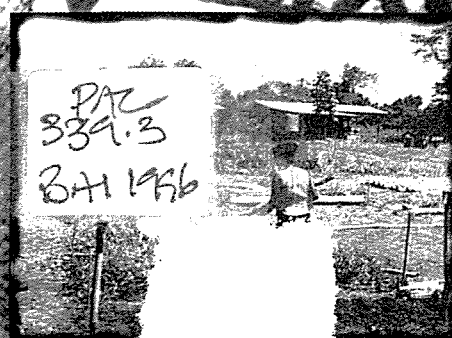




A GUIDE TO ESTIMATING THE VALUE OF HOUSEHOLD NON-MARKET PRODUCTION IN PACIFIC ISLAND DEVELOPING COUNTRIES

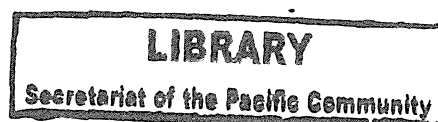
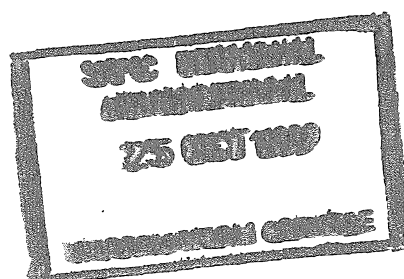


SOUTH PACIFIC COMMISSION



A GUIDE TO ESTIMATING THE VALUE OF HOUSEHOLD NON-MARKET PRODUCTION IN PACIFIC ISLAND DEVELOPING COUNTRIES

by
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Statistical Training Expert



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in South Pacific Developing Member Countries

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Foreword

Households have always been at the centre of cultural life in the Pacific. Less widely known is that households have been and still remain important centres of economic production. In many countries the food and other goods that households produce and consume themselves are the means of sustaining the livelihoods of considerable parts of the total population. When considered in total, households make a vital contribution to Pacific Island economies and the development of those economies.

This *Guide* was written to fill a gap in the reference material available to statisticians in Pacific countries about how to classify, value and present data on households' economic contribution in the national accounts. *The System of National Accounts 1993* (SNA) is a detailed, technical reference book that provides overall direction to national accountants throughout the world. It provides detailed instructions on how to measure and value the economic contribution of households. However, it assumes a degree of expertise in the subject that is often not available in Pacific Island statistics offices.

This *Guide* is aimed at the staff of Pacific Island statistics offices, people who are keen to produce good statistics but are often intimidated by the size and complexity of the SNA. This *Guide* provides the technical information that they need in a more accessible form. As such, it will form a basis for producing better national accounts in the region.

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Dr Bob Dun
Secretary-General
South Pacific Commission

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I should also acknowledge the inspiration and guidance of the *System of National Accounts 1993*. National accountants will recognise that much of the material in this Guide is from the SNA. I recommend that anyone wanting to know more about the production boundary, valuation of output, or other issues raised in this *Guide*, consult the SNA.

David Bain

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INTRODUCTION

'Non-market production of households' ('non-market production' for short) includes growing or catching food, making mats, baskets, tapas, etc., and building houses—all things that are mainly used by the people or **households** that produced them.⁽¹⁾ The products are not intended to be sold on the market, hence the title 'non-market production', though they can be given away.

A household is a small group of people who usually live in the same house, share their money and wealth, and eat together.

Non-market production, which is sometimes called 'subsistence production' or 'non-monetary production', makes a major contribution to total economic production in Pacific Island developing countries. About 75 per cent of people in Pacific Island developing countries (South Pacific Commission member countries at least) live in rural areas and villages.⁽²⁾ Most of the households that these people belong to grow all or some of their own food as well as make a wide range of household items and handicrafts that are not sold but still have an economic value.

Non-market production, as measured in national accounts, contributes about 6 per cent of Fiji's gross domestic product (GDP), about 15 per cent in Papua New Guinea and the Cook Islands, and more than 25 per cent in Western Samoa and Tonga.⁽³⁾ These contributions to GDP are probably understated, because estimates of the value of non-market production in Pacific Island countries' national accounts are generally inadequate.

Pacific Island members of the South Pacific Commission are: American Samoa, Cook Islands, Federated States of Micronesia, Fiji, Guam, French Polynesia, Kiribati, Marshall Islands, Nauru, New Caledonia, Niue, Northern Mariana Islands, Palau, Papua New Guinea, Pitcairn Islands, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu, Wallis and Futuna and Western Samoa.

- (1) See Chapter 4 for a more detailed list of different kinds of non-market production.
- (2) *Population Statistics*, Statistical Bulletin No. 42, South Pacific Commission, 1995.
- (3) Proportions of non-market production to total gross domestic product are from the national accounts of the countries cited.

One reason for poor estimates of the value of non-market production in Pacific national accounts is that easy-to-use guidelines about how to collect and compile data on the subject have not been available. The United Nations Development Advisory Team (UNDAT) produced a manual *Estimating Non-monetary Economic Activities* ⁽⁴⁾ following a seminar on 'The Subsistence Sector in the South Pacific' at the University of the South Pacific in 1974. The manual was intended to offer guidance to national accounts statisticians as they extended coverage of national accounts into the non-monetary part of the economy. It presumed that readers were familiar with methods of compiling national accounts for the monetary part of the economy. Because *Estimating Non-monetary Economic Activities* was written expressly for national accountants and much of the text is fairly technical, it has been difficult for statistics office staff with little experience in compiling economic statistics to follow its recommendations.

This new *Guide* was written in response to requests from Pacific Island statisticians for a more user-friendly manual, a manual designed for people who are not expert national accountants. Its purpose is to provide simple, practical advice on the complex range of issues surrounding recording and valuation of non-market production in the national accounts. It aims to give an appreciation of the importance of valuing non-market production, as well as some ideas for a framework to compile and present estimates. At the same time, a lot of material from *Estimating Non-monetary Economic Activities* has been incorporated in this *Guide*. Indeed this *Guide* is largely an extension of the UNDAT work from 1974, rather than new work.

Choosing the right title for the subject of this *Guide*—'household non-market production'—wasn't easy. The term 'non-market production' has a familiar sound to it but is not widely used in Pacific Island national accounts (an exception being Papua New Guinea). As already noted, other terms are used to describe this kind of production—'non-monetary' and 'subsistence' production, for example.

(4) *Estimating Non-monetary Economic Activities*, United Nations Development Advisory Team for the South Pacific, Suva, 1974.

National accountants may prefer the term 'household own-account production', but other data users may have difficulty understanding what this means. Definitions for these and other related terms, at least as far as they relate to national accounts, are given in Chapter 3.

'Non-market production' is used because it describes the type of activity quite well and the concept of 'non-market' is generally easier for users to understand than 'non-monetary'.

'Non-market production' in this *Guide* refers to production of goods for own consumption and own **gross fixed capital formation** by households, as well as household production of goods used for gifts.⁽⁵⁾

Gross fixed capital formation is the production of goods, tools and houses, for example, that will be used in further processes of production.

Some questions to consider:

- Why is it important to value non-market production?
- How can the value of non-market production be measured?
- How should non-market production be shown in national accounts?

To answer the first question, it's important to value non-market production in national accounts so that governments and other decision-makers are better informed about the state of a country's economy.

Pacific Island economies are generally changing. **Market production** in most Pacific Island countries is important and is increasing its share of total production. National statistics offices measure the value of market production through regular statistical

(5) Strictly speaking, 'non-market production' in national accounts includes output of market enterprises (businesses, etc.) that they either use themselves, or supply to other units in the same enterprise group. These types of non-market production by market enterprises are excluded from the coverage of this *Guide*.

collections such as annual business censuses or quarterly surveys of production, but they don't have regular collections of data on non-market production. However, non-market production is economically and socially important in Pacific Island developing countries. Most of the population of these countries depends on non-market production to some degree in their day-to-day lives.

Market production is goods or services sold, or intended to be sold or otherwise disposed of, on the market.

It is not acceptable to ignore or understate the value of non-market production in the national accounts because it's difficult to measure. Governments and other decision-makers need to know the size and economic contribution of both market and non-market production to make informed economic decisions. Applying a consistent set of principles to recording and valuing all production will improve the quality of national accounts. Better national accounts will, in turn, provide a sounder basis for better decisions by government.

Answers to the second and third questions: how to measure the value of non-market production and how to show these values in the national accounts, are dealt with later in this *Guide*.

1. NATIONAL ACCOUNTS

1.1 This *Guide* is intended for statisticians and economists who compile and use national accounts in the Pacific Islands. At the same time it recognises that they may not necessarily have a thorough understanding of these accounts. With this in mind, the following section provides an introduction to national accounts that will be useful before discussing non-market production in detail. Brief explanations of technical terms are shown in boxes throughout the text. These explanations are expanded in the Glossary at the end of the *Guide*.

1.2 Most countries produce a set of national accounts that summarise their **economic transactions** in a given period.

An economic transaction is a flow of money, financial obligations, goods and services, between business, household or government units, by mutual agreement.

1.3 The central idea in national accounts is 'economic production'. Production is the process by which labour, natural resources, capital assets and knowledge (the factors of production) are combined with other **inputs** such as materials and fuels and services to produce **outputs** of goods and services.

**Inputs are any goods and services used in the process of production.
Outputs are goods or services that can be used by units other than those that produced them.**

1.4 The idea of economic production is not limited to goods and services that are bought and sold. It includes goods and services provided free of charge, such as police and defence force services provided by government. It also includes goods and services that don't enter the market, such as food grown for own consumption. National accounts aim to measure the value of all economic production.

(a) Rules for recording production in national accounts

1.5 National accounts rely on a double-entry accounting system, in much the same way as a business. While business accounts use credits and debits to record their transactions, national accounts refer to production and its uses.

1.6 In simple terms, the value of production recorded in national accounts (also called 'value added') is equal to the incomes that flow to the factors of production, plus taxes on production, less subsidies.

Rule 1. *Production equals Income.*

1.7 When production is recorded, the corresponding income must also be recorded. Income earned by labour is recorded as compensation of employees (wages, etc.); income earned on capital is recorded as **operating surplus**. The 1993 *System of National Accounts*⁽⁶⁾ (SNA) introduced the term 'mixed income', which combines the idea of wages and operating surplus for owners of **unincorporated enterprises** (or other members of their households).

Operating surplus is value added, less compensation of employees, less taxes net of subsidies on production. It is similar to the business concept of profit.

Unincorporated enterprises are usually small businesses owned and operated by a single person, a partnership or a household.

'Mixed income' is used to describe the balancing item in the generation of income account for a sub-set of enterprises, i.e. unincorporated enterprises owned by members of households either individually or in partnership with others in which the owners, or other members of their households, may work without receiving a wage or

(6) *System of National Accounts 1993*, prepared jointly by the Commission for European Countries (Eurostat), the International Monetary Fund, the Organisation for Economic Co-operation and Development, the United Nations and the World Bank. Brussels/Luxembourg, New York, Paris, Washington, D.C., 1993.

salary. Owners of such enterprises must be self-employed: those with paid employees are employers, while those without paid employees are own-account workers. In a few cases it may be possible to estimate the wage or salary element implicitly included within mixed income, but there is not usually enough information available about the number of hours worked or appropriate rates of remuneration for values to be imputed systematically. Thus, mixed income contains an unknown element of remuneration for work done by the owner of the enterprise, or other members of the same household, as well as the surplus accruing from production. ^{SNA 7.85}

Mixed income includes the concepts of both operating surplus and compensation of employees for owners of unincorporated enterprises.

Rule 2. *Income equals compensation of employees,
plus operating surplus,
plus mixed income,
plus taxes on production payable,
minus subsidies receivable.*

1.8 When production and income are recorded in the national accounts, the use of that income must also be recorded. Income can be spent, or it can be saved to spend in a later period. Saving is equal to the value of gross fixed capital formation plus changes in **inventories**. Income is equal to the value of consumption, plus gross fixed capital formation, plus changes in inventories.

