



## KIRIBATI NATIONAL ACCOUNTS

# *The* *Production* *Account* *and GDP*

*(up to 2010)*

**Kiribati Government**

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**The Production**  
**Account**  
**And GDP**  
***(up to 2010)***

**Economic Statistics Unit  
National Statistics Office  
Ministry of Finance and Economic Planning  
Bairiki, Tarawa**

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## Foreword

This is the revised version of the first formal compilation guide on GDP that was produced last year. It contains basically the same information as the original publication but the tables have been updated to 2010 and there are some minor changes made to the notes. It is important to note here the good progress made on the national accounts since the publication of the first manual and this is basically because there is a manual or guide now to assist the national accounts compilers in their work. I believe also that my staff involved in this area are getting more knowledgeable and competent in their work from continued training programs and I want to take this opportunity to thank the EU for providing funds to develop and produce the original GDP manual and for on-the job training on the manual. I extend also my thanks to the IMF, including PFTAC in Suva, for their continued training and TA programs on national accounts—several of my staff have attended and benefited from IMF training courses held abroad. The TAs from PFTAC Suva have been very helpful also in developing the capacity of my staff. But the work on national accounts is still far from complete—there is more to do and I encourage my staff to continue the good work. I want also to extend my request to the development partners to continue their assistance and support to the development of economic statistics in Kiribati. Lastly I hope the information and tables in this report are useful to government planners and policy makers. Any comment or feedback on the report is appreciated.

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Tekena Tiroa  
Republic Statistician

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## **INTRODUCTION**

This manual is intended primarily to focus more on the production account of the SNA however other components and terms of the SNA will be mentioned also in order to place and highlight the importance of the production account and GDP in the whole national accounts system. As a matter of fact the production account is the first account in the SNA and this reflects the fundamental importance of the production process in the development and growth of an economy, i.e. without robust and sustainable production, the economy cannot grow and the people standard of living cannot improve. The process of production culminates in the production or provision of goods and services, which can either be used or consumed (intermediate or final consumption) or put in stock or retained as gross fixed capital formation. The most important element or concept in the production account is the “value-added” which when summed up for all producing units in the country produces the ‘famous’ gross domestic product or GDP<sup>1</sup>. This aggregate can be calculated on a ‘factor’ basis or on a ‘market-basis’, the latter having taken in consideration the production taxes and the subsidy payments. The valuation of the GDP can be made in current prices or in constant prices. When current prices are used we get nominal GDP, and when constant prices are used we get real GDP—these will be elaborated further under separate headings. The focus of the manual therefore is on how to measure or estimate the value of production or the output (value-added) of each producing unit in the country. In principle output from the informal sector (including the subsistence sector) should be measured or included in the GDP however there are certain productions or outputs that are excluded from the calculation and these will be explained in the subsequent chapters. In Kiribati, a significant proportion of output comes from the informal or subsistence sector and while an attempt has been made to measure and include this in the GDP it is important to note that such productions are difficult to measure and often subjective valuations are made, and in this respect one should be very cautious when analyzing and making comments on GDP trend and growth. A useful approach would be to analyze the formal (or monetary sector) separately from the subsistence or informal sector as the basis and the reliability of the data from the two sectors are quite different. Towards the end of each chapter or section there is some discussions on special issues or features that are important in the context of the national accounts in Kiribati—obviously these require further consideration and remain important challenges to national accountants or economic statisticians in the years ahead.

In this manual we will use the term “International SNA” (or UNSNA) to refer to the SNA that was developed by the UN and other international agencies, and the term “Kiribati SNA” (or KSNA) to refer to the national accounts system developed in Kiribati. This is simply to differentiate and facilitate the discussion on the work

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<sup>1</sup> It is important to note here that there are essentially three ways to calculate GDP, one is through the production approach, the other is through the income approach, and the third approach is through the expenditure approach—there is a section that explains these approaches.

carried out by international agencies and by the local NSO on the national accounts system.

This report starts off with some brief discussions on the “international SNA”, then the development of the SNA in Kiribati, the types of classification used, followed by more detailed explanation of the businesses or entities in the different industries and how their production or value-added are derived. Brief notes on the difference between nominal and real GDP is included as well as a section on the derivation of real GDP. There is a small section describing how the subsistence (or the non-monetary) activities and the informal sector are measured and included in the GDP. Towards the end of some sections there is a brief discussion of special issues or features unique to Kiribati—these are issues that are either problematic or pose some challenges to the national accounts compilers. The report has in the annex a GDP table spanning 1979 to 2009 however it should be noted that some of the figures in this table may be revised in later issues. Although there are breaks in the GDP series, an attempt has been made to link all the tables so that a long continuous series is produced, i.e. from 1979 to 2009. However this is possible only for the formal GDP, and this is shown as Table 1. The GDP shown in Table 2 and Table 3 are more recent estimates of GDP and contain both the formal and informal or non-monetary contributions. If the informal sector, including the subsistence contributions, are removed from these tables the resulting GDP should be quite close to the estimates in Table 1. In analyzing GDP growth over time it is important to know the underlying methodologies used in estimating the contributions from each producing unit or industry because some have been calculated from more formal and more accurate information while some are based on imputed and sometimes very subjective values. The case in particular is the contributions from the informal and the subsistence sector. Here a lot of guesstimates and personal judgments and crude assumptions have been used and in this respect the users are cautioned against making very firm conclusions from these figures.

The terms ‘manual’ and ‘report’ have been used interchangeably throughout this document and the reason is that the document is indeed a combination of the two— a ‘report’ in the sense that it documents what has been done so far on the national accounts in Kiribati and a ‘manual’ in the sense that it explains what needs to be done in order to produce the production account and GDP.

## **1. OVERVIEW of the “International” SNA**

The SNA or system of national accounts is a systematic summary of the transactions taking place in an economy, especially those relating to the production and use of goods and services and to the transfers of income and capital between sectors of the economy. The account linking the local economy with the rest of the world is called the “external transactions account” and this account is very similar to the balance of payments account<sup>2</sup>.

The SNA has undergone several revisions since the first published version by the Organization for European Economic Cooperation (OEEC) in 1952. In 1958 a minor update was published but in 1968 the United Nations Statistical Office (UNSO) made another major revision with the publication of *A System of National Accounts (SNA)*. This was the principle guide to national accounts compilation for over twenty years and contains basically three accounts for the economy, viz., the production account, the income and outlay account and the capital finance account. The fourth account is the external transactions account but this applies only to the whole nation, i.e. it is part of the consolidated accounts. In 1993 another major update was published commonly known as the *1993 SNA*. This updated version is a joint effort between UNSO, the Commission of the European Commission, OECD, IMF, and the World Bank, and this contains more accounts than the 1993 SNA and more detailed information. In the preface of the manual it is stated that the ‘new’ manual “*embodies many new features. Many of the important ones can be summarized as aspects of updating, clarifying, simplifying, and harmonizing*”. In 2008 another updated version was produced and this has two volumes, the first volume contains the broad framework covering the concepts, accounting rules, the accounts and the tables, and their integration. Volume 2 provides details of how the accounts should be presented and describes some extensions to improve the usefulness of the accounts to a wide range of purposes. As such it is clear that the national accounts system is very much an involving subject and in a way this reflects the increasing sophistication of the production processes, the technology, and the financial and economic markets.

It is important to mention here that while the SNA is an internationally agreed system for measuring and monitoring economic transactions and economic growth, there are some countries that have used a slightly different system, in particular the former Communist countries. This system is called the Material Product System or the MPS but it is not very common these days, i.e. most countries have adopted the SNA as the system for recording financial and economic transactions and monitoring economic performance.

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<sup>2</sup> Historically the IMF is responsible for the balance of payments statistics and the Fund has produced a manual on this topic whereas the United Nations Statistics Office is responsible for the national accounts. However in recent years there are more international agencies involved in the drafting of the SNA manuals, such as the World Bank, the Commission of the EU, IMF, and the OECD.

## **2. HISTORICAL DEVELOPMENT OF the SNA in KIRIBATI**

The work on the national accounts in Kiribati started in 1976 by two expatriate officers<sup>3</sup> working in the National Planning Office<sup>4</sup> and the report on it was produced in January 1977. The national account tables shown in the report cover the years 1972—74 and the report also contains very useful information on the definition, the scope, and coverage of the important terms used in the national accounts, such as the compensation of employees, operating surplus, consumption of fixed assets, and so forth. Several consolidated tables are also shown in the report such as GDP cost structure (or GDP by income approach), GDP by economic activity (or GDP by industry), gross national income (GNI), etc. The purpose of the report, as stated in the Preface of the report *“is to provide a statistical description of the whole economy to be used as an input into the Gilbert Islands Fourth Development Plan.* The Gilberts Islands separated from the Ellice Islands in 1976---prior to that the two groups of islands were known as The Gilberts and Ellice Islands<sup>5</sup> Colony under Britain. The work on the national accounts stopped when the expatriate staff left the country.