Inventories are stocks of goods held by the units that produced them and stocks of goods acquired to use for intermediate consumption or for resale without more processing.

Rule 3. *Use of Income equals consumption,
plus capital formation,
plus change in inventories.*

(b) Recording non-market production

1.9 Recording the value of non-market production in the national accounts follows the rules given above. Take for example a farmer who used his labour and land to produce a tonne of taro in one year that was valued at \$1,000. Through this production he also earned income (mixed income) for himself, equal to the value of the production.

Production (value added): \$1,000 = income (mixed income): \$1,000

1.10 The taro grown can either be eaten in the period that it is produced or saved for use in a later period. When the taro is eaten, its use is recorded as consumption (household final consumption expenditure). If the taro is saved for use in a later period, it is recorded as an increase in the value of inventories. For convenience, it's usually assumed that taro, and other non-market food produced, is consumed in the period that it is produced.

**Income (mixed income): \$1,000 = consumption
(household final consumption expenditure): \$1,000**

1.11 By making sure that the value of production (value added) is equal to the value of income and the use of production, the fundamental balance of the national accounts is maintained.

1.12 In this example the non-market production, a tonne of taro, was given a value of \$1,000. It's much more useful for national accounts to record production in terms of money than as physical products—tonnes of taro in this case—for economic analysis. Money values are easier to use and compare than physical values. However, as in the example, a major part of economic production in Pacific Island developing countries (especially agriculture) is consumed by the households that produce it. There are no cash or 'market' transactions associated with the production.

1.13 It is important to record the value of non-market production, and the associated incomes, consumption and saving in each country's national accounts, so that a true picture of the whole economy is shown, rather than just recording the value of production in the market sector. To do so, national accountants often have to impute, or assign, a value to the non-market production. Some different ways to value non-market production are discussed in Chapter 6.

2. PRODUCTION MEASURED IN NATIONAL ACCOUNTS

2.1 This chapter discusses the concept of production, and why some activities that seem to be productive are excluded from the national accounts. Chapters 2 and 3 are based on SNA Chapter VI, The Production Account.

(a) The production boundary (SNA 6.14–6.36)

2.2 'Production' is an activity in which an **enterprise** uses inputs such as materials and skills to produce outputs of goods and services. In national accounts, an enterprise is any productive unit—for example, a business selling cars and the farmer growing taro for his family are both enterprises. The SNA recommends measuring the value of 'economic production' in each country's national accounts.

(b) The general production boundary

2.3 Economic production is any activity carried out under the control of an **institutional unit** that uses inputs of labour, capital, and goods and services to produce goods and services that can be (but are not necessarily) delivered to other institutional units.

An institutional unit is an economic entity capable of owning assets, incurring liabilities and engaging in economic activities and transactions with other entities.

2.4 The SNA describes a 'general production boundary' that includes all kinds of economic production. Some things that we may think of as 'productive' are not classified as economic production, so are not inside the SNA's general production boundary. Natural processes without any human involvement are not economic production. For example, unmanaged growth of fish in oceans or trees in natural forests is not economic production, yet the activities of fish farming and forestry are economic production. Of course, when fish are caught from oceans and timber is cut

from forests, the harvesting of these natural resources is economic production. The key concept is that for production to be 'economic' in the national accounts sense, an institutional unit must assume responsibility for the process. An institutional unit (or 'unit') can be a household, a corporation, a government, or a non-profit organisation.

2.5 Identifying economic processes that produce goods is usually easy, as goods are physical objects, but it isn't always easy to distinguish economic processes that produce services from other activities that are both important and beneficial. Activities that are important but not economically productive include basic functions such as eating, drinking, sleeping and taking exercise. These are essential functions but one person can't perform these functions on someone else's behalf, so they are outside the general production boundary.

2.6 Activities that can be provided by other persons, or units, such as washing, cooking, caring for children, the sick or aged, are inside the general production boundary. It is possible to value these services in the national accounts. However, the production boundary used in the SNA is more restricted than the general production boundary. Accounts are not compiled for household activities that produce domestic or personal 'services' for own final consumption within the same household, except for **own-account housing services** and services produced by employing paid domestic staff.

2.7 Valuing own-account housing services (the amount of rent home owners would have to pay to live in their houses if they didn't already own them) in the national accounts is an exception to the general rule of not including imputed values for own-account services. The main reason for imputing a value for this service (rent) is that the usefulness of national accounts is based on their users' ability to compare values. Users compare values for different periods of time and different economies. These comparisons would be distorted if values for housing services were not included in the accounts, because the ratio of owner-occupied to rented dwellings can vary considerably over time or between different countries.

2.8 The following types of own-account production of services by households for their own consumption are excluded from the national accounts:

- cleaning, decorating and maintaining the home occupied by the household;
- cleaning, servicing and repairing household durables (such as cars, washing machines, etc.), or other goods;
- preparing and serving meals;
- caring for, training and teaching children;
- caring for sick, infirm or old people; and
- transporting members of the household or their goods.

2.9 A lot of time, labour and expense are used by households to produce these services, while consuming them makes an important contribution to economic welfare. Why then are values for these services excluded from the national accounts? The SNA gives several reasons:

- (a) *The own-account production of services within households is a self-contained activity with limited repercussions on the rest of the economy. The decision to produce a household service entails a simultaneous decision to consume that service. This is not true for goods. For example, if a household engages in the production of agricultural goods, it does not follow that it intends to consume them all. Once the crop has been harvested, the producer has a choice about how much to consume, how much to store for future consumption or production, and how much to offer for sale or barter on the market.*
- (b) *As the vast majority of household domestic and personal services are not produced for the market, there are typically no suitable market prices that can be*

used to value such services. It is therefore extremely difficult to estimate values not only for the outputs of the services but also for the associated incomes and expenditures which can be meaningfully added to the values of the monetary transactions on which most of the entries in the accounts are based;

- (c) *Imputed values have a different economic significance from monetary values. The imputed incomes generated by the imputed production would be difficult to tax in practice. They would have to be shown as being all spent on the same services. However, if the incomes were to be available in cash, the resulting expenditures might be quite different. For example, if a household member were offered the choice between producing services for own consumption and producing the same services for other households in return for remuneration in cash, the paid employment would likely be preferred because of the greater range of consumption possibilities it affords. Thus, imputing values for the own-account production of services would not only be very difficult, but would yield values which would not be equivalent to monetary values for analytic or policy purposes. (SNA 6.21)*

2.10 The reasons for excluding values for the outputs, incomes and expenditures associated with the production of domestic and personal services within households from the national accounts are fairly compelling.

2.11 The SNA does recognise the importance of valuing the household services described above in a national accounting framework but recommends that the way to do so is through what are called '**satellite accounts**'. Satellite accounts are closely linked to the main SNA but not bound to use exactly the same concepts. Accounts for household services can be compiled using similar methods to the core national accounts and linked to the core accounts—but are still treated as separate accounts. In this way, it is possible to estimate the value of unpaid household work in a national accounts framework without changing the analytical value of the core accounts. (See SNA Chapter XXI. Satellite analysis and accounts, for more information on satellite accounts.)

(c) Kinds of production inside the SNA boundary

2.12 What kinds of production are inside the SNA production boundary? In summary, they are as follows (see SNA 6.18):

- Production of goods or services supplied (or meant to be supplied) to units other than their producers. This includes production of goods or services used up in the process of producing these goods or services (intermediate inputs);
- Own-account production of all goods kept by their producers for their own final consumption or gross capital formation;
- Own-account production of housing services by owner-occupiers and of domestic and personal services produced by employing paid domestic staff.

2.13 Of the activities inside the SNA production boundary, production of goods or services supplied to other units is only relevant for non-market production when goods or services are given away. Own-account production of goods for own final consumption, and own-account production of housing services, are always components of non-market production (although own-account production of housing services is generally treated as market production in the national accounts).

2.14 The following types of own-account production of goods are important in the Pacific:

- Production, collection and storage of agricultural products; forestry; wood-cutting and collecting firewood; hunting and fishing;
- Production of other primary products, such as fetching water;

- Processing agricultural products; production and preservation of meat and fish products; production of wine or spirits; production of toddy and kava and production of baskets or mats;
- Other kinds of processing, such as weaving cloth; dress-making; producing pottery, tools or utensils; making furniture;
- Building homes and meeting-houses.

2.15 The above list covers the most common types of own-account production; there are of course many other kinds that are important. Chapter 4 provides a more detailed list of the types of non-market production likely to be found, classified by industry division.

(d) Recording production

2.16 When making estimates for the value of non-market production for the national accounts, the rule to follow is this: ***Record production when you believe that the amount of a non-market good is important in relation to the total supply of that good.*** Otherwise it's probably not worthwhile trying to estimate it in practice.

2.17 As a rough guide, the value of non-market production should be recorded in each country's national accounts if it is likely to be more than one million dollars (or equivalent) or likely to contribute more than one per cent to the value of total production of the country.

3. NON-MARKET PRODUCTION DEFINED

3.1 It's important to be clear what 'non-market production of households' means in Pacific Island national accounts. Other terms are close in concept but have slightly different meanings, for example, 'subsistence' and 'non-monetary' production are terms also used in some country's published national accounts (neither of these terms is defined in the SNA.)

3.2 The SNA makes a fundamental distinction between market output, output produced for own final use and other non-market output.

Output is goods or services produced by an establishment that become available for use outside that establishment.

(a) Market output

3.3 Market output (see SNA 6.45), is output sold (or intended to be sold) at ***economically significant prices*** or otherwise disposed of on the market.

Prices are said to be economically significant when they have a major impact on the amounts that producers are willing to supply and the amounts purchasers wish to buy.

The value of market output for a producer in a given period is the sum of:

- The total value of goods and services sold at economically significant prices;
- The total value of goods and services bartered;
- The total value of goods and services used for payments in kind;

- The total value of goods and services supplied by one establishment to another belonging to the same market enterprise, to be used as intermediate inputs;
- The total value of changes in inventories of finished goods and work-in-progress intended for one or other of the above uses.

3.4 A market producer is an establishment or enterprise that sells all or most of its output. Market output is outside the scope of this *Guide*. (See SNA 6.53–6.83 for more information on measuring market output.)

(b) **Outputs produced for own final use**

3.5 Outputs produced for own final use (see SNA 6.46) are goods or services that are retained for own final use by the owners of the enterprises that produced them. **Corporations** don't have final consumption, so output for own final consumption is only produced by unincorporated enterprises, including households.⁽⁷⁾ For example, food produced and consumed within a household is output of a good produced for own final use. There are only two kinds of services produced for own final use by households inside the SNA boundary, housing services produced for own consumption by owner-occupiers and services produced by employing paid domestic staff.

Corporations are legal entities created to produce goods and services for the market, usually as a source of profit to their owners.

3.7 The value of output produced for own final use in any period is given by the sum of the following:

- (1) Total value of goods produced and consumed by the same households;

(7) Goods or services used for own gross fixed capital formation can be produced by any kind of enterprise. Machine tools produced for own use by engineering enterprises and dwellings (or extensions to existing dwellings) built by households are both examples of own-account gross fixed capital formation.

- (2) Value of housing services produced and consumed by the same households and the value of services provided by paid domestic staff;
- (3) Total value of own-account gross fixed capital formation;
- (4) Total value of changes in inventories of finished goods and work-in-progress intended for one or other of the above uses.

3.8 The coverage of 'non-market production of households' for Pacific Island developing countries, the subject of this *Guide*, is narrower than 'output for own final use'. Goods produced for own consumption or intended to be given as gifts by households, (1) above, are included.

3.9 The value of housing services produced by owner-occupiers for own consumption, part of (2) above, is generally classified as market output in the national accounts, whether they relate to rural, village or urban areas. Services produced on own account by employing paid domestic staff, the rest of (2), are market outputs. Both these outputs are outside the scope of this *Guide*.

3.10 Own-account gross fixed capital formation, (3) above, applies to both market and non-market enterprises. Market output should be measured in regular statistical collections and recorded as part of market sector production. Only the value of own-account capital formation of households that are non-market enterprises should be included in non-market production estimates.

3.11 The value of changes in inventories of finished goods and work-in-progress, (4) above, can be an important element of non-market production, for example in raising livestock for slaughter and own use by households. Chapter 5 gives a more detailed account of how to measure these inventories.

(c) Other non-market output

3.12 'Other non-market output' (see SNA 6.49) consists of goods and services produced by non-profit institutions serving households or government that are supplied free, or at prices that are not economically significant, to other institutional units or the community as a whole. The types of output included under this heading are police and defence services provided by governments, and education or health services provided free, or at prices that are not economically significant, by governments, churches and charities. This kind of output is produced by institutional units other than households, so should not be included with 'non-market production' in the national accounts.

(d) Non-monetary production

3.13 'Non-monetary production' is a term sometimes used in place of non-market production. Market transactions can be non-cash, or non-monetary, if for example barter is involved. 'Other non-market output', described in the previous paragraph, is often 'non-monetary' because there is no money paid for the good or service supplied, but it is part of market sector production. 'Non-monetary' is not the best term to use when describing non-market production by households.

(e) Subsistence production

3.14 'Subsistence production' generally refers to small-scale farming whose output is usually consumed by the producer and his or her family, leaving little or no surplus for selling. It can include participation in both the market and non-market sectors of the economy. For example, a farmer may not know when he plants taro whether his family will eat the taro crop or whether he will sell some or all of it. If his family eats the taro, his work counts as non-market production. If he sells the taro, its value is included with market production. His family may eat some and he may sell the rest, so part of his production is market and part is non-market.

3.15 The decision to eat or to sell doesn't really change the farmer's status as a subsistence farmer, but it does affect classification of his production in the national accounts. Food and other goods sold by a subsistence farmer are part of market, rather than non-market, production.

(f) Informal production

3.16 'Informal production' is probably a bit easier to deal with. Informal production generally consists of people producing goods and services with the aim of creating employment and incomes for themselves. ⁽⁸⁾ Informal production is usually market production. It's only informal in so far as this type of production is mostly outside the regulation or control of authorities. For example, a street peddler who doesn't have a peddler's licence is part of the informal sector. Informal sector transactions will still be on a cash, credit or barter basis—they are very much part of market production.

Summary

3.17 It is easy to be confused by the various terms used to describe non-market production in Pacific Island national accounts. Some countries refer to 'subsistence production', some refer to 'non-monetary production', others use the term 'non-market production', but they all mean the same thing: non-market production of households. It would be better for users, of course, if a single term 'non-market production of households' was used consistently in all accounts.

3.18 The definition of 'non-market production of households' in Pacific Island countries, in the box that follows, should help clarify the term.

(8) Fifteenth International Conference of Labour Statisticians, Geneva, 1993, Resolution concerning statistics of employment in the informal sector, International Labour Office.

Definition:

The value of 'non-market production of households' in Pacific Island developing countries is equal to:

Total value of goods produced and consumed by the same household, or given as gifts;

plus Own-account gross fixed capital formation of household non-market enterprises;

plus The value of changes in inventories of household non-market enterprises.

4. CLASSIFICATION OF NON-MARKET PRODUCTION

4.1 Chapter 2 described several kinds of economic production that should be included in estimates of non-market production:

- production and processing of agricultural goods,
- hunting and fishing,
- weaving cloth, making pottery,
- building houses.

4.2 In fact, the range of activities included in estimates of non-market production will probably be limited by the cost of collecting data rather than by issues of principle. Obvious activities for inclusion are agricultural production, fishing and hunting. There are many other activities, such as house construction, manufacturing—especially handicrafts—wood-gathering, land-clearing and road maintenance, that can also be part of non-market production. The best way to calculate the total value of non-market production is to value each kind of activity separately. To do so effectively, statisticians need to consider where to classify non-market activity in ISIC⁽⁹⁾.

4.3 The rules used to classify market production to industry division in the national accounts are also used to classify non-market production. Table 1 (pages 24 and 25) describes some of the most common types of non-market production and suggests appropriate industrial classifications. The comments are not exhaustive and there are many other kinds of non-market production that aren't listed. The table is intended to be a guide to industry classification of non-market production, not a comprehensive classification in itself.

(9) International Standard Industrial Classification of all Economic Activities (ISIC), United Nations, Revision 3.

Table 1: Non-market output

Tabulation categories	Division	Description	Comments
A	01	<i>Agriculture, hunting and forestry</i> Agriculture, hunting and related service activities	Includes production of crops, gathering fruit, berries, toddy, etc., hunting for food, land improvement and clearing for agriculture.
	02	Forestry, logging and related service activities	Includes wood-cutting and collecting firewood.
B	05	<i>Fishing</i>	Includes gathering uncultivated seaweeds, shells and sponges.
D	15	<i>Manufacturing</i> Manufacture of food products and beverages	Includes processing agricultural products, preservation of meat and fish products, production of beer and (fermented) toddy. Own-account manufacture of food should be allocated to Division 01, 02 or 05, depending whether the bulk of the work is in planting, cultivating or harvesting (or catching or gathering) on the one hand, or Division 15 if the bulk of the work is in processing the product. If it is not practical to distinguish, the activity should be allocated to Divisions 01, 02 or 05.
	16	Manufacture of tobacco products	Allocate to Division 01 if the bulk of the work is in growing the plant.
	17	Manufacture of textiles	Includes making tapa (masi).
	18	Manufacture of wearing apparel, dressing and dyeing of fur	In principle, making clothes in the home should be included.
	19	Tanning and dressing leather, manufacture of leather footwear	
	20	Manufacture of wood products except furniture, manufacture of articles of straw and plaiting materials	Includes activities used to make handicrafts, such as wood carving, weaving mats and baskets.

Table 1: Non-market output (cont'd.)

Tabulation categories	Division	Description	Comments
D	29	<i>Manufacturing (cont'd.)</i> Manufacture of machinery and equipment n.e.c.	Own-account capital formation ancillary to another activity is included in the output of the other activity; e.g. own-account production of agricultural tools by a farmer should be included in agriculture.
	35	Manufacture of other transport equipment	Includes boat-building and repair.
	36	Manufacture of furniture; manufacturing n.e.c.	Includes decorative or ceremonial objects; e.g. shell or feather necklaces, shell money.
F	45	<i>Construction</i>	Mainly houses, but may also include construction of village meeting-houses, churches and sports fields.
I	60-64	<i>Transport, storage and communication</i>	Should be treated as an intermediate input to final output, therefore included in the value of the final output.
O	92	<i>Other community, social and personal services</i> Recreational, cultural and sporting activities	Such activities in the non-market sector are regarded as a use of leisure and are excluded from the national accounts.

Note: Table 1 is based on material from ISIC.
n.e.c. not elsewhere classified.

5. MEASURING OUTPUT

5.1 This chapter looks at some of the issues that arise when measuring non-market output, that is, production capable of being supplied to units other than its producers. This includes output of all goods, whether they are intended to be supplied to other units or not. The first part deals with measuring output in specific industries, the second part deals with measuring different types of output. The advice given interprets the SNA flexibly. Emphasis is on what can be done, rather than what should be done, but the SNA guidelines are closely followed.

(a) Output by industry

Agriculture, hunting and forestry (ISIC Divisions 01 & 02)

Measuring agricultural output

5.2 The value of non-market agriculture can be measured by calculating either potential or actual output. Potential output is the amount grown or raised by producers. Actual output is the amount harvested, collected or used by producers. Farmers often grow more than they intend to use (for example, as a precaution against a poor harvest), so potential output usually exceeds actual output.

5.3 Actual physical output should be measured whenever possible. This is done by measuring the weight or volume (kilograms, litres, etc.), of output so that consistent physical measurements are maintained. Counting the number of units produced (bunches of peanuts, baskets of yams, numbers of fish, etc.), is an alternative, but it's difficult to get consistent measurements this way. On the other hand, produce is often sold by the bunch, basket, etc., so establishing prices for physical units is usually straightforward.

5.4 Measuring potential output can be a convenient basis for estimating agricultural production in some cases. For example, a simple method of estimating

5.5 A good is counted in the national accounts once it has been acquired by a final user, regardless of whether it is wasted or not. Waste after harvest should be included in the value of production. This rule applies to both the market and non-market economy.

The non-market part of household output is what is left once the following components have been deducted from total household output:

- Output that is sold (this is included in the market part of the national accounts);
- Output used as an intermediate input into other goods consumed within the household. This includes, for example, bait fish used in fishing, coconuts fed to pigs or poultry, and coconut or pandanus fibres used in weaving. Only the value of the final good is measured in the national accounts, to avoid double counting.

Household non-market output includes consumption within the household as well as exchanges, gifts, etc. The rule is:

Total household output *minus* sales,

minus intermediate consumption,

equals household non-market output.

5.6 The production approach can also be used to estimate the value of output for forestry, hunting, etc. In forestry, for example, total production, less sales, less intermediate consumption equals the amount available for own consumption—mainly

firewood. Timber harvested for use in own-account construction is an intermediate input to construction.

Fishing (ISIC Division 05)

5.7 The same general rules for measuring the value of output for agriculture, hunting and forestry can be used for fishing. Measure total production (the value of fish caught, shells collected, etc.), less sales and intermediate consumption (the value of bait fish for example). The residual amount is the value of output for fishing.

A consumption approach to measuring non-market agricultural output

Papua New Guinea uses a 'consumption', rather than production approach to measure the value of non-market agricultural output. The term 'non-market production' is used in the Papua New Guinea national accounts to define own-account production taking place in rural villages only, not in urban areas.

Valuing non-market food produced involves estimating the total calorie requirement for the rural village population and deducting calories provided by purchased foods. The residual calorie requirement is assumed to be satisfied by non-market production of food. The amount of each type of traditional food produced is based on a survey of indigenous agriculture in 1961–62.⁽¹⁰⁾

To be effective, this method requires very detailed data on domestic production, import and export of foods. As well, up-to-date information on patterns of food production and household consumption is needed. Without such detailed data this approach is unreliable and should only be used for rough estimates.

Data requirements for a consumption approach include:

- reliable population census data showing urban/village population by age and sex;
- estimates of calorie requirements for target population;
- data about the types of food consumed by the rural village population;
- detailed information, including volumes, about imports of food;
- volume of domestic production of manufactured food;
- detailed information about exports of food;
- nutrition tables giving calories for each type of food consumed.

(10) *Papua New Guinea National Accounts Statistics 1960/61–1973/74*, National Statistics Office, Port Moresby

Manufacturing (ISIC Divisions 15–36)

5.8 Table 1 gives a brief description of various types of non-market manufactured output. Manufacturing output can be measured using different methods to estimate the physical output of durable goods:

- It may be possible to estimate output directly from the number of goods produced during the year, for example, tapas or mats made. This method is preferred for valuing physical output whenever it can be used;
- If the inventory of a good at points in time can be measured and its average life and value is known, then estimates of average output between the points in time can be calculated. For example, to calculate the value of the output of woven mats in a year, estimate the number of mats used in a typical household, the average life of a mat and its value. If 1,000 households on average own 3 mats each and each mat lasts on average 2 years, and is valued at \$20, then the value of output each year is equal to:

$$(1,000 \text{ homes} \times 3 \text{ mats} \times \$20) / 2 \text{ years} = \$30,000 \text{ per year}$$

- The value of output can be estimated based on the amount of labour input if a suitable labour/output ratio is available. For example, if studies show that labour input contributes 80 per cent of the value of baskets (the rest of the value is contributed by materials used), the total value of baskets made can be estimated by calculating the hours spent producing baskets and valuing the time spent according to an appropriate wage rate. If 500 basket-makers each spend 100 hours per year making baskets and basket-making is valued at a standard rural wage rate of \$1 per hour, then the value of output of basket-making is equal to:

$$(500 \text{ basket-makers} \times 100 \text{ hours per year} \times \$1 \text{ per hour}) / 0.8 = \$62,500$$

Construction (ISIC Division 45)

5.9 House-building, including ordinary dwellings and larger meeting-houses, is probably the most important kind of non-market construction.