In 1984 work on the national accounts resumed after the National Statistics Office (NSO) asked the South Pacific Commission (SPC)<sup>6</sup> for assistance on developing the national accounts system in Kiribati. The impetus to start the work on the national accounts though actually started off when the secretary<sup>7</sup> of Finance ministry asked the newly recruited local statistician<sup>8</sup> in 1982 to produce updated national accounts estimates. A consultant<sup>9</sup> from New Zealand Statistics Office assisted the local staff of the NSO and the initial work consisted of data collection and training. Like the previous work on national accounts, it was necessary to start almost from scratch because there was no data or record of the previous work (apart from the report mentioned above) nor experienced staff to assist the NSO staff. The consultant made two visits to Kiribati, one in the beginning of the year for four weeks and the second one towards the end of the year for three weeks—a total of seven weeks altogether. The first visit was to train the local statistician on how to compile and draw up the production account (and other relevant accounts of the system) for each business or economic activity and the second visit was to go over what the local statistician has done in the preceding year. The starting year of the ‘new’ national accounts series was set at 1979 the year Kiribati got its independence from UK—the idea is to see how Kiribati evolves and develops since independence. After the consultant left, local staff continued producing GDP estimates up to this point in time, but

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<sup>3</sup> Mike Walsh and Garry Quince.

<sup>4</sup> Referred to as Economic Division, Ministry of Finance, that time.

<sup>5</sup> This is known now as Tuvalu.

<sup>6</sup> This is now renamed to South Pacific Community.

<sup>7</sup> The secretary that time was Beniamina Tiinga who eventually became a minister some years later in the same ministry.

<sup>8</sup> Iete Rouatu who eventually became the Republic Statistician in 1989 and later the Director of both the Planning Office and the Statistics Office in 2005, before retiring in 2008. He is the author of this report.

<sup>9</sup> Geoffrey Cope.



consultants from overseas continued to assist in the development of the national accounts system through short and intermittent visits, mostly from PFTAC<sup>10</sup> and SPC. A report on the development of the national accounts in Kiribati was presented at the ADB meeting held in Vanuatu in 1985—that time only a few countries in the region were able to produce national accounts estimates. Tonga<sup>11</sup> also presented their report on their national accounts development during the same meeting. Local staff of the NSO was also involved in the revision of the 1968 SNA which resulted in the 1993 SNA through regional workshops and meetings. In fact Kiribati was the only country in the region invited<sup>12</sup> to the official launching of the 1993 SNA manual in 1995 in the United Nations Building in New York. Given the early work on national accounts in Kiribati it is reasonable to think that the full SNA system has been completed and routinely compiled by now but this is not the case and this largely due to the shortage of staff in the NSO. Because of this the work on the national accounts, up to now, is restricted mainly to the production of the GDP estimates through the production approach—on many occasions there was only one staff to look after the whole national accounts system. There are now more staff assigned to assist in the national accounts works and it is reasonable to assume that better GDP estimates and more accounts will be produced in the near future. Again it is stressed here that the full national accounts system is a very big and complex system and more resources and efforts are needed to further develop and improve the system in Kiribati.

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<sup>10</sup> IMF office based in Suva, Fiji.

<sup>11</sup> Dr Saia Kami, a national account statistician from the Statistics Office in Tonga that time, presented the report. The work on the national accounts in Tonga that time was assisted by Dr Mulk, an expatriate officer. Dr Kami is now a lecturer in the University of the South Pacific, Suva Fiji.

<sup>12</sup> Iete Rouatu represented Kiribati.

### **3. HOW to measure gross domestic product (GDP)**

There are three basic approaches to measuring GDP—one is called the ‘**Production approach**’, the second one is called the ‘**Income approach**’ and the third one is the ‘**Expenditure approach**’. All these approaches are part of the national accounts system but they are specifically mentioned here because this manual is intended primarily to document and explain how GDP is derived through the production approach. In theory GDP derived from the three approaches should be the same however in practice this is rarely the case—i.e. the GDP estimates are bound to differ and the difference is often termed ‘statistical discrepancy’.

The **production approach** involves summing up all value-added of all resident producers, including businesses, public enterprises, government, households, churches, and non-profit institutions. The value-added of each producer is derived by subtracting the intermediate consumption (or general expenses) from the output (gross profit or total income).

GDP =	Gross output -	Intermediate consumption
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The other approach known as the ‘**income approach**’ involves summing up all the incomes of the factors of production such as ‘compensation of employees’ (return to labour), operating surplus (return to capital or to the firm or the organization), consumption of fixed capital (allowance for the use of fixed assets), and net taxes on production (portion of the income that goes to government). Most of these items are available from the production account therefore deriving GDP using this approach should be fairly straightforward.

GDP =	Compensation of employees +	Consumption of fixed capital +	Operating surplus +	Taxes on production less subsidies
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The third approach is the **expenditure approach** and this involves summing up all final expenditures, such as government final consumption expenditure, household final consumption expenditure, gross fixed capital formation, increase in inventories or stock, and net exports. At this stage all the aggregates are available, except the household final consumption expenditure but this can be estimated from the 2006 HIES.

GDP =	Private final consumption expenditure +	Government final consumption expenditure +	Increase in inventories (or stock) +	Gross fixed capital formation +	Exports less imports
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In Kiribati there is very little work done so far on the income approach and the expenditure approach but most of the information required for these two approaches is available now in the NSO. The task now is simply to sift through all

the information already gathered from the production account exercise and select the appropriate figures or aggregates required for the income or the expenditure approach. For instance, in the income approach, all the incomes accruing to factors of production, such as compensation of employees, consumption of fixed capital, operating surplus and net taxes on production, have already been collected and compiled for the production account. Similarly, for the expenditure approach all the aggregates are available except for the private final consumption expenditure. This aggregate is composed of the households final consumption expenditure and the non-profit (e.g. churches) final consumption expenditure. The households final consumption expenditure can be estimated from the households income and expenditure survey (HIES)<sup>13</sup> but the churches final consumption expenditure can be derived from the church financial accounts.

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<sup>13</sup> The NSO has conducted two HIES, one in 1996 and the second one in 2006. The coverage and scope of the 2006 HIES however is larger than the 1996 HIES.

## **4. HOW the ECONOMY is divided for national accounts purposes**

In order to make comparison and meaningful analysis one needs to group or categorize things or items using some predefined classification. Usually the classification or the way the items or things are arranged and grouped is designed in a hierarchical fashion, starting with major groups, then sub-major groups, then the more specific and detailed groupings, and lastly to the individual item. The way the grouping is made is very much dependent on the objective and the purpose of the analysis or the work that will be undertaken later on. The extent or the details of the classification also varies and again this depends on the purpose and the complexity of the analysis and the subsequent use of the data.

Standard classifications are also very useful when analyzing and comparing different sectors (or industries) over time or across countries. In other words, meaningful and useful comparison across countries can be made if the terms or classifications are the same.

For national accounts purposes the economy is divided or delineated on an institutional and on an industry basis. The institutional classification is important because it shows the ownership and decision aspect while the industrial classification focuses more on the activities. Without proper classifications it would be very difficult to analyze the data and summarize the findings or make specific and prioritized recommendations.

The two classifications described here are the ones used currently by national accounts section in the National Statistics Office but there are other classification systems used in the full accounts of the UNSNA such as the “Classification of transactions and other flows”, “Classification of assets”, the “Central Product Classification (CPC)”, “Classification of the functions of government (COFOG)”, etc. These classifications are available in the 1993 SNA manual and other relevant documents.

### **A. Institutional classification**

The definition of an institutional unit is ***“an economic unit that is capable, in its own right, of owning assets, incurring liabilities, and engaging in economic activities and transactions with other entities”***. The following are institutional sectors, with some local examples in brackets:

- 1) the **non-financial corporation** sector (e.g. Air Kiribati, BKL, Shipping Co., etc)
  - i) *public corporations or enterprises*
  - ii) *private incorporated businesses*
  - iii) *foreign controlled businesses*

- 2) the **financial corporation** sector
  - i) *central bank (none in Kiribati)*
  - ii) *Other depository banks (e.g. Bank of Kiribati)*
  - iii) *Other financial intermediaries*
  - iv) *Financial auxiliaries*
  - v) *Insurance and pension funds (e.g. Kiribati Insurance Co., and Kiribati Provident Fund)*
  
- 3) the **general government** (e.g. government ministries and the local councils)
  - i) *central government (e.g. government ministries, statutory bodies, etc)*
  - ii) *local government (e.g. island councils)*
  
- 4) the **households**
  - i) *employers*
  - ii) *own account workers*
  - iii) *employees*
  - iv) *recipient of property and transfer income*
  
- 5) and the **non-profit institutions serving households** (NPISH) e.g. churches, AMAK (women association), Red Cross, KANGO (Kiribati Associations of NGOs), etc

## **B. Industry classification (ISIC, Rev 3)**

Another very useful classification used in the national accounts is the industry classification. This classification uses or follows the International Standard Industry Classification (ISIC, Rev 3). This classification focused more on the activities undertaken such as fishing, mining, transportation, etc. It does not delineate nor emphasize ownership, decision making, etc. The main headings are shown below.