5.10 One way to value house-building is to estimate the hours of labour used in construction plus the value of intermediate inputs. The labour input can be valued using a suitable wage rate, for example, local council wage rates for labourers and higher rates for skilled workers. The value of labour input to house construction will vary from place to place, depending on the size and type of house being built. The value of intermediate inputs, for example, timber and twine, should be based on market prices whenever possible. If suitable market prices for intermediate inputs don't exist, for example, thatching material, valuation should be based on time taken to collect and prepare the thatch (or other inputs).

5.11 The number of houses built is influenced by the average useful life of the house type, the number of that kind of house and the rate of change in the population living in that type of house. Population censuses or other censuses that record types of housing are a very useful source of information for these estimates. Local statisticians usually have a good idea how long it takes to build traditional houses in their own areas and how long they will last. This knowledge can be used as a starting point for estimating the value of non-market construction.

5.12 For example, say it takes four people (one skilled builder and three unskilled labourers) fifteen days to build a house if they work ten hours a day. If the local council wage rate for unskilled workers is \$1 per hour, and the local wage rate for skilled builders is \$2 per hour, then the value of labour input into the house is calculated as follows:

	1 skilled builder x 15 days x 10 hours a day at \$2 per hour	= \$300
<i>plus</i>	3 unskilled workers x 15 days x 10 hours a day at \$1 per hour	= \$450
<i>equals</i>	total value of labour input to house	= \$750

5.13 To calculate value added by this type of house construction for the year, multiply the number of houses of this type likely to be built each year by the value of average labour input. If one hundred houses of the type used in the example are built each year, their value added is equal to:

$$\text{average labour input (\$750)} \times \text{total houses built (100)} = \$75,000$$

5.14 Other types of non-market construction (bridge- or road-building for example) can also be valued using this labour-hours technique.

Transport, storage and communication (ISIC Divisions 60–64)

5.15 As noted in Table 1, non-market transport, storage and communication services should be treated as intermediate inputs to final output and so be included in the value of final output. For example, the value added to yams by transporting them from a village where they were produced to another village to be eaten on a feast day should be included in the final value of the yams. In practice, it would be difficult to assign values for such transport services unless there is a difference in the market price of yams in the two villages because of transport costs.

Real estate activities (ISIC Division 70)

5.16 It is important to impute a rental value for all owner-occupied dwellings, whether in towns, villages or rural areas. Imputed rent for owner-occupied dwellings should be recorded as output of the Real Estate, Renting and Business Activities industry. The production of all own-account housing services is, by definition, an own-account production of a service, that is a non-market activity. However, these services have always been treated in the same way as market production in the national accounts. There is no need to include a separate 'non-market sector' for the imputed rent for rural or village houses as distinct from urban houses. (See SNA 6.89 – Services of owner-occupied dwellings.)

A value for the imputed rent of all owner-occupied dwellings should always be included in the national accounts.

Other community, social and personal services (ISIC Division 92)

5.17 Non-market recreational, cultural and sporting activities, such as singing and dancing festivals, religious celebrations, football or volleyball contests between villages, are a use of leisure. There is often a lot of time and money spent on these activities, but this expense is regarded as being on final consumption, not as intermediate input contributing to further production in the national accounts.

(b) Gross fixed capital formation (SNA Chapter X. The Capital Account)

5.18 Gross fixed capital formation is measured by the value of a producer's **acquisitions** less **disposals** of new or existing fixed assets in an accounting period. 'Acquisitions' includes the value of any fixed assets produced on own-account—the part included in non-market production. Purchases and sales of fixed assets are market transactions. Fixed assets are produced assets used repeatedly, or continuously, in processes of production for more than one year. Non-produced assets used in production, such as cooking stones, are not treated as capital formation.

Acquisitions of fixed assets include purchases, barter exchanges, gifts received and manufacture on own account.
Disposals of fixed assets include sales, barter exchanges and gifts given.

5.19 Gross fixed capital formation that is an **ancillary** (supporting) activity to another sector should be included, as capital formation, in the gross output of the major sector. For example, own-account land improvement (capital formation) that is an ancillary activity to agriculture should be included in the gross output of agriculture. Otherwise, capital formation should be included in the sector in which the major part of the capital-forming activity falls (for example, construction or manufacturing).

5.20 As a general rule, where the value of the fixed assets created is small it may not be worth counting them as capital formation; in such cases their value can be included with intermediate consumption. Non-market gross fixed capital formation should be included with other non-market production.

Types of own-account capital formation

Improvements to land

5.21 Activities leading to major improvements in the quantity, quality or productivity of land, or preventing its deterioration, are treated as gross fixed capital formation. Non-market activities likely to be found here include:

- Clearing forests, rocks, etc. so that land can be used for agricultural production for the first time;
- Draining marshes or irrigating land by building dykes, ditches or irrigation channels.

5.22 The value of unpaid labour used in these activities should be treated as non-market capital formation in Agriculture, Forestry and Fishing (ISIC Division 01). Re-clearing gardens that have not been used for some time is regarded as an intermediate activity rather than capital formation. (See SNA 10.45–10.54, Improvements to fixed assets).

Small tools

5.23 Making small tools to use in own-account production, such as spades, knives, axes, etc. should generally be treated as intermediate consumption of the industry in which they are used. For example, making a spade should be treated as an intermediate input to agriculture. However, if these tools count for a significant part of the value of an industry's total stock of durable goods, they can be treated as fixed

assets and their creation recorded under gross fixed capital formation. It's unlikely that home-made tools are a significant part of any industry's total stock of tools these days as even isolated villages usually have access to market-manufactured tools. However, some communities still prefer to use home-made tools for specific purposes so it is important to consider their value. Valuation can be on the basis of comparable tools available in markets or on the time taken to make the tools.

Dwellings and other buildings and structures

5.24 The value of non-market gross fixed capital formation for buildings, including dwellings and other structures with an expected useful life of at least one year, is the sum of the value of intermediate inputs, materials and labour used to construct the buildings. All dwellings used as principal residences of households are fixed assets because they provide housing services to their owners.

5.25 Owner-occupiers are treated as the owners of enterprises producing housing services for their own final consumption.

Cultivated assets

5.26 **Cultivated assets** are livestock or trees used repeatedly or continuously for more than one year to produce goods and services. Livestock used in production year after year are classified as fixed assets (e.g. breeding stock, dairy cattle, and draught animals). Animals raised for slaughter, such as poultry and pigs, are not classified as fixed assets.

5.27 Trees and shrubs cultivated in plantations for the products they yield year after year, for example, coconut palms and fruit trees, are fixed assets. On the other hand, trees grown for timber that yield a finished product only when they are finally cut down are not fixed assets.

5.28 When animals or trees intended to be used as fixed assets are produced on own account, **uncompleted assets** in the form of immature animals, trees, etc. that are not ready to be used in production are treated as gross fixed capital formation. As a general rule, spread the value of uncompleted assets across the time that it takes to complete them. For example, if a dairy cow is worth \$200 when it is old enough to milk, say two years, then it would be worth \$100 when it is one year old.

5.29 Keeping track of uncompleted fixed assets so that they can be valued will be difficult in practice. As an alternative, try to estimate the value of changes in the number of non-market horses, dairy cattle, coconut palms, fruit trees, etc. during the year. Make gross fixed capital formation equal to the value of changes in the numbers of each cultivated asset.

(c) Inventories

5.30 Inventories are stocks of outputs held by the units that produced them, prior to being further processed. The most important inventories for non-market producers are likely to be animals raised for slaughter (mostly pigs and chickens) and crops held over from the period that they were produced into a new period. The accounts measure changes in inventories, the change in values between the start and end of the year, so it's important to be able to measure the numbers of animals, or the level of crop products held at different times. This is often difficult to do on a reliable basis so, in practice, it may be best to assume that inventories are held at constant levels. When inventories are measured they should be valued at basic prices, that is, the price they would fetch at local markets.

(d) Intermediate activities in the non-market economy

5.30 A non-market intermediate good or service used to produce a final good or service should be included in the value of the final good or service. For example, the value of poles cut for use in building a house should be included in ISIC Division 45 (Construction), not in ISIC Division 02 (Forestry).

6. VALUING NON-MARKET PRODUCTION

6.1 The value of any product is given by multiplying its price per individual item by its quantity. The major problem in valuing non-market production is, of course, that it is not sold so we can't observe prices in the same way we can for goods that are sold. We must use other, less direct, methods of pricing to calculate the value of non-market production. This chapter looks at different methods that can be used to value non-market production.

6.2 There are two ways to value non-market production. The first is to measure the physical quantity of non-market production and then use the price of similar marketed goods to value the non-market production. For example, market rents are used to value the housing services of owner-occupied dwellings whenever possible. The second way is to add up the costs incurred—labour (valued by applying an appropriate wage rate) plus intermediate inputs. This method is used to value government non-market services.

1. Value equals price multiplied by quantity.
2. Value equals the sum of costs incurred in production.

6.3 As an example, to value non-market production of taro, find the price of taro at a local market. The market doesn't need to be large or organised, what we are interested in is the local price. Multiply the quantity of non-market production by the local market price to find the value of non-market production. Otherwise, add up the value of the farmer's labour and any intermediate inputs used in non-market production of taro. Either way you will get a value that is acceptable for the national accounts, though the first method—directly valuing output using market prices—is preferred whenever practical.

6.4 Measuring physical output or estimating hours worked requires a statistical survey (or census) of non-market producers. These surveys are expensive and time-

consuming and aren't held very often. To get the most from such surveys when they are conducted, it's important to make sure that the questions are well-designed so that reliable information about non-market production is obtained. If properly designed and conducted, surveys and censuses provide base-year estimates that can be **extrapolated** for several years. Whenever possible, though, studies should be repeated at regular intervals to build up a time series of data on non-market production.

To extrapolate is to use information that is known as a basis for estimating an unknown value or quantity.

6.5 Questions about economic activity, including non-market production, can be asked in many kinds of statistical collections. For example, population censuses and household income and expenditure surveys should include questions about economic activity and own-account production. Examples of these approaches are shown in Chapter 7. Academic or social research work can also provide valuable information about non-market production. Use information from any available source if it is helpful; it doesn't need to come from official sources—but try to make sure that it is of acceptable quality.

(a) Market prices as proxy prices

6.6 Where a market price is used as a **proxy** (substitute) price to value non-market production it should, if possible, be for a market:

- In the area where production is being valued—a local market; and
- Where there is significant trade in the commodity, that is, there is sufficient trade in the commodity to fix a representative price.

6.7 Gluts and shortages of commodities affect their prices, so prices collected on any particular day may not be representative of the whole year. Short-term price effects can be avoided by using the average of several price checks over the year.

6.8 An exact market-price equivalent for non-market output won't always be available, but there will usually be a similar market product to use for a proxy value for non-market products. Market prices, or cash equivalents, exist for a wide range of goods, including those that aren't normally sold in urban markets (fine mats or tapas given as gifts at weddings or ceremonies, for example). Prices for most commodities can usually be found by making local enquiries. Where market prices for related commodities don't exist, the alternative method of valuation—by labour input—must be used.

(b) Valuation using basic prices

6.9 The SNA describes three methods of valuing production in the national accounts: at basic prices, at producers' prices (basic prices plus taxes on production) and at purchasers' prices (the actual cost, including transportation to the place of delivery, to the users).

The preferred method of valuation of output is at basic prices, although producers' prices may be used when valuation at basic prices is not feasible. Basic prices are prices before taxes on products are added and subsidies on products are subtracted. Producers' prices include, in addition to basic prices, taxes less subsidies on products other than value-added types. ^{SNA 2.72}

6.10 Valuation of output at 'basic prices' results when prices from local markets are used to value non-market production, as there are no production taxes or subsidies built into local market prices. This is the preferred valuation method.

(c) Valuation by labour input

6.11 When production can't be valued from market prices for physical output, it can be valued from the inputs used, as described in Chapter 5. For example, the value of clearing new land for non-market cultivation is measured by labour input plus any non-market intermediate input. Labour should be valued at the standard local rate for comparable work. 'Local' refers to the area of the country in which the work is being done, as wage rates are often different within a country. 'Comparable' refers to the need to use wage rates paid for a similar level of skill in the monetary economy, rather than using a rate for unskilled labour in all cases. Labour should be valued at average wage rates for the year rather than the rates on a single day. Non-market intermediate inputs include, for example, the value of small tools made on own account and used for clearing the land.

'Activity co-efficients'

6.12 Kiribati uses the 'valuation by labour input' technique to value some non-market production in its national accounts. Local council wage rates are used to value labour input, but with an extra refinement. 'Activity co-efficients' are used to standardise the level of work intensity for a wide range of non-market activities. This approach is discussed further in Chapter 7(a).

(d) Intermediate goods

6.13 It's important to avoid double counting in the national accounts, so purchased inputs used in non-market output should be deducted from the value of non-market output.

6.14 For example, take the case of a bag of fertilizer bought by a non-market farmer. The fertilizer increases the size or quality of his crop so adds value to it; this is reflected in the total value of output he produces. However, the cost of the fertilizer is recorded as a sale to a final user by the store-keeper in the market sector

accounts. If the cost of purchased fertilizer isn't subtracted from the value of non-market crops, it will be counted twice in the national accounts.

6.15 One way to measure the actual value of intermediate inputs to non-market agriculture—fertilizer, fuel, seeds, etc.—is through detailed household economic activity surveys. However, data on types and values of intermediate inputs for various crops are usually available from agricultural censuses. Data from agricultural censuses can be used as a basis for estimating intermediate costs in non-market output.

(e) Services of owner-occupied dwellings

6.16 It's already been noted that housing services provided by owner-occupied dwellings are a kind of non-market production, and the value of these services is always included with market production in the national accounts. For this reason, a detailed description of valuation of services of owner-occupied dwellings is beyond the brief of this *Guide*. However, a short note on estimating the value is shown in the Appendix.

(f) Constant prices

6.17 Transactions in the national accounts are measured in money values, the price of the good or service multiplied by the quantity of the good or service supplied, at the time the transactions take place. Valuation by this method is usually called 'at current prices'. But money values change as prices change, what we know as 'inflation'. Users of national accounts often want to know the extent to which changes in the value of transactions between periods are the result of changes in quantity, rather than changes in prices. National accounts estimates designed to remove the effect of price changes are called '**constant price estimates**'. Estimates of the value of non-market production should be prepared in constant prices as well as in current prices.

Estimating GDP at constant prices involves expressing the current price value of each transaction as the product of a current price and quantity, then substituting the corresponding price in the base year for each actual current price.

6.18 Changes over time in the value of non-market goods and services can be split into changes in their imputed prices and changes in their quantities, in the same way as for marketed goods and services. Where physical quantities are measured to value non-market output, preparing constant price series is simply a matter of multiplying each year's physical quantity of production by the **base year** prices.

The base year is the reference year from which prices are selected to be used in all other years in the constant price series.

6.19 For example, say that there is a constant price series where the base year is 1990. In the base year (1990), 150 tonnes of yams were produced at a market equivalent price of \$1,000 per tonne and in another year, say 1995, 140 tons of yams were produced at a market-equivalent price of \$1,300 per tonne. The current price value for yams in each year is equal to the quantity produced multiplied by the price of the yams, so that for 1990 the current price value is:

$$150 \text{ tonnes (quantity)} \times \$1,000 \text{ per tonne (price)} = \$150,000 \text{ (value)}$$

and for 1995, the current price value is:

$$140 \text{ tonnes (quantity)} \times \$1,300 \text{ per tonne (price)} = \$182,000 \text{ (value)}.$$

6.20 The constant price value for yams in each year is derived by substituting the price in the base year, 1990 in this case, for prices in other years, then multiplying the quantity of yams produced in each year by the base-year price. For 1990 the constant price is the same as its current price because 1990 is the base year for the prices.

$$\begin{aligned}
 &150 \text{ tonnes (quantity)} \times \$1,000 \text{ per tonne (the base-year price)} \\
 &= \$150,000 \text{ (the constant price value).}
 \end{aligned}$$

For 1995 the constant price value of yams produced is:

$$\begin{aligned}
 &140 \text{ tonnes (quantity)} \times \$1,000 \text{ per tonne (the base-year price)} \\
 &= \$140,000 \text{ (the constant price value).}
 \end{aligned}$$

6.21 You can see from this example that the constant price value of yams produced in 1995, \$140,000, is very different from the current price value, \$182,000. The difference between the two values is simply due to price changes between the base year, 1990, and 1995.

6.22 The same method of substituting base-year for current-year prices can be used when labour inputs are used to value non-market output. Suitable hourly wage rates in the base year can be multiplied by hours worked in other years to estimate constant price values. This method of deriving constant prices is called **quantity re-valuation**, because base-year prices are used to re-value the quantity of output produced in each year.

6.23 Data from consumer (or retail) price indexes (CPI) can be very useful for calculating constant price values for non-market production. CPI series can be used to value current-year estimates in constant prices through a method called **price deflation**. Price deflation follows the following procedure.

6.24 Using information from the previous example, the CPI base year (the base year for the constant price series) is 1990. The price of yams in 1990 was \$1,000 per tonne, which is equal to \$1 per kilogram (a more common unit of measurement for a CPI). Index numbers are expressed in relation to the value in the base year, which is always equal to 100.

1 kilogram of yams in 1990 = \$1 = Index number 100

6.25 The price of yams in 1995 was \$1,300 per tonne, equal to \$1.30 per kilogram. This is expressed as an index number by dividing the current-year price by the base-year price, then multiplying by 100.

$\$1.30/\$1 \times 100 = 130$ (index number for yams in 1995, base year 1990)

6.26 The index number can now be used to **deflate** the current price value of production of yams in 1995, which was \$182,000, to give an estimate of the value of current-year production in constant (1990) prices. This is done by dividing the current-year value of production in current prices (\$182,000) by the 1995 index number for yams (130), then multiplying by 100.

$\$182,000/130 \times 100 = \$140,000$

6.27 This is the same result that was obtained by the quantity revaluation method for yams produced in 1995. CPIs usually have a lot of information about price changes in food and other products that can be used to deflate current price estimates of non-market production.

7. DATA COLLECTION

7.1 There are two basic approaches to collecting non-market production data. The first is to have a survey or census specifically designed for the purpose. The second is to ask supplementary questions on other statistical collections such as a household income and expenditure survey, an agricultural census or a population census. Examples of different approaches used in the region are given in this chapter, along with some comments about the approach used.

(a) Special data collection: the Gilbert and Ellice Islands Rural Socio-economic Survey ⁽¹¹⁾

7.2 As its name implies, the Gilbert and Ellice Islands (GEI) (now two separate countries, Kiribati and Tuvalu) Rural Socio-Economic Survey was designed to collect a range of social and economic data, including information on non-market activity. The survey was conducted in 1972 and 1973, a long time ago now, but remains an interesting approach to measuring the value of non-market production.

7.3 The survey was held in five islands and recorded the hours that households worked each week on a variety of non-market economic activities. Table 2 shows the average hours worked in various non-market activities each week by households in each village, classified by ISIC Division.

7.4 The average hours that households spent each week on non-market production were converted to money values by applying suitable wage rates to the time worked, as discussed in Chapter 6. Before this was done, however, 'activity co-efficients' were derived to attempt to standardise the intensity of work per hour on the various activities in each of the islands. The co-efficients were developed after discussion with individuals from each island. Surprisingly, there was general agreement about appropriate coefficient values amongst those questioned. By standardising the

(11) Gilbert and Ellice Islands Rural Socio-Economic Survey, 1972–73, reported in Kiribati National Accounts—Sources and Methods.

intensity of work, it was felt that a more realistic 'market' value could be applied to the non-market work. Coefficients ranged from 0.40 for low-intensity activities such as water carting and animal tending to 0.90 and 0.95 for hard work such as babai cultivation and collecting toddy. The activity coefficients are shown in Table 3.

Table 2: GEI: Hours per household per week by kind of economic activity

ISIC	Kind of Work	Island				
		Butaritari	Abemama*	Tabiteuea	Tamana	Nanumea
1	Work on land	0.40	0.60	0.79	1.33	1.16
	Toddy	5.67	6.74	7.81	26.32	7.21
	Pandanus preparation			4.03	0.63	
	Coconut & pandanus collection	2.31	3.51	4.71	2.45	3.59
	Babai and fruit collection	3.97	2.15	0.33	1.68	
	Babai cultivation	10.13	6.91	3.69	2.03	7.48
	Animal tending	1.86	1.27	0.67	5.88	8.64
	Fishing	10.06	7.16	4.25	20.37	10.82
3	Handicrafts	11.61	9.23	6.84	18.55	16.49
	Thatching		1.12	2.24	5.53	
	Bread-making		0.84	1.68	0.70	
4	Carting water		1.12	2.24	5.39	6.63
8	House & capital repairs	5.66	6.25	6.84	7.91	7.02
TOTAL		51.67	46.90	46.12	98.77	69.04

* average of Butaritari and Tabiteuea

Source: GEI Rural Socio-Economic Survey, reported in Kiribati National Accounts—Sources and Methods

7.5 Hours worked in non-market production, shown in Table 2, were adjusted by the activity co-efficients shown in Table 3, then multiplied to provide an estimate of the adjusted hours per household per year by kind of economic activity. Average Island Council wage rates, supplied by the Ministry of Local Government and Rural Development, were used to value the adjusted hours worked.

Table 3: GEI: Activity coefficients applied to hours worked

Activity	Island				
	Butaritari	Abemama	Tabiteuea	Tamana	Nanumea
Work on land	0.50	0.50	0.50	0.50	0.50
Toddy	0.90	0.85	0.95	0.95	0.95
Pandanus preparation			0.70	0.70	
Coconut & pandanus collection	0.85	0.85	0.85	0.90	0.85
Babai and fruit collection	0.80	0.80	0.80	0.80	0.85
Babai cultivation	0.90	0.90	0.90	0.90	0.90
Animal tending	0.40	0.40	0.40	0.40	0.40
Fishing	0.70	0.70	0.85	0.90	0.90
Handicrafts	0.70	0.70	0.80	0.80	0.80
Thatching		0.90	0.90	0.90	
Bread-making		0.50	0.50	0.50	
Carting water		0.50	0.50	0.50	0.40
House & capital repairs	0.85	0.85	0.75	0.75	0.75

Source: GEI Rural Socio-Economic Survey, reported in Kiribati National Accounts—Sources and Methods

7.6 A further adjustment for the cash output of handicrafts was made by deducting sales recorded in the monetary accounts. Table 4 shows the total value of non-market production by activity, as well as the value of non-market production per capita.

7.7 Virtually all non-market production in Gilbert and Ellice Islands was used for final consumption, except work on land (land improvement), which was allocated to capital formation. Table 5 shows how production was allocated to consumption and capital formation.