- 1) *Agriculture*
- 2) *Fishing*
- 3) *Mining and quarrying*
- 4) *Manufacturing*
- 5) *Electricity, gas and water*
- 6) *Construction*
- 7) *Wholesale and retail trade*
- 8) *Hotels and restaurants*
- 9) *Transport and storage*
- 10) *Communication*
- 11) *Financial intermediation*
- 12) *Real estate, renting, business activities*
- 13) *Government sector*
  - i) *public administration, defence*
  - ii) *education*
  - iii) *health*
- 14) *Other community, social, and personal services*

Further discussion of the industries and the list of entities falling in each industry as well as brief notes on how their production or value-added are measured is provided under a separate chapter below.

### **Monetary versus Non-monetary or Formal versus Informal**

Classifying the economy into monetary and non-monetary (or subsistence) or into formal versus informal is not really part of the SNA but this is a useful classification because it has policy implications. For instance, the decline in the subsistence output could mean that people are leaving the outer islands and their traditional way of living and moving to urban areas and working for cash. Another important aspect of this classification is the fact that the basis and the way the aggregates within the different sectors have been derived are different, in particular the degree of reliability and accuracy of the data sources vary—in general data from the monetary and the formal sector are more accurate and more reliable than those in the subsistence or in the informal sector.

In respect to the national accounts in Kiribati, the monetary sector is comprised of all entities whose production and output are sold in the market or whose activities or transactions involve cash or money, such as that of the businesses, government, banks, churches, etc. Non-monetary activities include subsistence activities or own account production including imputed value of owner-occupied dwellings. Although the term 'non-monetary' is used, in actual fact there may be some cash transactions involved, like buying fishing hooks, or buying knives or axes to cut copra, etc. but the term is used primarily to distinguish own-account production from market or commercial activities.

In terms of the formal sector, this is comprised of all entities that have accounts or good records or whose basis and activities are well established, such as the government, the public enterprises, the larger private businesses (e.g. MOEL, Punjas, Betio Hardware, etc). The informal sector, on the other hand, consists of entities or activities that are carried out on ad-hoc basis with no formal basis and no accounts, such as street vendors, people selling foods along the roads or near government offices, fishermen selling their catch along the roads, and people growing vegetables in their backyard and selling the excess harvest. The people undertaking subsistence or community-based activities are included in the informal sector as well.

### **Special features:**

While the industry classification is quite clear and simple, in practice there may be some delineations or variations made to suit the circumstances or the local conditions. In Kiribati, for instance, the Copra Society output is included under the 'Agriculture' industry when in fact it is a 'distributive' or retailing activity in the

sense that it buys copra from local people and resells them to the Copra Mill Company or to overseas buyers<sup>14</sup>. The output therefore is more of a gross margin on sale of copra which strictly speaking falls under the retail industry but because the Copra Society activity is very closely related to copra production, one of the main commercial and traditional activities in Kiribati, it is decided that this entity (i.e. Copra Society) should remain in the agriculture industry along with the “copra cutters”. This shows a more comprehensive picture of the copra industry in Kiribati.

In Kiribati there is a high proportion of people living in their own houses and because this activity is very similar to the commercial ‘house renting’ activity the UNSNA manual recommends that the value of own-account dwellings should be imputed and included in the GDP figure. This has been done in the Kiribati national accounts and the output is classified under a separate sub-heading under “real estate”. This is an informal and non-monetary production and it is important that the user is aware of how the value-added is derived and estimated and for this reason this item is separately shown in the GDP table.

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<sup>14</sup> The Copra Mill was established in the 1990s and prior to that all copra produced were exported. Sometimes the world copra price would be so low that it is no longer worthwhile to export copra.

## **5. MAIN ACCOUNTS of the “International” SNA**

The number of accounts in the SNA depends on the versions of the SNA used. For instance, the 1968 SNA recommends basically three accounts, viz., production account, the income and outlay accounts, and the accumulation account. The 1993 SNA on the other hand proposes seven accounts but most of these are parts of the main accounts recommended in the 1968 SNA, i.e. the main production and income and outlay accounts are further split into smaller accounts, such as the distribution and redistribution accounts, and so forth. The 2008 SNA version proposes the same accounts as 1993 version and the following accounts are shown below. Most of these accounts are linked or interrelated and this is why they are sequenced with the production account placed at the starting point because production generates income (i.e. income for labour, income for land, and income for the business) which then can be distributed or used for other purposes including investment purposes. The final account is the balance sheet because this shows the stock of assets and liabilities or the wealth of the business. The external transactions account summarizes the transactions between Kiribati and the rest of the world and is applicable only to the total economy—not to the institutional sectors, nor to the industries.

- 1) production account
- 2) distribution of income account
- 3) redistribution of income account
- 4) use of income account
- 5) capital account
- 6) financial account
- 7) other changes in assets account
- 8) balance sheet
- 9) external transactions account

The full sequence of accounts from the productions account to the balance sheets is applicable to the entities in the institutional sectors but the production account itself can be drawn or set up for each establishment or producing entity. That is, a large firm can have several production accounts relating to different activities and different products. For instance for the Kiribati Housing Corporation, two production accounts can be set up, one for the house renting business and one for the house loan business which the corporation is also involved in. The first activity falls in the real estate category while the second business falls in the financial industry.

Because the focus of this manual is on the GDP or the production account, the following discussions will concentrate more on the format of the production account and how it is set up for different businesses or different economic activities.



## **6. The PRODUCTION ACCOUNT and the VALUE—ADDED Concept**

The production account is very similar to the trading account<sup>15</sup> or the profit and loss account of most businesses, however there are certain items that may be excluded or included when drawing up the production account for a producing unit in the economy. There are also some differences in the terms used, for instance while the normal business account uses the term "profit", the national account system uses the term "operating surplus". Likewise the national account system uses the term "consumption of fixed capital while the business account uses the term "depreciation", and so forth. Furthermore the coverage and the scope of such terms are slightly different as well. For further and more extensive discussion on these the International SNA manual should be consulted.

The importance of the production account has been discussed in the previous sections but it is worthwhile to quote here the importance of the production account as stated in the 1993 SNA manual (p. 121):

The production account is the first in the sequence of accounts compiled for institutional units, sectors and the total economy. The incomes generated by production are carried forward into subsequent accounts so that the way in which the production account is compiled can exert a considerable influence on the System. In any case, information about production is extremely important in its own right. It is therefore necessary to spell out in some detail exactly how production is measured in the system.

The details of the production account shown in the different versions of the SNAs are slightly different however the concept or definition of value-added remains basically the same, which is either the difference between the output and the intermediate consumption or the sum of the operating surplus, salaries and wages, and the consumption of fixed capital and net taxes on production. Note that when the consumption of fixed capital is included, then we get gross value-added, otherwise we get net value added. In most cases, at least in the current national accounts series, the concept of gross value-added is used—hence the term Gross Domestic Product (GDP). These concepts are illustrated below.

Gross value-added=	Output	- intermediate consumption
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Net value-added=	Output	- intermediate consumption	- consumption of fixed capital
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OR

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<sup>15</sup> Sometimes this is known as the 'profit and loss' account or simply 'the income' account.

Gross value-added=	Compensation of employees	+ Operating surplus	+ consumption of fixed capital	+ taxes less subsidies
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Net value-added=	Compensation of employees	+ Operating surplus	+taxes less subsidies
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As evident from the discussions above the value-added can be derived from the production account or we can say that value-added is part of the production account. The production account below shows the main elements of the production account with some numerical figures to facilitate the explanation and the discussion.

**The Production account (for a normal production entity)**

<b>Inputs</b>	<b>Outputs</b>
1. Intermediate consumption (e.g. operating expenses) e.g. A\$40	Marketed output (e.g. sales or income) e.g. A\$105
2. compensation of employees e.g. A\$30	
<b>3. operating surplus e.g. A\$ 20</b>	
4. consumption of fixed capital (e.g. depreciation) e.g. A\$10	
5. taxes less subsidies e.g. A\$ 5	
<b>TOTAL inputs= A\$105</b>	<b>TOTAL outputs= A\$105</b>

On one side we have the “inputs” or “resources” and on the other side we have the outputs. The design of the account is made as to have both the total inputs and the total outputs the same or equal to each other. To ensure that both are numerically the same, a balancing item (or residue) known as the “operating surplus” is inserted in the inputs side next to the compensation of employees and the consumption of fixed capital—this is somewhat similar to the ‘profit’ of a business. The three (i.e. compensation of employees, operating surplus, and the consumption of fixed capital) together with the net taxes on production constitutes the value-added of the business or the firm. The production account shown is for market-oriented entities (e.g. corporations, companies, businesses, etc) that include profit and depreciation allowance in their cost structure.

From the example above we see that from the production approach the value-added is A\$65. This can be either calculated by subtracting A\$40 (intermediate consumption) from the output of A\$105, or as the sum of compensation of employees (A\$30), operating surplus (A\$20) and consumption of fixed capital (A\$10) and taxes less subsidies (A\$5). Either way we get A\$65, but when we use the first approach to calculate the value-added for all producing units in the country and we add together all these value added to get GDP, the method used is called the production approach. When we add all compensation of employees,

and the operating surplus, the consumption of fixed capital, across the country, to arrive at the GDP, the method is called “Income approach”. The third approach to calculating GDP is called “expenditure” approach which sums all the final expenditures plus the capital formation and net exports but this has not been done although it is possible to construct crude estimates from existing data. One of the problematic aggregates is the final private consumption expenditure—this generally requires information from a household income and expenditure survey.

The production account is drawn up basically from the trading or profit and loss accounts of businesses or firms, however in some instances, but particularly for the informal and subsistence sector, the information will be collected and compiled from different sources, such as the Tax Office, the island councils, the Audit office, government ministries, household surveys, and so forth. While the extraction of information from the formal sector is fairly straightforward, the information from the informal sector including the subsistence sector is very difficult to obtain and in most cases crude estimates are made based on past surveys or on records from different sources. Even the valuation and the prices used and the methods used to produce forward estimates are fairly subjective and one should be very cautious and careful when analyzing and interpreting such figures.

Although the items shown in the production account seem to be straightforward, like intermediate consumption (or operational expenses), compensation of employees (or salaries and wages), output, etc, the setting up of the production account for some businesses or enterprises (and activities in some cases) require more elaborate and tedious workings. For instance, the outputs of some businesses, such as the banks or insurance, or even the copra cutters, and local fishermen, are quite difficult to calculate. These will be explained in more detail under a separate heading.

Now the production account of the non-profit entities such as the government and churches usually do not have operating surplus, consumption of fixed capital, and net taxes. This is illustrated below.

**The Production account (of a non profit institution including government and churches)**

<b>Inputs</b>	<b>Outputs</b>
1. Intermediate consumption (e.g. operating expenses) e.g. A\$60	Incidental Sales (e.g. = passport fees, fish from Temaiku fish pond, etc) e.g. A\$20
2. compensation of employees e.g. A\$40	Services produced for own use (balancing item) e.g. A\$ 80
<b>TOTAL inputs=</b> A\$100	<b>TOTAL output =</b> A\$ 100

Note that the balancing item is referred to as ‘services produced for own use’ and this constitutes the ‘government final consumption expenditure’ from the

consumption or expenditure approach. That is, the output of government is assumed to be consumed or used up by the government itself, hence the term ‘government final consumption expenditure’.

### **Terms used in the production account**

These terms are described in more detail in the ‘International’ SNA manuals but the following descriptions are more simple and easy to understand because they are illustrated with examples, most of which are local examples.

Obviously **output** is one of the most important terms in the production process as well as in the whole national accounts system. The output could be a good (like a broom, salted fish, or a radio) or a service (like transport or bus service or accommodation service, internet service, etc). Sometimes the good could be a finished or completed output but sometimes it could be a work-in-progress, especially if it takes longer than an accounting period to produce, such as building a ship, or a sports complex. Some outputs are easy to calculate but others, like the output of the banking sector, or the insurance or provident fund, construction entities, are more complex and problematic. These will be explained further below when the production in each industry is explained. The output should be priced or valued in current market prices and the interest income from banks and other investment should not be included in the output of producing entities that are not financial entities. This should be included in the income and outlay account. Subsidies should not be included in the output as well. The output refers basically to the income derived from the production or trading activity of the firm or producing unit in question—i.e. excluding property and subsidy incomes. For instance, the output of the KOIL is the gross margin on its sales of petroleum products, and likewise the output of PUB is the total revenue from electricity bills. This will be discussed further in the next section. The output of the banks is known as FISIM or ‘financial intermediation services indirectly measured’<sup>16</sup> and this is equivalent to the difference between interest received on loans minus interest paid deposits.

The term **intermediate consumption** refers basically to the operational or general expenses of the business or the firm however certain items are not included, such as the depreciation cost, the interest paid to banks, salaries and wages, loss on exchange, provisions for future maintenance or future works, capital expenses, and so forth.

**Compensation of employees** include wages, salaries, overtime, bonuses, allowances, provident fund contributions, and any other payment given to employees in return for their labour services.

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<sup>16</sup> This is known in previous SNAs as ‘imputed bank service charge’.

**Consumption of fixed capital**—that part of the gross product which is required to replace fixed capital used up in the process of production during a period of account. This item is to cover the loss in value of all fixed assets due to normal wear and tear, foreseen obsolescence, and the normally expected rate of accidental damage not made good by repair, valued at current replacement cost. In practice this item is very difficult to measure and instead the value of accounting depreciation shown in the business accounts is used to proxy the consumption of fixed capital.

**Operating surplus** is the balancing item or residue in the production account and is quite close to the meaning of profit in the 'normal' business accounts. The difference would be in the way income (or output) and intermediate consumption are derived from the business accounts.

**Taxes on production** refer to licenses paid by businesses, registration fees, or import duties, and other similar charges. Usually this is paid to the government or some governing bodies in respect of the business or the producing unit.

**Subsidies on products**—include current payments by the government to help or assist production units or firms such as copra subsidy, shipping subsidy, water subsidy, etc.

### **Special feature**

While it is fairly easy and straightforward to set up the production account of some businesses (or producing units) there are some that are more complex and difficult to work with, such as the financial institutions, commercial activities undertaken by government ministries, private businesses but especially the foreign owned companies, own-account production, owner-occupied dwellings, etc. Some businesses or entities are difficult to work with because they do not have proper financial accounts but sometimes they have the information but the information is not the right kind of information for national accounts purposes. In some cases subsidized or government-controlled prices are used instead of commercial or market prices. There is a government policy on price control which forbids businesses and even public enterprises, to raise their prices or their charges above what the government sets. The items whose prices are being controlled by government include rice, sugar, kerosene, domestic airfares, copra, seaweed, etc. These items or services are considered as basic to the needs of the people and therefore, as the argument goes, should not be charged or priced excessively, or in the case of copra and seaweed the price should not drop below a reasonable figure<sup>17</sup>. These are distortions to the market and sometimes they pose special problems to the national account compilers.

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<sup>17</sup> These prices sometimes are set by politicians.

## **7. PRODUCTION ACCOUNT by INDUSTRY**

The following section will focus on how the production or the output of the different entities making up an industry is calculated or estimated. These are the actual entities which constitute the basis of GDP in Kiribati. As will be evident from the list and discussions there are indeed lots of problems and gaps in the exercise and future works should consider these and try to improve them in order to have a better GDP estimate. The lack of relevant information and shortage of staff are key constraints in having better GDP estimates.

### **1. Agriculture and Fishing**

Ideally all agricultural and fishing activities should be included here, such as the value of growing and cultivating crops or trees, such as *babai* (giant swamp taro), collecting and cutting copra, commercial and subsistence fishing, etc. However in practice some activities or outputs may not be included because they are too difficult to measure or because they do not have money or market values. In particular activities carried out by individuals or households in villages or in their own homes are very difficult to measure, let alone on a systematic and ongoing basis, and in the analysis this aspect should be considered carefully. Quoting from the 1972—74 national accounts report “*Since the estimates for non-monetary production are somewhat conjectural, and are based on rather small samples, they have generally been shown separately wherever they occur in the accounts.*”

In Kiribati the following are included under Agriculture and Fishing.

<b><i>Producing Entities</i></b>	<b><i>Main activities</i></b>	<b><i>How to measure production or value-added</i></b>	<b><i>Sources of information</i></b>
<b><i>Agriculture</i></b>			
Copra cutters	Individuals collecting and cutting copra for sale ( <i>taan oro ben</i> )	Total copra production in the country multiplied by prevailing copra price paid to copra cutters minus some arbitrary percentage of the value calculated (e.g. 15% is used now)	Kiribati Copra Society, Ministry of Commerce, Ministry of Finance
Kiribati Copra Society	This company buys copra from people and resells them overseas or to the Copra Mill.	Gross margin on sale of copra less intermediate consumption	Annual accounts of the company
Other agricultural activities—for sale	Growing and selling vegetables and food crops	Income and expenditure obtained from the 2006 household survey(HIES) <sup>18</sup>	2006 Household survey reports

<sup>18</sup> One household survey (Household Income and Expenditure Survey) was conducted in 1996 and another one in 2006.

Other agricultural activities—for own consumption	Growing and selling vegetables for own consumption	Income and expenditure obtained from the 2006 household survey(HIES) <sup>19</sup>	2006 Household survey reports
<b><i>Fishing</i></b>			
CPPL company (government owned)	Buys fish from local fishermen including those on the outer islands, and then resells them at a slightly higher price however the company is also involved in other activities such as transportation, shipping agency, etc.	Output comes from different activities, such as gross margin on sales of fish, agency fees, freight revenue from Moamo vessel. Intermediate consumption obtained as for other businesses.	Accounts of the company.
Seaweed growers	Cultivating and selling seaweed, mostly on the outer islands, including on Line islands	The total tonnage of seaweed produced multiplied by the local price. It is assumed that there is no cost associated with the cultivation of seaweed.	Trade reports, Atoll Seaweed Co accounts,
Atoll Seaweed Company (government owned)	Buys seaweed from people and resells it to overseas companies Headquarters closed down in 2007 but some seaweed production still going on, especially on Tabuearan island (Fanning island).	Gross margin on sale of seaweed minus intermediate consumption	Annual accounts of the company
Informal sector fishing –for sale (this replaces the commercial fishing output estimated in earlier accounts)	These people fish for their own consumption but they sell excess catch as well	Benchmark output data moved by population growth and price of fish	Tax Office, Island councils, and 2006 HIES
Informal sector fishing—subsistence	These people catch fish for their own consumption	Benchmark output data moved by population growth and price of fish	Tax Office, Island councils, and 2006 HIES

### Special features:

#### *On copra production:*

In terms of copra production it has been noted that the figures provided by the Copra Society may not be the same as the figures kept by the island cooperatives or island councils. This would imply that the total tonnage of copra used in the national accounts (which is obtained from the Copra Society) may not

<sup>19</sup> One household survey (Household Income and Expenditure Survey) was conducted in 1996 and another one in 2006.

be very accurate and this needs to be investigated further. The output of the copra cutters is included under the 'formal sector' in the present accounts because the copra industry is managed and controlled by the government through the Copra Society and through the subsidies paid through the ministry of Commerce. Likewise, the seaweed production is treated as a 'formal activity' as well.