Table 4: GEI: Non-monetary production by activity (\$'000)

ISIC	Activity	1972	1973	1974
1	Work on land	12	13	14
	Toddy	326	346	408
	Pandanus preparation	35	36	37
	Coconut, pandanus, babai and fruit collection	152	155	176
	Babai cultivation	204	208	238
	Animal tending	33	34	38
	Fishing	573	589	736
3	Handicrafts	209	266	305
	Thatching	41	42	46
	Bread-making	3	3	4
4	Carting water	35	37	40
8	Services of owner-occupied dwellings	207	211	237
TOTAL		1830	1939	2279
Per capita total (\$)		32	33	39

Note: Tables do not add exactly owing to rounding.

Source: GEI Rural Socio-Economic Survey reported in Kiribati National Accounts—Sources and Methods

Table 5: GEI: Non-monetary production, consumption and capital formation (\$'000)

Classification	1972	1973	1974
Production			
1. Agriculture	1335	1381	1647
3. Manufacturing	253	311	355
4. Water & electricity	35	37	40
8. Business & financial services	207	211	237
Total	1830	1940	2279
Consumption			
1. Food & beverages	1326	1371	1637
3. Gross rent, fuel & power	242	248	277
4. Household operation	250	308	351
Total	1818	1927	2265
Capital formation			
4. Land improvement	12	13	14

Source: GEI Rural Socio-Economic Survey reported in Kiribati National Accounts—Sources and Methods

7.8 It's interesting to note that the GEI Rural Socio-Economic Survey was conducted in 1972 and 1973, before Kiribati and Tuvalu became independent countries. The fact that Kiribati still uses results from the survey as benchmarks for valuing non-market production in its national accounts highlights two points. Firstly, this type of survey is an expensive, time-consuming exercise to complete so isn't often repeated in small countries. Secondly, using results from surveys that are 20 years old or more to compile national accounts estimates is generally unsatisfactory (though sometimes unavoidable). Although the various kinds of non-market economic activity measured in this survey are still relevant in Kiribati today, it's likely that the relative time spent on each activity has changed.

7.9 As noted in Chapter 6, a more satisfactory approach to measuring non-market production is to measure physical output, rather than labour input, whenever possible. Physical outputs are easier to measure and value consistently than labour inputs. For example, it is better to measure the litres of toddy produced, rather than the time spent gathering toddy. It's better to measure the weight and type of fish caught, rather than the time spent fishing. The value of time spent fishing may well be zero if no fish are caught—though this seems unlikely in Kiribati or Tuvalu.

7.10 Nevertheless, the method used to value non-market production in the GEI Rural Socio-Economic Survey—the labour input method—is still appropriate to use. The development of 'activity co-efficients' was a unique response to the problem of applying a standard wage rate to non-market work of different intensity.

(b) Non-market data from household surveys: the Tonga Survey of Household Incomes ⁽¹²⁾

7.11 The second approach to collecting data on non-market production is to ask supplementary questions on other statistical collections. A household income and expenditure survey, agricultural census or population census provides an ideal vehi-

(12) Tonga Household Survey, 1992–1993, Statistics Department, Tonga

cle for questions about own-account production. Table 6, reproduced from the Tonga Household Survey 1991–1993, gives an idea of the types of questions that can be asked. The layout of the table has been altered a little to fit it more easily into this *Guide*. Items (6) to (9) were shown beside items (1) to (5) on the original form.

Table 6: Tonga: Survey of household incomes, 1992–93
Value of output and payments for goods and services

(a) Goods produced for sale in local market or for exports Item (1)	Value (2)	Payments for goods & services in cash/kind		Net income (2)-(3)-(4)
		Labour (3)	Transport etc. (4)	
1. Agricultural products, e.g. copra, coconut, banana, vanilla, watermelon, fruits, vegetables, etc.				
2. Livestock, poultry and its products				
3. Fish and fish products				
4. Forest products like timber, fuel-wood, herbs, etc.				
5.1 Unfurnished residential property				
5.2 Furnished residential property				
5.3 Non-residential property				

(b) Goods produced for self consumption Item (1)	Value (6)	Payments for goods & services in cash/kind		Net Income (6)-(7)-(8)
		Labour (7)	Transport etc. (8)	
1. Agricultural products, e.g. copra, coconut, banana, vanilla, watermelon, fruits, vegetables, etc.				
2. Livestock, poultry and its products				
3. Fish and fish products				
4. Forest products like timber, fuel-wood, herbs, etc.				
5.1 Unfurnished residential property	xxxxxx	xxxxxx	xxxxxx	xxxxxx
5.2 Furnished residential property	xxxxxx	xxxxxx	xxxxxx	xxxxxx
5.3 Non-residential property	xxxxxx	xxxxxx	xxxxxx	xxxxxx

Source: Tonga Household Survey 1992–1993, Statistics Department, Tonga

7.12 The survey asked respondents to value goods produced for sale as well as goods produced for self-consumption. It's a good idea to ask for market and non-market production in a single table as it makes respondents consider the value of output for own consumption in the same terms as output that is sold. Also, it stops respondents forgetting the contribution of their non-market production.

7.13 The SNA recommends that goods produced for own final use be valued at basic prices (no production taxes or subsidies included). Values reported in the survey were based on local market prices, so were likely to be basic prices. On the other hand, because respondents were asked to value their own output, rather than to list the physical quantity produced, it was more difficult for **enumerators** to check the accuracy of the response. Valuation of production is unlikely to be consistent for all households unless very carefully checked by survey enumerators.

Enumerators are the survey staff who collect and check the survey information from each household.

7.14 One fault with this survey, so far as valuing non-market production is concerned, is that it only attempts to value output for agriculture, fishing and forestry. There are no questions about output of manufactured non-market goods, for example basket-ware and tapas, that are important in Tonga. Similarly, there are no questions about capital formation (land improvement, for example), which can be an important part of non-market production.

(c) **Non-market data from a population census: questions about economic activity**

7.15 Population censuses have always asked questions about the **economic activity** of the adult population, but classification of economic activity in Pacific islands has often been inappropriate for the region ⁽¹³⁾.

(13) Measuring Economic Activity in Pacific Censuses with Special Reference to Fiji. Paper presented at the 16th Population Conference, New Delhi, January 1995, Vilimaina Rakaseta, South Pacific Commission.

In population censuses, economic activity describes whether and how people in the working-age population (usually 15 to 64 years), are employed or make their living.

7.16 The importance of non-market production as an economic activity in Pacific Island countries has often been overlooked because people of working age were classified as 'economically active' only if they were involved in market production, that is, work for wages and producing goods and services for sale. Poor recognition of the importance of non-market economic activity in population censuses stems partly from adopting concepts of 'labour force', 'work' and 'economically active' from industrialised countries where non-market production is not usually important. Concepts from industrialised countries have less relevance in Pacific Island countries, where large parts of the population are non-market producers.

7.17 One result of inappropriate classification of non-market economic activity in population censuses is that the economic contribution of women and young people has not been given the recognition it deserves. Because governments and other decision-makers use census data as a basis for planning, lack of data on the role of women and young people in non-market production may disadvantage them when important decisions are made.

7.18 Census-takers are now remedying these problems by asking more relevant questions about economic activity in Pacific Island population censuses. A sample set of questions designed to make collection of economic activity data more appropriate is shown in Table 7.

7.19 Population censuses ask questions on issues such as participation in economic activity from a demographer's point of view, rather than from an economist's point of view, so they don't specifically address national accounts concerns. For example, national accountants are more interested in actual hours worked, which is what the questionnaire shown in Table 7 asks. Another problem is that the

questionnaire only asks about work last week. The hours of economic activity reported for traditional non-market activity will depend on when the question is asked.

Table 7: Sample set of economic activity questions for a population census

I	II	III
a) Did person have paid job last week, i.e. for wages, profit or work in a family business? NO () YES () If NO If YES, ask ask b) II and III	What kind of work was that? For whom? At what place?	How many hours spent doing that work last week? More than 1, up to 4 hours () More than 4, up to 8 hours () More than 8, up to 40 hours () More than 40 hours ()
b) Did person do any traditional-type work last week e.g. grow crops, catch fish or make crafts intended for sale? NO () YES () If NO If YES, ask ask c) II and III	What kind of work was that?	How many hours was spent doing that type of work last week? More than 1, up to 4 hours () More than 4, up to 8 hours () More than 8, up to 40 hours () More than 40 hours ()
c) Did person do any work last week to grow or catch food for own or family use? NO () YES () If YES, ask II and III	What kind of work was that?	How many hours were spent doing that work last week? More than 1, up to 4 hours () More than 4, up to 8 hours () More than 8, up to 40 hours () More than 40 hours ()

Source: The Measurement of Economic Activity: Progress in Pacific Islands Countries Since 1985. Paper presented at the Fourth Regional Meeting of Population Census and National Development Planners, Noumea, New Caledonia, 18–22 February 1991, Dr Peter Pirie, South Pacific Commission.

7.20 National accountants would prefer to know about economic activity over a year rather than just a week. But we also realise the difficulty that respondents would have recalling their hours of economic activity over a year, especially with the variety of work associated with non-market production.

Federated States of Micronesia Population Census

7.21 The Federated States of Micronesia (FSM) was one of the first Pacific Island countries to incorporate more meaningful questions about economic activity in its Population Census, in 1994. A copy of these questions from the FSM census is shown in Table 8.

7.22 Though the census asks for detailed information on market economic activity, questions about non-market economic activity, 20(b) and 20(c), are still fairly limited. They ask if the respondent worked in farming or fishing, then about how production was disposed of, through own/family consumption or through sales, or through a combination of these. But the questions don't provide enough information to value the production, whether market or non-market, in the national accounts.

7.23 A better alternative, from the national accountant's point of view, would be to use questions 20(b) and 20(c) for screening, then ask a more detailed set of questions about non-market production. For example, further questions about hours worked in each kind of non-market activity and kinds of output would be more useful, but of course more time-consuming for the respondent as well as the enumerator.

7.24 As noted in the comments on the 'Sample set of economic activity questions', it's preferable to ask questions about activity over a year, rather than a week. The FSM census asks respondents about market activity in the previous year (1993)—questions 31 (a) and 31(b)—but only asks about subsistence activity in the last week. More emphasis could be given to non-market activity.

7.25 Question 27 asks respondents when they last worked, and provides a range of possible responses. One suggested response is 'never worked; or did subsistence only'. Putting 'subsistence work' in the same category as 'never worked' implies that a low value is placed on subsistence work. It gives the impression that subsistence work is not considered to be of the same worth as 'real' (market-sector) work. Wording such as this should be avoided.

Table 8: Federated States of Micronesia—Population Census
Questions on economic activity

- 20a. Did work at any time last week, either full-time or part-time?
 Work includes part-time or full-time work such as helping without pay in a family business or farm; it also includes active duty in the Armed Forces. Work does NOT include unpaid volunteer work. Read each category and mark (X) in the box that applies.
- 1[] Yes, worked full-time or part-time at a job or business and did NO farming or fishing (Skip to 21)
 - 2[] Yes, worked full-time or part-time at a job or business and did SOME farming and fishing (Skip to 21)
 - 3[] Yes, worked MAINLY in farming or fishing (Ask 20b)
 - 4[] Yes, did MAINLY housework and SOME farming, fishing, production of handicrafts, etc. (Ask 20b)
 - 5[] No, HOUSEWORK ONLY (Skip to 25)
 - 6[] No, School work/Student (Skip to 25)
 - 7[] No, retired (Skip to 25)
 - 8[] No, unpaid volunteer work (Skip to 25)
 - 9[] No, other reason, specify ----- (Skip to 25)

- 20b. What did mainly do?