### *On informal fishing*

Many people in Kiribati fish for their own consumption and some fish for cash or for commercial purposes. There are also people who fish for both—for cash and for own consumption. Now to find these people or their total production, let alone differentiate their own consumption from their commercial activity, is very very difficult. Many of these do not need registration fees or licenses to operate—they just go out fishing on their boats or canoes anytime of the day, and if they catch a large number of fish they can either sell all of them or retain some for their own use. Now setting up the production account for this kind of activity is very difficult because there are no proper records of the catch and the sales. One way of obtaining information on these activities is to conduct a household income and expenditure survey but this is a fairly expensive exercise and in Kiribati only two household surveys have been conducted, one in 1996, and the second one in 2006. In other words, there is very little information on the informal commercial fishing in Kiribati. Although some estimates have been made based on the 2006 HIES, one should be very cautious when interpreting the trend and growth rates. This is basically because data for the other years are simply estimated by extrapolating the benchmark figures by the population estimates and RPI movements. Obviously more work is needed in this area.

## **2. Mining and quarrying**

In Kiribati there is no proper mining company apart from the digging and collection of gravel and sand for building purposes. Most activities are informal apart from a small section of the PWD that is responsible for producing gravel to be used in the construction or in the maintenance of roads and causeways. Unfortunately this section is ancillary to the larger role of the PWD which is the construction and therefore output from this activity is not included here.

In the 1960s and 70s output from the phosphate mining on Banaba island was very high and contributed significantly to the GDP however mining on Banaba ceased in 1979, the year Kiribati got its independence from UK.

The output from informal quarrying is recently included in the GDP estimate based on the 2006 HIES. Estimates for other years are based on population growth and RPI movements.



<b>Producing Entities</b>	<b>Main activities</b>	<b>How to measure production or value-added</b>	<b>Sources of information</b>
Gravel and sand sellers (informal)	Individuals collecting and selling gravel and sand	Output and value added calculated from 2006 HIES.	2006 HIES report

### **Special feature:**

There is a small salt production under the Ministry of Linnix on Christmas island but the process involved is very crude and basic. The process involves digging up salt granules or crystals from the bottom of shallow ponds left exposed to the hot sunlight. The water evaporated from the ponds leaving very salty water and some salt residues on the bottom of the ponds. These salt residues are dug up using shovels and then pounded into smaller crystals before they get shipped overseas, mainly to Japan. The question now is whether this process falls under the mining category, or the manufacturing category. In the current national accounts, the output of this production is included under the ministry or the government. In the future, especially if the production is getting big and significant, the production may be separated and included either under the 'mining' or the 'manufacturing' industry—whichever turns out to be the better choice.

### **3. Manufacturing**

Manufacturing in Kiribati is very small, which means Kiribati has to rely on imported goods for most of its manufactured goods, including tables, chairs, plates, spoons, etc. This shows that Kiribati economy is not a very developed nor a sophisticated economy and this is why the United Nations categorized Kiribati as one of the Least Developed Countries (LDC)<sup>20</sup>. Most of the developed or industrialized countries, such as the US, Japan, Germany, etc. for comparison purposes, have very strong manufacturing and production base and their economy are generally strong and robust. Kiribati, on the other hand, is deficient in resources (apart from the marine resources) and the huge distance from major trading partners is another major constraint and therefore Kiribati manufacturing base is likely to remain small in the foreseeable future. A fish cannery has been on the minds of some policy makers but for some reasons this has not been carried further than just an interesting discussion topic.

The few manufacturing entities included in the current national accounts are listed below.

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<sup>20</sup> The United Nations accorded Kiribati an LDC status in 1985 because of its very low GDP per capita.

<b><i>Producing Entities</i></b>	<b><i>Main activities</i></b>	<b><i>How to measure production or value-added</i></b>	<b><i>Sources of information</i></b>
Tarawa biscuit company (government owned)	Baking and selling biscuits Company is about to close down.	Sales less intermediate consumption	Accounts of the company
Copra Mill Co (government owned)	Buys copra from the Copra Society and then milled the copra to produce copra oil which has higher value and this is exported to overseas companies. Some bi-products include soap, body oil, animal feed, and firewood.	Sales less intermediate consumption.	Accounts of the company
Nanotasi garment shop (island cooperative)	Sewing and selling clothes (e.g. shirts, shorts, dresses, etc)	Sales less intermediate consumption	Tax office
Shipyards Company	Constructing and selling boats but operates also small hardware store	Sales less intermediate consumption	Annual accounts
Government Printery Office	Printing shop—main customer is the government	Production accounts derived from government accounts	Government accounts and budget reports
Levett Print co (church owned)	Printing shop	Sales less intermediate consumption	Tax Office
KT metals (private company)	Manufactures steel buckets, washing tubs, etc	Sales less intermediate consumption	Tax Office
Other smaller private manufacturing businesses	Variety of manufactured products	Value added from Tax rated up using island councils business registration	Tax office, island councils
Household production – for sale	These are households producing and selling food, local smoke, etc	Benchmark production obtained from 2006 HIES and extrapolated using population growth and RPI	2006 HIES report
Household production – for own use	These are the outputs of households which they consume themselves	Benchmark production obtained from 2006 HIES and extrapolated using population growth and RPI	2006 HIES report

**Special feature:**

There are some new businesses like the TTT, KOES printery, that are performing manufacturing activities (e.g. boat building, furniture, etc) but sometimes these

are included in the retail industry because the main activity of the businesses concerned is retailing. In future when these entities increase their production and contribution to GDP then it is necessary to set up separate production account for each and put these under this industry.

#### **4. Electricity, gas and water**

There is only one powerhouse generating electricity on S.Tarawa under the authority of the Public Utilities Board (PUB). There is another power generator on Christmas island generating electricity but its accounts is included with the ministry of Lines and Phoenix accounts and it is difficult to extract and separate the required accounting information and therefore it is not possible to set up a production account for the power generation on Christmas island. Likewise on the outer islands there are small generators and some solar panels used by people to generate electricity but it is difficult to measure the costs and output of these devices. Under these circumstances, only the production of the PUB that is included in current GDP.

<b><i>Producing Entities</i></b>	<b><i>Main activities</i></b>	<b><i>How to measure production or value-added</i></b>	<b><i>Sources of information</i></b>
Public Utilities Board or PUB (government owned)	Provision of electricity, water and sewerage service	Sales of electricity less intermediate consumption (includes fuel cost)	Accounts of the company

The PUB is entrusted to supply electricity, water and sewerage services to the residents of S.Tarawa but while the users pay for their electricity, the water and the sewerage are not paid for and in a way the electricity generation is subsidizing the cost of water and sewerage. In fact an attempt has been made in the past to charge people using water but this was not successful—the water meters installed were not working properly and some people know how to manipulate the meters to avoid being charged.

The electricity rate is monitored closely by the government and PUB cannot raise the charge or the rate without approval from the Board of Directors or from the government—this implies that the rate that the PUB currently charges to consumers is not strictly a commercial or market rate. PUB gets its diesel fuel from the Kiribati Oil company (KOIL) and sometimes because of cash flow problems the payment to KOIL gets delayed. PUB owed quite a significant amount to KOIL in some years, and it is likely that this outstanding debt will remain for many years to come given the financial situation of PUB.

There is a solar company located on Betio, Tarawa that imports and sells out solar panels, batteries, and other solar equipments but this is classified under the retail industry. Many people on the outer islands use solar panels to generate their electricity.

## **5. Construction**

This is one of the more problematic areas to work in because of the absence of proper accounting data, and because there are no 'permanent' resident construction firms<sup>21</sup> apart from the small unincorporated private businesses that carry out small construction and maintenance works, mostly for the Kiribati Housing Corporation (KHC).

As mentioned above, there is hardly any major construction firm in Kiribati apart from the Public Works Department (PWD). Most of the big constructions carried out in Kiribati are undertaken by overseas construction firms, such as Capella, Fletcher, Dai Nippon, etc. The recent construction of the roads on Betio and Bairiki was carried out by a Japanese firm. These overseas firms usually brought their own construction equipment with them, and when they leave, they took their equipment back to their countries. In most cases these overseas companies employ local labourers<sup>22</sup>--except in the case of Chinese construction firms. The few local companies are often involved in small-scale constructions, such as constructing residential houses or building coastal defenses. There are also a few private housing maintenance companies working for the Kiribati Housing Corporation.

The setting up of the production account for the following construction entities is quite problematic because there are no comprehensive accounts readily available, as mentioned above. In the case of the PWD, the accounts is mixed up with the Ministry of Works accounts and often the works undertaken by PWD are not costed or valued properly. There is no notion of profit or operating surplus because of the inherent nature of government of not working for profit. Most customers of PWD are government ministries themselves and extracting relevant accounting information on these activities is very difficult. Putting together the production account for PWD therefore is a tedious and formidable task.

In the case of overseas firms undertaking construction activities in Kiribati, the treatment and the classification is quite 'complicated'. One way of treating this kind of activity is to consider the construction activity as an imported service from overseas, i.e. Kiribati is purchasing or importing construction services from overseas which means the whole contracted cost of the construction goes overseas. This means then that the construction activity is no longer a domestic production but a foreign activity or output which Kiribati then buys just like importing a vessel or an aircraft. Wages of local labourers involved in the construction can be considered as income from abroad and the cost of local

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<sup>21</sup> If one large firm exists then it may be possible to extract the relevant national accounts information which then can form the basis of the estimates for overseas construction 'firms'.

<sup>22</sup> Prior to 2003, the Chinese construction firms working on the Bonriki runaway and on the Betio Sports Complex brought their own Chinese labourers.

materials and services will be treated as exports of goods and services. Another approach is to treat the foreign construction firm as a notional domestic entity just like any other local construction firm but the operating surplus and return to capital should all be repatriated back to the foreign country of the firm. This will require that a production account is set up for this notional entity.

<b>Producing Entities</b>	<b>Main activities</b>	<b>How to measure production or value-added</b>	<b>Sources of information</b>
PWD (part of the Ministry of Works)	Construction and maintenance of government buildings, roads, runaways, causeways, etc.	Production account derived from the Ministry of Works accounts	Ministry of Works accounts
Capella (overseas firm)	Constructing offices, houses, etc	Contracted Value of construction less intermediate consumption	Tax Office, Ministry of Finance, KPF
Mitsubishi (overseas firm)	Constructing PUB powerhouse	Contracted Value of power house less intermediate consumption	Ministry of Finance, KPF
SAPHE project	Constructing the water system on S.Tarawa.	Contracted value of project less intermediate consumption	SAPHE office, and Ministry of Finance, KPF
Sommer and Staff (overseas firm)	Constructing Otintaii hotel	Contracted value less intermediate consumption	Ministry of Finance, KPF
Dai Nippon (Japanese firm)	Construction of Nawerere hospital	Contracted value less intermediate consumption	Ministry of Health, KPF
Fletcher Co. (overseas firm)	Construction of KPF building	Contracted value less intermediate consumption	Ministry of Finance, KPF
Other construction firms	Other local construction businesses	Contracted value less intermediate consumption	Tax Office, island councils

Most of the construction firms listed above are no longer operating in Kiribati however the list is just to illustrate the types of constructions undertaken in Kiribati. Most of these constructions are large and expensive, say more than a million dollars worth, and most would stay in Kiribati for a year or two. All the profits would undoubtedly be repatriated back to their headquarters overseas. The contribution of this sector could be very significant because the value of the construction works are generally very high but the accounts are not readily available to the NSO and therefore the figures presented are bound to be understated.

## **6. Wholesale and retail**

Wholesale business and retail business fall under the distributive trade category and while there is this distinction between wholesale and retail, in Kiribati the

distinction is sometimes mixed up or blurred because some wholesale businesses undertake retailing activity as well, and often they do not separate the accounts of their different activities.

<b><i>Producing Entities</i></b>	<b><i>Main activities</i></b>	<b><i>How to measure production or value-added</i></b>	<b><i>Sources of information</i></b>
<b><i>Wholesale businesses</i></b>			
Yamaha store	Imports and sells and repairs Yamaha outboard marine engines	Gross margin less intermediate consumption	Tax office
Bairiki holdings	Imports and sells general merchandise	Gross margin less intermediate consumption	Tax office
BKL (government owned)	Imports and sells general merchandise	Gross margin less intermediate consumption	Annual accounts
Abamakoro (government owned)	Imports and sells general merchandise	Gross margin less intermediate consumption	Annual accounts
KOIL (government owned)	Imports and sells petrol and gas. After the closure of the BP, KOIL supplies fuel to aircrafts as well.	Gross margin less intermediate consumption	Annual accounts
<b><i>Retail businesses</i></b>			
Philatelic Bureau (government owned)	Sells Kiribati stamps	Sales less intermediate consumption	Ministry of communication accounts
Air BP (foreign owned)	Imports and sells aircraft fuels. Closed down in 2006.	Gross margin less intermediate consumption	
Supply Co.	Importing building materials and selling them locally	Gross margin less intermediate consumption	Annual accounts
Solar Co	Importing and selling solar power equipment and accessories	Gross margin less intermediate consumption	Annual accounts
AMMS (government owned)	General supermarket Closed down and taken over by BKL	Gross margin less intermediate consumption	Annual accounts
Island cooperatives (stores owned by island cooperatives-private)	Buys general merchandise from S.Tarawa and resells them on the island—in the past these stores facilitated the collection and shipment of copra to S.Tarawa—i.e. acted as a copra agency.	Gross margin less intermediate consumption	Ministry of Commerce
Tarawa Motors	Importing and selling cars, and spare parts—also operates a vehicle repair shop	Gross margin less intermediate consumption	Tax office
Fern trading (private store)	General supermarket—no longer operating	Gross margin less intermediate consumption	Tax office

WKK	Operates a supermarket	Gross margin less intermediate consumption	Tax office
Kirigas (branch of Tarawa Motors)	Imports and sells gas, especially gas for cooking purposes	Gross margin less intermediate consumption	Tax office
Betio Hardware	Imports and resells hardware	Gross margin less intermediate consumption	Tax office
Fair Price (Chinese owned shop)	Imports and resells general merchandise—operates a petrol station as well	Gross margin less intermediate consumption	Tax office

## 7. Hotels and restaurants

The number of hotels in Kiribati is very limited and this reflects the very small tourism industry in the country. The two bigger hotels, both owned by government, have 70 and 40 bedrooms each. The larger hotel (Otintaai) is located on S.Tarawa and the smaller one (Captain Cook hotel) is located on Christmas island. There is a growing number of motels or smaller sized hotels on both S. Tarawa and Christmas island. These motels are usually small, most have 10 or less bedrooms but one or two has about 20 bedrooms (e.g. Mary motel in Bairiki).

<i><b>Producing Entities</b></i>	<i><b>Main activities</b></i>	<i><b>How to measure production or value-added</b></i>	<i><b>Sources of information</b></i>
Otintaai hotel (government owned)	Provides accommodation and meals	Sales less intermediate consumption	Annual accounts
Captain Cook hotel (government owned, located on Xmas island))	Provides accommodation and meals	Sales less intermediate consumption	Annual accounts
Mary motel	Provides accommodation and meals	Sales less intermediate consumption	Tax office
Tarawa hotel	Provides accommodation and meals	Sales less intermediate consumption	Tax office
Abemama hotel	Provides accommodation and meals	Sales less intermediate consumption	Tax office

## 8. Transport and storage

Major public transport activities, by sea, air and by land are undertaken by government owned companies, at least there is one government entity in each transport sector. For instance, on land, the government has the PVU looking after the government transport need. In the sea, the government has the Kiribati Shipping Corporation and in the air the Air Kiribati operates two small planes, a CASA and a Y-12. There is a marked increase however of the private businesses in the transport sector. On land virtually all buses on S.Tarawa are owned by

private businesses. There are also several private car dealers and motor vehicle repair workshops, in addition to the government owned PVU. Recently a private businessman has recently started a domestic airline service.

<b><i>Producing Entities</i></b>	<b><i>Main activities</i></b>	<b><i>How to measure production or value-added</i></b>	<b><i>Sources of information</i></b>
Plant and Vehicles Unit or PVU (government owned)	Maintains government motor-vehicles. Sometimes it imports cars for the government.	Total income less intermediate consumption	Annual accounts
Kiribati Shipping Co	Provides transport service by sea—for passengers and general merchandise. Some vessels make trips to Fiji but now most vessels are no longer seaworthy.	Total income less intermediate consumption	Annual accounts
Air Kiribati	Provides air transport between Tarawa and the outer islands, excluding Christmas island—has only two planes(CASA and Y12)	Total income less intermediate consumption	Annual accounts
Kiribati Port Authority (KPA)	Looks after the Betio port and other government ports. Betio port handles freight from overseas and charges importers for handling and storage of their goods	Total income less intermediate consumption	Annual accounts
Private buses	Provides transport service on S.Tarawa	Total income less intermediate consumption	Tax office and the island councils, and KPF
Private vessels	Provides inter-island transport for passengers and general merchandise. The vessels are generally small, say less than 100 tons capacity and most are based on S.Tarawa.	Total income less intermediate consumption	Tax office and the island councils, and KPF

One of the main problems with transportation, especially on land, is the bad conditions of the roads. Even on S.Tarawa, the capital island of the country, the roads are very poorly maintained, especially after heavy rainfall. This has a heavy toll on the bus owners who have to constantly pay for the repair and the damage resulting from the poor conditions of the roads. As a matter of fact, several bus owners have gone bankrupt simply because they could not maintain their vehicles.