- | | |
|----------------------------|-------------------------------|
| 1[] Gardening | 5[] Gardening and cash-crops |
| 2[] Fishing | 6[] Other cash-crops |
| 3[] Animal raising | 7[] Other |
| 4[] Gardening and fishing | |

- 20c. The food produced, fish caught, and animals raised, were they for own and family consumption, or did sell some?

- 1[] Own/family consumption -never sells
- 2[] Own/family consumption -never sells/ sometimes give away
- 3[] Occasionally sells
- 4[] Regularly sells

21. How many hours did work LAST WEEK at all jobs, excluding subsistence activity?
 Subtract any time off and add any overtime or extra hours worked.
 [] Number of hours

22. Where did usually work LAST WEEK?

If worked at more than one location, ask: Where did work most last week?
 Print the village/island, municipality, FSM state or other country where worked.

Village/island: -----
 Municipality: -----
 FSM state: -----
 Other country: -----

- 23 & 24 Inquire about the mode of transportation

INTERVIEWER INSTRUCTIONS. If this person was working for Income LAST WEEK, SKIP TO 28a.

25. Was on vacation, away sick, or temporarily absent from a job last week for any other reason?

- 1[] Yes, Reason for temporary absence
 Specify -----
- 2[] No

Table 8: Federated States of Micronesia—Population Census (cont'd.)

26a	Has been looking for work to earn money during the last 4 weeks?			
	1[]	Yes	2[]	No
<hr/>				
26b	Could have taken a job LAST WEEK if one had been offered?			
	If NO, Ask: For what reason?			
	1[]	No, already has a job	3[]	No, other reasons (in school, etc.)
	2[]	No, temporarily ill	4[]	Yes, could have taken a job.
<hr/>				
27.	When did last work at a job, business, or farm, even for a few days?			
	1[]	1994	5[]	1985 to 1989
	2[]	1993	6[]	1980 to 1984
	3[]	1992	7[]	1979 or earlier
	4[]	1990 to 1991	8[]	Never worked; or did subsistence only

INTERVIEWER INSTRUCTIONS FOR QUESTIONS 28 TO 30:

Questions 28-30 ask about the job worked last week. If had more than one job, describe the one worked the most hours. If did not work, the questions refer to the most recent job or business since 1990.

28a.	For who did usually work? Print the name of the company, business or employer.
28b.	What kind of business or industry was this? Describe the activity at location where employed. For example: hospital garment factory, retail bakery, etc.
29a.	What kind of work was doing? For example: registered nurse, industrial machinery mechanic, cake icer, etc.
29b.	What were most important activities or actual duties? For example: patient care, repair machines, icing cakes, etc.
30.	Was Read list. Mark (X) ONE box <ul style="list-style-type: none"> 1[] Employee of PRIVATE FOR PROFIT company, business or individual, for wages, salaries, or commissions 2[] Employee of PRIVATE NOT FOR PROFIT 3[] Municipal GOVERNMENT employee 4[] State GOVERNMENT employee 6[] FOREIGN/FEDERAL employee 7[] SELF EMPLOYED 8[] Working WITHOUT PAY in a family business or farm
31a.	Last year (1993), did work, even for a few days, at a paid job or in a business or a farm, excluding subsistence activity? <div style="display: flex; justify-content: space-around; margin-top: 10px;"> 1[] Yes 2[] No </div>
31b.	How many weeks did work in 1993, excluding subsistence activity? Count paid vacation, paid sick leave, and military service <div style="margin-top: 10px;"> [] Number of weeks. </div>

8. PRESENTING HOUSEHOLD NON-MARKET PRODUCTION IN NATIONAL ACCOUNTS

8.1 Before discussing ways to present data on non-market production in the national accounts, let's first review the reasons why values for non-market production are included.

8.2 The need to value non-market production arises not only from national accountants' desire to accurately measure total production, but also because decision-makers need to know about relationships in the economy. A fundamental relationship in developing countries is that between market and non-market sectors of the economy. For national accounts to properly show the relationship between these sectors, values for both market and non-market production need to be separately identified in the accounts.

8.3 If, for example, national accounts show the value of agricultural production without separately identifying market and non-market components, the relative size and importance of each sector is not obvious. Decision-makers won't see the importance of non-market agriculture if they don't see it valued in the accounts.

8.4 The following tables are from the Papua New Guinea and Fiji national accounts. They demonstrate two different approaches to presenting the value of non-market production. These approaches represent only two of the many possible ways to show values for non-market production; they don't necessarily suit the circumstances in other countries. The best approach for each country will depend on the overall importance of non-market production in the economy, and the need for information about non-market production by users of national accounts.

(a) Papua New Guinea

8.5 Presentation of non-market production data in the following tables from the Papua New Guinea national accounts is very good. In Table 9, non-market values

are clearly presented, both in their contribution to aggregates such as *operating surplus* and as part of the agriculture, forestry and industry. Table 10 shows non-market components of *private final consumption expenditure* and *gross fixed capital formation*, as well as non-market's overall contribution to total *gross domestic product*. The relative size of the market and non-market sectors are clearly identified in these tables.

Table 9: Papua New Guinea: Cost structure of gross domestic product by kind of economic activity, at current purchasers' values, year ended 31 December 1990 (million Kina)

Kind of economic activity	Compensation of employees	Operating surplus	Domestic factor incomes	Consumption of fixed capital	Indirect taxes	Gross product
Agriculture, forestry and fishing	64.3	789.4	853.7	28.2	9.4	891.2
Market component	64.3	343.6	407.9	28.2	9.4	445.5
Non-market component	—	445.8	445.8	—	—	445.8
Mining and quarrying	73.1	238.6	311.7	140.5	—	452.2
Manufacturing	130.6	21.2	151.8	40.0	84.0	275.8
Electricity, gas and water	21.8	18.7	40.5	11.8	—	52.3
Construction	75.9	56.9	132.8	22.3	—	155.1
Wholesale and retail trade	148.5	89.5	238.0	23.7	35.1	296.8
Transport, storage & communication	102.8	41.9	144.7	43.0	3.2	190.9
Financing, insurance, real estate and business services	106.4	-11.6	94.8	26.0	10.0	130.8
Services of owner-occupied dwellings	—	35.7	35.7	10.5	—	46.2
Market component	—	15.7	15.7	10.5	—	26.2
Non-market component	—	20.0	20.0	—	—	20.0
Other	106.4	-47.3	59.1	15.5	10.0	84.6
less Imputed bank service charge	—	108.2	108.2	—	—	108.2
Community, social and personal services	539.1	8.2	547.3	4.0	—	551.3
Total	1262.4	1144.6	2407.0	339.4	141.7	2888.1
Import duties	—	—	—	—	189.9	189.9
less subsidies	—	—	—	—	2.0	2.0
Gross domestic product	1262.4	1144.6	2407.0	339.4	329.6	3076.1

Note: Small discrepancies between totals and sums of components in the table are due to rounding.
Source: Gross Domestic Product & Expenditure, 1987-1991, National Statistical Office, PNG

Table 10: Papua New Guinea: Gross domestic product and expenditure at current purchasers' values, 1989–1991 (million Kina)

Expenditure on gross domestic product			
	1989	1990	1991
Government final consumption expenditure	744.9	763.9	808.1
Private final consumption expenditure	1962.0	1816.3	2165.9
Market component	1544.2	1355.3	1661.7
Non-market component	417.7	461.0	504.2
Increase in stocks	-83.4	-21.0	-22.0
Gross fixed capital formation	790.7	772.9	1010.1
Market component	786.1	768.1	1005.0
Non-market component	4.6	4.7	5.1
Gross national expenditure	3414.2	3332.0	3962.0
Market component	2991.9	2866.3	3452.7
Non-market component	422.3	465.7	509.3
Exports of goods and services	1238.0	1249.7	1523.9
less Imports of goods and services	1606.5	1505.7	1880.5
Gross domestic product	3045.7	3076.1	3605.5
Market component	2623.3	2610.4	3096.2
Non-market component	422.3	465.7	509.3
Cost structure of gross domestic product			
	1989	1990	1991
Compensation of employees	1268.5	1262.4	1348.7
Operating surplus	1115.6	1144.6	1455.8
Market component	693.3	678.9	946.5
Non-market component	422.3	465.7	509.3
Consumption of fixed capital	315.5	339.4	416.8
Indirect taxes	347.6	331.6	386.1
less Subsidies	1.6	2.0	2.0
Gross domestic product	3045.7	3076.1	3605.5

Note: Small discrepancies between totals and sums of components in the table are due to rounding.
Source: Gross Domestic Product & Expenditure, 1987–1991, National Statistical Office, PNG

(b) Fiji

8.6 Information about non-market production in Fiji's national accounts is less comprehensive than in Papua New Guinea's. In Table 11, the value of 'subsistence' activity is shown as a component of Agriculture, Forestry and Fishing (item 1.5) but not separately identified at the All Activities level. Perhaps one reason for less emphasis on non-market production in Fiji's national accounts is its lower relative importance. Non-market production contributes about 15 per cent to total production in Papua New Guinea, but only around 6 per cent in Fiji. Still, non-market production is significant by any measure and its contribution could be better emphasised.

8.7 Papua New Guinea and Fiji are among the largest of Pacific Island developing countries, in their land area, their population and their GDP. From this point of view, the examples used from their national accounts may not be appropriate for the smaller countries in the region. Perhaps more important than sheer size, both Papua New Guinea and Fiji have relatively large Statistics Offices with staff specialising in national accounts. Smaller countries often don't have specialist staff and other resources available to compile such detailed tables. However, this should not be put forward as an excuse for not compiling the best national accounts possible, including values for non-market production. Users of national accounts need to be informed about the importance of non-market production.

(c) A general comment

8.8 Each country must consider the importance of non-market production and how it can best be shown in its national accounts. If non-market production is significant (a question that each country must answer for itself), its contribution should be highlighted for decision-makers. Getting expert advice on how to compile and present statistics is only a matter of telephoning or faxing other statistics offices, or regional organisations such as the South Pacific Commission.

Table 11: Fiji: GDP by activity at constant prices of 1977, at factor cost (\$'000)

ACTIVITY	1992	1993	1994
1. Agriculture, forestry and fishing	184,932	191,180	207,468
1.1 Crops			
1.1.1 Sugarcane	73,149	75,605	88,237
1.1.2 Other crops	26,826	28,245	28,139
Total 1.1	99,975	103,850	116,376
1.2 Livestock products	7,840	7,623	8,741
1.3 Fishing	11,639	13,376	15,014
1.4 Forestry	12,192	14,642	14,613
1.5 Subsistence	53,286	51,689	52,724
2. Mining and quarrying	1,644	1,681	1,528
3. Manufacturing	102,930	108,002	116,739
3.1 Sugar	28,240	29,303	34,275
3.2 Other food, drink and tobacco	31,631	30,053	32,888
3.3 Other manufacturing	40,326	45,869	46,748
3.4 Self-employment	2,733	2,777	2,826
4. Electricity, gas and water	11,989	12,334	13,290
5. Building and construction	42,245	29,629	31,518
6. Wholesale and retail trade, restaurants and hotels	168,854	183,374	193,472
6.1 Trade	139,801	152,927	159,431
6.2 Hotels, restaurants, cafes	29,053	30,447	34,041
7. Transport and communications	135,899	136,486	142,346
7.1 Transport	118,489	116,373	121,227
7.2 Communications	17,410	20,113	21,119
8. Finance, insurance, real estate and business services	110,241	113,379	115,800
9. Community, social and personal services	150,320	150,016	151,165
10. Others not elsewhere classified (residual)	1,720	1,751	1,842
Less: Imputed service charges	29,843	31,096	31,799
All activities	880,931	896,736	943,369

Source: Current Economic Statistics, January 1995, Bureau of Statistics, Fiji

Appendix

A note on services of owner-occupied dwellings

Heads of households who own the dwellings which the households occupy are treated as owners of unincorporated enterprises that produce housing services consumed by those same households. As markets for rented housing exist in most countries, the output of own-account housing services can be valued using market rents for similar housing, taking into account factors such as location, services available, etc., as well as the size and quality of the dwelling itself. In other words, the output of the housing services produced by owner-occupiers is valued at the estimated rental that a tenant would pay for the same accommodation. This is in line with the general valuation rules adopted for goods or services produced on own-account. The same figure is recorded under household final consumption expenditures. SNA 6.89

The principles outlined in the above extract from the SNA are universal. Services of housing in rural areas and villages should be valued using the same principles as for urban areas. Work out the value by looking at the type of house, its location and the kinds of services, roads, water and electricity for example, that are available. Information on the housing stock, including type of construction and connection to services, is usually collected in population censuses so there should be data available to use as a basis for valuation.