There are virtually no buses operating on the outer islands, apart from Christmas island which now has two or three buses operating on the island. The main road on Christmas island is tar-sealed but it is fairly rough as most of the coal tar cover has disappeared—this causes the vehicle tyres to worn out quite fast.



Sea transport is provided by the government shipping company (KSC) and some private businesses. There are two major private shipping companies, KISS (owned by the church) and Taotin (owns and operates Supercat vessel and SuperCarrier landing craft). Most vessels of the KSC are no longer seaworthy and there is now severe constraint in the shipping and transport industry in Kiribati. There are no ship dock and repair facilities in Kiribati apart from the Betio Shipyard which caters only for very small boats—even its slipway is no longer working. Most of the ship repair is undertaken in Fiji, and this is a time-consuming and costly exercise.

## 9. Communication

Virtually all entities in this industry are government owned, at least those included in the current national accounts. The only private business in this industry is the broadcasting company (FM 90) and a publication company (Newstar) but these are owned by the same individual owning Neways, the motor car business, and because the accounts of these are included with Neways accounts it was not possible to produce a separate production account for FM90 nor for the Newstar publishing business.

<i><b>Producing Entities</b></i>	<i><b>Main activities</b></i>	<i><b>How to measure production or value-added</b></i>	<i><b>Sources of information</b></i>
Government Post Office	Provides postal services	Income less intermediate consumption	Ministry of communication accounts
Broadcasting and Publication Authority (BPA)	Provides radio broadcast service and produces a newspaper (TeUekera) twice a week	Income less intermediate consumption	Annual accounts
TSKL	Provides telecommunication services, internet, telephone, etc	Income less intermediate consumption	Annual accounts
TKL	Provides TV services (also imports and sells some electronic equipment, and do some repairs)	Income less intermediate consumption	Annual accounts

## 10. Financial intermediation

Financial markets and intermediation in Kiribati is fairly small and basic. There is only one commercial bank, one development bank, one provident fund, and one insurance company—but no central bank<sup>23</sup>. Loans extended by the banks are generally small compared to overseas banks and large investments in Kiribati are usually funded from outside sources, in most cases from foreign aid. There is no

<sup>23</sup> Kiribati uses the Australian dollar as its official currency.

stock or capital market in Kiribati and the government cannot raise its funds from sale of bonds or securities. Government investments through the reserve fund (RERF) and that of the Provident Fund are managed by overseas investment firms. In short the financial intermediation in Kiribati at this point in time is very limited or rudimentary.

<b>Producing Entities</b>	<b>Main activities</b>	<b>How to measure production or value-added</b>	<b>Sources of information</b>
Development Bank of Kiribati (DBK)	Offers low interest loans to people for development purposes—capital provided by government	Output less intermediate consumption	Annual accounts
Bank of Kiribati (BOK) 75% owned by ANZ and 25% owned by Kiribati government	Undertakes commercial banking activities and acts as the government's main repository bank.	Output less intermediate consumption	Annual accounts
Kiribati Provident Fund (KPF)	Entrusted to collect and invest employees contribution (savings). These can be released when an employee reaches 50 years or when he retires/going abroad for good. Most of the funds are invested abroad.	Output (valued at cost) less intermediate consumption. And output is equivalent to total cost of running the office, therefore value-added is approximately equal to salaries and wages.	Annual accounts
Kiribati Insurance Co (KIC)	Provides general and life insurance cover in the country. Like most insurance firms, a large proportion of the premiums collected is sent overseas as re-insurance payment—to share the risk and the cost.	Net insurance premiums less intermediate consumption	Annual accounts

For the banks (e.g. the **Bank of Kiribati** and the **Development Bank**) the output this is calculated as the difference between the total interest earned on the loans they extend to borrowers and the interest they pay to lenders or depositors—the interest earned on their own funds should be excluded. Obviously to cover their costs and earn some operating surplus, they have to charge higher interest rate to borrowers and pay lower interest rates to lenders. This difference or output is known as **FISIM (financial intermediation services indirectly measured)**. The imputed FISIM output is used because the bank does not specifically charge customers when they call in or make use of the bank services.

FISIM =	Interest earned -	Interest paid
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Now the creation of this output (FISIM) requires that someone or some entity has been using these financial services and the SNA recommends that this is assigned to various recipients or users as part of their intermediate consumption.

Another option is to record the total FISIM value as the intermediate consumption of a ‘notional’ or ‘dummy’ industry. The approach used in Kiribati now is to subtract the whole FISIM (or imputed bank service charge<sup>24</sup>) from the sum of the value-added of all industries and this is shown in the GDP table, under the last industry as “less imputed FISIM” or “less imputed bank service charge”.

For the **insurance company** the value added (through the production approach) is calculated as below (figures in bracket are used just to illustrate the formula):

<i>Items in the accounts</i>	<i>Life</i>	<i>Non-Life</i>	<i>Total</i>
Premiums	\$1,000	\$2,000	\$3,000
Less claims (net of claim recoveries)	\$500	\$200	\$700
Other income	\$100	\$50	\$150
<b>Gross output</b>	<b>\$1,600</b>	<b>\$2,250</b>	<b>\$3,750</b>
<b>General expenses</b>			
Re-insurance payments (overseas)	0	\$600	\$600
Plus re-insurance expenses	0	\$50	\$50
Less claims (on reinsurance)		\$300	\$300
Plus other expenses normally included in the ‘intermediate consumption’ (.e.g. )	\$700	\$600	\$1,300
<b>Intermediate consumption</b>	<b>\$700</b>	<b>\$950</b>	<b>\$1,650</b>

From the example above we see that the value added is \$2,100. This is obtained by subtracting the intermediate consumption (\$1,650) from the gross output (\$3,750). We could use also the other approach, the income approach, because most of the information are available from the annual accounts.

Note that there is no re-insurance payment overseas for the Life portfolio. This is because the company feels that they can meet all the liabilities or charges arising from deaths. All the Life funds are deposited in the Bank of Kiribati.

For the **provident fund**, the output is measured as the total cost of running the office, i.e. the sum of all operational costs (general expenses) and the salaries and wages. The value-added is simply the sum of compensation of employees and the depreciation allowance. It is important to note however that this office invests most of the employees savings overseas and this has enabled the Fund value to increase, and hence the members contributions, over the years. The

<sup>24</sup> FISIM is a term of the 1993 SNA—prior to that it was known as ‘imputed bank service charge’

Fund has a plan to set up a loan scheme whereby members can make loans from the Fund, somewhat like what the commercial banks are doing now. At the time of writing up this manual the scheme has not started.

A small section of the Kiribati Housing Corporation (KHC) is also involved in lending activity but generally the loans are small and are restricted to houses and water tanks. The output of this is not included in the financial sector because of the lack of separate accounting information from the (KHC).

There are other small private unincorporated lending bodies but these are restricted to members only and they generally lend out small loans. There is also a branch of the Western Union operating on S.Tarawa but there are no accounts available from this and therefore it is not yet included in the present national accounts.

## 11. Real estate

This includes real estate activities (e.g. renting of houses) and renting of machinery and equipment. Computer and related businesses such as internet service, hire or computers, etc is also included here.

In Kiribati real estate entities or activities consist of the Kiribati Housing Corporation (KHC), privately owned renting business, and the owner occupied dwellings. Setting up the production account is fairly straightforward for the KHC but for the private businesses the work is more complicated because some entities do not provide relevant accounting information—even to the Tax Office. In any case the production account is set up from records collected from the Tax Office and the estimates derived are rated up using the list of businesses from the island council records. The work on the owner-occupied dwellings is even more complicated because of the limited information available and the non-existent market values for the ‘local houses’. Information from population censuses, RPI, and other studies have been used to derive the output for this non-monetary activity.

<b><i>Producing Entities</i></b>	<b><i>Main activities</i></b>	<b><i>How to measure production or value-added</i></b>	<b><i>Sources of information</i></b>
Kiribati Housing Corporation (KHC)	Provides housing accommodation to employees, mostly government employees on S.Tarawa.	Total rent income less intermediate consumption	Annual accounts
Other rented dwelling businesses	Provide accommodation to visitors as well as to local people, especially long-term tenants	Total rent income less intermediate consumption	Tax Office and island councils
Business services	These are businesses offering internet or general computer services, or offering accounting or auditing services, etc.	The value added is calculated as 1% of the value added of the other industries, e.g. housing output, government	Indirectly calculated from value added of other industries

		output, etc.	
Owner-occupied dwellings	These are the homes or houses of people which are for national account purposes considered as providing accommodation services to the owners—just like rented houses which provide housing services to the tenants, e.g. residents in KHC houses.	The value added of this sector is imputed, based on 80% of the imputed rent obtained from the 2006 HIES. For other years the number of households and the RPI movements are used to move the benchmark data of 2006.	Population Census and Household survey reports (e.g. 2006 HIES, and the census reports). RPI figures.

## 12. Government services

This includes the central government and the local councils. The central government consists of government ministries and all statutory bodies including special bodies created for some projects, such as the KAP<sup>25</sup>. The value-added of government is essentially made up of salaries, wages and other benefits given to the employees. There is no operating surplus and consumption of fixed assets, i.e. the output from government is essentially valued at cost, i.e. it equals the sum of intermediate consumption and compensation of employees minus incidental sales.