It may be difficult to establish suitable rental values for housing in rural or village areas, but, by using the principle of establishing local prices discussed in Chapter 6, it should generally be possible to make reasonable estimates for the value services of owner-occupied dwellings. There will always be cases where the remoteness of dwellings, lack of services and the absence of a local rental market render valuation of housing services using general principles virtually impossible. In such cases, a small default value of perhaps \$50–\$100 per year (or equivalent) can be allocated for the value of the housing services. The appropriate default value should be determined by national accountants in each country.

A value for consumption of fixed capital, the decline in the value of owner-occupied houses as a result of physical deterioration or normal accidental damage, should also be calculated for inclusion in the national accounts. Consumption of fixed capital is based on the cost of replacing an asset at the end of its useful life rather than its actual (historical) cost. For example, if a house is valued at \$1,000 when new (its historical cost), it may cost \$1,500 to eventually replace it at the end of its useful life in, say, ten years. The annual allowance for consumption of fixed capital for the house should be calculated by dividing its replacement cost (\$1,500) by its estimated useful life in years (10). In this example, the annual value of consumption of fixed capital is \$150. (See SNA 6.184–6.198 for an explanation of how to estimate replacement costs of fixed assets and how to calculate consumption of fixed capital.)

**\$1,500 (replacement cost) divided by 10 years (estimated useful life)
equals consumption of fixed capital – \$150 per year.**

GLOSSARY

- ancillary activity** A supporting activity undertaken by an enterprise in order to create the conditions within which the principal or secondary activities can be carried out. For example, when small areas of land are cleared to grow food by non-market producers, the work of land-clearing is a construction industry activity (ISIC Division 45), but its value should be included in the agriculture industry (ISIC Division 01), as growing food is the principal activity.
- barter** Transactions involving two parties, with one party providing a good, service or asset other than cash to the other party in return for a good, service or asset other than cash. Barter transactions are market sector transactions. *Example: Fish given in exchange for work in a garden is a barter transaction.*
- base year** The base year is the reference year from which prices are selected to be used in all other years in a constant price series. *Example: A constant price series, base year 1990, for the value of pumpkin produced over a period of years, means that prices for pumpkins in 1990 are substituted for prices in all other years. 1990 prices are multiplied by the quantity produced each year to find the constant price value.*
- basic price** The amount received by a producer from the purchaser for a unit of good or service produced as output, minus any tax payable, and plus any subsidy receivable, on that unit as a result of its production or sale. Basic prices exclude any transport charges invoiced separately by the producer. *Example: Prices paid by customers at local markets are basic prices.*

- constant prices** Values for goods or services expressed at the price level of the corresponding good or service in the base year. See the example under 'base year'.
- consumption of fixed capital** The decline, during the accounting period, in the current value of the stock of fixed assets owned and used by a producer as a result of physical deterioration, normal obsolescence or normal accidental damage. Consumption of fixed capital is similar to 'depreciation' measured in business accounts, though it is based on the replacement cost of the asset, rather than its historical cost. *Example: A business buys a machine for \$10,000 that has an expected life of two years, the business expects to pay \$12,000 to replace the machine when it wears out. The annual allowance for consumption of fixed capital is the replacement cost, \$12,000, divided by the two-year life of the asset, or \$6,000 per year.*
- corporation** A legal entity, created to produce goods or services for the market, that may be a source of profit or other financial gain to its owner(s). It is collectively owned by shareholders who have the authority to appoint directors responsible for its general management. The legal status of the corporation distinguishes it from other producers such as households or governments.
- cultivated assets** Livestock or trees reared by people, rather than naturally growing, that are used repeatedly or continuously for more than one year to produce other goods or services. *Example: Breadfruit trees that produce fruit over a long period of time, dairy cattle or draught horses that are used for several years.*
- economic activity** How people in the working-age population, usually 15 to 64 years, are employed or looking for employment, or otherwise make their living—the country's labour force. Economic activity

includes self-employment such as a farmer producing crops for his family, but excludes housework.

**economic
production**

An activity carried out under the control and responsibility of an institutional unit that uses inputs of labour, capital, and goods and services to produce outputs of goods or services that can be supplied to other units.

**economic
transaction**

An economic flow that is an interaction between institutional units by mutual agreement. Transactions can be monetary, where one unit makes or receives a payment or incurs a liability or receives an asset in units of money, such as buying a car or being paid wages. Transactions can also be non-monetary, such as *barter* or payment in kind, for example when employers provide meals and drinks or accommodation for their workers. Non-monetary transactions also include actions within units, such as households producing goods for their own consumption.

**economically
significant prices**

Prices are economically significant when they have a significant influence on the amounts that producers are willing to supply and on the amounts purchasers wish to buy. The term is used to distinguish between market producers that sell all or most of their output with a view to making a profit, and other producers such as governments or non-profit institutions that provide services free or at prices so low that they have little effect on the demand for them.

enterprise

An enterprise is an institutional unit engaged in production. It may be a corporation, a non-profit institution or an unincorporated enterprise.

enumerator

Statistical census or survey staff who collect and check information in the field from households or enterprises.

establishment	Establishment combines the concepts of kind-of-activity and locality. An establishment is an enterprise, or part of an enterprise, found at a single site where only a single productive activity is carried out or where the principal productive activity accounts for most of the value added.
extrapolate	The process of using known data as a basis for estimating unknown values. <i>Example: Population census data are extrapolated for subsequent years using data on births, deaths and migration, to give population estimates for non-census years.</i>
fixed assets	Durable goods produced as outputs from processes of production that are used repeatedly or continuously in other processes of production for more than one year. <i>Example: Trucks used by a business to transport materials, canoes used for fishing and dwellings that provide housing services to the people that live in them are all fixed assets.</i>
goods	Physical objects for which a demand exists, over which ownership rights can be established and whose ownership can be transferred from one institutional unit to another.
gross fixed capital formation	The total value of a producer's acquisitions, less disposals, of fixed assets during the accounting period. Acquisitions include the value of fixed assets purchased, obtained through barter, received as gifts as well as fixed assets retained by producers for their own use. <i>Example: Clearing land for the first time to be used for farming, building houses and making canoes are all gross fixed capital formation.</i>

gross domestic product (GDP)	The sum of the gross value added of all resident producers. GDP is also equal to the sum of the final uses of goods and services, except intermediate consumption, less the value of imports of goods and services. GDP is also equal to the sum of primary incomes distributed by resident producer units. It is 'gross' because consumption of fixed capital is not deducted in the calculation.
household	A small group of persons who share the same living accommodation, who pool some or all of their income and wealth and who consume certain types of goods and services collectively, mainly housing and food. A 'household' in national accounts is much the same as the usual meaning of the word.
household final consumption expenditure	Expenditure, including imputed expenditure, incurred by households on individual consumption of goods and services such as food, clothing, health and education services. It includes imputed expenditure on non-market production consumed by households.
input	Goods and services of all kinds that are used up in the process of production.
institutional unit	An economic entity that is capable, in its own right, of owning assets, incurring liabilities and engaging in economic activities and in transactions with other entities. Households, corporations and governments are different kinds of institutional units.
intermediate consumption	The value of goods and services consumed (as a process of production), excluding fixed assets whose consumption is recorded as consumption of fixed capital. <i>Example: Fertilizer used in agriculture and fuel used in fishing boats are intermediate inputs used to produce further outputs.</i>

inventories	Stocks of goods still held by the institutional units that produced them before they are further processed, sold, delivered to other units or used in other ways; and stocks of goods acquired from other units for use in intermediate consumption or for resale without further processing.
market output	Output that is sold at economically significant prices or otherwise disposed of on the market, or intended for sale or disposal on the market.
mixed income	The balancing item after deducting compensation of employees, and taxes, less subsidies, on production from value added. Mixed income incorporates the concepts of both operating surplus and compensation of employees for owners of unincorporated enterprises.
operating surplus	The balancing item after deducting compensation of employees and taxes, less subsidies on production from value added is either operating surplus (for corporations) or mixed income (for unincorporated enterprises owned by households). It is similar to the concept of 'profit' in business accounts, except that no account is taken of any interest or other property income receivable or payable.
output	Goods or services that are produced within an establishment that become available for use outside that establishment. Outputs must be disposed of by their owners in the period in which they are produced. Outputs may be sold; bartered in exchange for other goods or services; provided as payments in kind; they may enter the producer's inventories; they may be supplied to another establishment belonging to the same enterprise for use as intermediate inputs; they may be retained by their owners for own final consumption or gross fixed capital formation; or they may be

supplied free, or sold at prices that are not economically significant to other institutional units.

output produced for own final use	Goods or services that are retained for their own final use by the owners of the enterprises in which they are produced.
own-account housing services	The value of housing services derived by home owners from their own homes that they live in. The value of this service is equal to the rental value of the house.
own-account production	Goods and services consumed by the enterprises that produced them.
payments in kind	Payments made in the form of goods or services instead of money. <i>Example: In agriculture, 'rent' on a farm may be paid by handing over part of the crops produced, rather than money, to the landlord.</i>
price deflation	Use of an index, for example a consumer price index, to re-value a current price series to a constant price series with the same base year as the index.
producer's price	The amount receivable by the producer from the purchaser for a unit of a good or service produced as output, minus any value-added tax, or similar deductible tax, invoiced to the purchaser. It excludes any transport charges invoiced separately by the producer.
production	An activity in which an enterprise uses inputs to produce outputs.
proxy values	Prices of a good or service used to value similar goods or services. <i>Example: If studies show that prices for potatoes and pumpkins are similar and tend to rise and fall together, then if prices for potatoes can't be found at a local market but pumpkin prices can</i>

be, it's possible to use pumpkin prices as a proxy for potato prices

- purchaser's price** The amount paid by the purchaser, excluding any deductible value-added tax or similar tax, in order to take delivery of a unit of a good or service at the time and place required by the purchaser. It includes any transport charges paid by the purchaser to take delivery at the required time and place.
- quantity re-valuation** Deriving constant price values from current price values by using prices prevailing in the base year to re-value quantities produced in all other years in the series.
- satellite accounts** Accounting frameworks semi-integrated with the core national accounts that allow for analysis of expanded or alternative concepts. Issues such as health, the environment and the value of housework can be addressed in satellite accounts.
- services** Outputs produced to order that typically consist of changes in the conditions of the consumers through the activities of producers of the services, as demanded by the consumers. Services cannot be traded separately from their production. *Example: A person having a hair cut, going for a doctor's examination, getting a ride in a taxi or bus, attending school or going to a concert is consuming services of different kinds.*
- uncompleted assets** Fixed assets that are not yet ready to be used for further production. *Example: Immature fruit trees that have not yet begun to bear fruit.*
- unincorporated enterprises** Producer units within the household sector are all unincorporated enterprises. The term emphasises that the producer unit is not incorporated as a separate legal entity from the household itself.

value added

Value added is intended to measure the additional value created by the process of production. Value added can be measured either gross or net, that is before or after deducting consumption of fixed capital. Gross value added is the value of output less the value of intermediate consumption. Net value added is the value of output less the values of both intermediate consumption and consumption of fixed capital.