<b><i>Producing Entities</i></b>	<b><i>Main activities</i></b>	<b><i>How to measure production or value-added</i></b>	<b><i>Sources of information</i></b>
Public administration, defense	General administration, law and order, planning and development, safeguarding environment	The value-added consist of compensation of employees only.	Central government and island councils annual accounts
Education	Provides primary, secondary and tertiary education	The value-added consist of compensation of employees only.	Central government accounts
Health	Provides prevention and curative services	The value-added consist of compensation of employees only.	Central government accounts

## Special features

There are several development projects that employ local labourers, especially large construction projects, and information on these projects (including total salaries or wages paid to local workers) are not readily available, at least to the NSO and because of this the total value added from the government may be

<sup>25</sup> This is the Kiribati Adaptation Project funded by the World Bank and is basically set up to study and monitor impacts due to climate changes. This project is under the Office of the President but works closely with the Ministry of Finance.

understated. Because Kiribati relies heavily on foreign aid<sup>26</sup>, the lack of comprehensive information on development projects could undermine the importance of the foreign aid to the country.

There are also sections or departments of the government which undertake commercial or market activities, such as the PWD, Printery office, Philatelic Office, the Postal division, etc, but these entities do not keep proper accounts (like the business accounts) and therefore setting up separate production accounts for these entities is often difficult because of the way the accounts are mixed up with the parent ministry accounts. Also the value of the services of these entities sometimes are not fully reflected in the accounts because they do not get reported, especially if the customer or the client is the government itself.

### 13. Other community, social, and personal services

These are the non-profit bodies serving people such as the churches, the women associations, youth groups, the Red Cross, the regional organizations such as FSP, housemaids, etc. These bodies undertake or provide non-profit services.

<b><i>Producing Entities</i></b>	<b><i>Main activities</i></b>	<b><i>How to measure production or value-added</i></b>	<b><i>Sources of information</i></b>
Churches	Provides spiritual and moral guidance to their respective followers	Only salaries or wages are included	KPF office, Church offices
AMAK (women organization)	Coordinating and promoting the activities of women, such sewing, cooking, etc.	Only salaries or wages are included	KPF, and AMAK office
Peace Corps (left the country in 2008)	Assist in teaching primary and secondary schools	Only salaries or wages are included	Peace Corp office
Other private non-profit bodies (PNPI)	Miscellaneous non-profit services	Only salaries or wages are included	MISA, island councils,

Domestic servants or housemaids are classified under this heading and their value-added is equivalent to their wages.

#### **Special features/issues:**

Although this industry should contain bodies (or groups of people) that provide non-profit services, in actual fact they are involved also in fund raising activities. The money raised are then used to fund their routine or assigned activities or

<sup>26</sup> Total value of aid in a year is equivalent to 30-40% of the total recurrent budget, i.e. roughly A\$30—50 million.

sometimes given away to some charitable cause. As a matter of fact, some of these bodies own and operate printing shops, small stores or cafes, and even vessels. However in the national accounts system these activities, at least their production account, are separated and put in the relevant industries—i.e. not in this industry.

## **8. Measuring Output of the Non-Monetary or Subsistence Sector**

Measuring the non-monetary or subsistence sector has always been a difficult and problematic area to work in. A lot of assumptions and imputations have to be used in the calculations as well as indicators to move the calculated or benchmark figures. There are few published reference books on this and the International SNA manual does not discuss this topic in great detail. Obviously the calculation of the output of the non-monetary or subsistence sector is very subjective and great caution should be exercised when analyzing GDP trend and growth, particularly not to attribute real growth simply on figures that are very subjective or ‘mechanically produced’<sup>27</sup>. Nevertheless it is important to assess and value the contribution of the subsistence sector, especially in ‘less developed countries’ like Kiribati because of the large number of people involved in such activities. From the literature (see for example Blades (1975)) it is noted that the contribution varies from 5% to 50%. This shows that some countries rely or depend to a great extent on their subsistence sector while others depend on the more formal or ‘monetary’ economy.

Basically there are two ways of measuring subsistence output—through the **production and the consumption approach**. Some countries use the production approach while others use the consumption approach—a few use both.

In the **production approach** one tries to estimate the total volume or quantity produced or caught, while in the consumption approach the idea is that people consumed what they produced therefore the consumption data reveals the total production and value-added of the sector. While this sounds straightforward in practice there are problems and difficulties in getting the right data, such as the quantity produced, the right ‘market’ price, the relevant costs, etc. Sometimes indirect methods are used, such as using ‘labour input’ or opportunity cost method to derive the output of the sector or the activity concerned. Some of these will be discussed below, however it is important to note that some of the methods involve several steps and complex calculations and it is not possible to discuss these in great detail here—some require their own manuals but the intention here is simply to let users know that there are several ways one could measure the output of the subsistence sector.

In the early part of the Kiribati national account exercise, the value of subsistence output was calculated on the basis of the **number of hours people on the outer islands spent on their traditional or subsistence activities**, such as cultivating taro (*ribanan te baba*), cutting toddy (*koro-kareve*), fishing (*te akaawa*), collecting firewood (*tabe aia*), etc. Once the total time or duration on these activities are obtained then they are multiplied by the prevailing council wages to obtain the total value of production. The total value of production is

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<sup>27</sup> This refers to figures that are simply estimated using population growth and price movements.



equated to the valued-added because it is assumed that there is no intermediate cost involved in these traditional activities. This approach uses the opportunity-cost notion, i.e. if these people do not undertake subsistence activities then they might end up working in the island councils. In other words, a subsistence worker forgoes the opportunity of getting a paid job with the island council because he or she decided to go fishing or cut toddy instead. Putting it differently, if he or she had not engaged in subsistence activities, they would have got a paid job in the island council office.

The information on the number of hours spent on each activity is obtained from the rural socio-economic surveys carried out by a team from Victoria University, Wellington, New Zealand 1972-3. Obviously this is a fairly outdated information however there no surveys until 2006 and this is why the data from the early surveys are used. Detailed documentation of the work can be seen in the 1972-74 National Accounts report. The national accounts work that started in 1985 essentially used the same approach but the wages and the prices were updated to reflect the prevailing rates used.

One major problem with this approach (time-use approach) is that the time or duration spent on the activities may not necessarily correspond well with the actual amount or volume produced or harvested. For instance, one might go fishing for several hours but ended up with no catch. What is then the value of the fishing? If we use the time-use or the opportunity cost approach, then there would be some production but if we use the direct production approach then there would be no production and no value-added.

The other approach would simply to ask the people in the households what and how much they produce and consume and aggregate these across the whole country and then multiply these by the relevant prices. This is a more direct approach than the labour input approach and this was used in the Kiribati national accounts after the completion of the 2006 HIES.

Another indirect method is to measure **the protein** or **calorific value** of the subsistence fishery catch (this is not yet used in Kiribati). The steps are listed below.

- Obtain an estimate of subsistence catch.
- Estimate the contribution of finfish and shellfish to the subsistence catch.
- Account for waste during consumption.
- Estimate the nutritional content, protein and caloric value of the subsistence consumption.
- Determine the price and nutritional content of the most likely marketable substitute.
- Determine the amount of the substitute that yields an equivalent amount of protein or calories.
- Value subsistence fisheries based on the value of the substitute with an equivalent caloric or protein content.

Although there are people who prefer to see the subsistence output calculated and included in the GDP there are some that argue that the basis of the subsistence output is very subjective, unreliable, and depends to a large extent on the person or persons who estimated the output and therefore it should not be included in GDP, at least it should be shown separately from the more formal sector. Obviously the subsistence output is important however when analyzing the economy it is important to differentiate growth due to the formal sector and growth due to the subsistence sector. This is because, as noted by Blades (1975), *“.....this is an area where there is generally little reliable basic information, and it is not possible to make intelligent use of the published statistics without knowing the estimation procedure used and the assumptions on which they are based”*.

## **9. Measuring Output of the Informal sector**

Strictly speaking the non-monetary or the subsistence activities (discussed above) are part of the informal sector but in this section we will restrict our discussion only to the monetary or 'commercial activities' undertaken by 'informal' small entrepreneurs such as fishermen selling their catch along the roads, or people providing catering service along the roads or near the offices, or people growing vegetables in their 'backyard' for sale. These activities are 'informal' in the sense that they do not register their businesses, nor pay taxes, or keep accounts, and generally they are small and family owned. Nevertheless they are considered important in the economy because of their cumulative impact on the communities and on the total economy. For instance, the local fishermen fishing and selling their catch along the roads or under make-shift shelters provide the bulk of protein to the people of Kiribati, especially for people living on S.Tarawa. Without these 'informal' commercial fishermen the people on S.Tarawa would surely suffer from imbalance diet of malnutrition due to the lack of protein.

The approach to measuring the output of these activities is to use several sources, including the information from the population censuses and the household surveys, as well as information from the island councils and the Tax office. The list of businesses kept by the island councils is useful when rating up the contribution of this sector, and the information from the Tax office could serve as the basis of the estimation. For instance, in measuring the output of the commercial fishermen, the surveys of the Ministry of Fisheries have been used. The surveys provide the basis or the benchmark figures for this sector and the extrapolation exercise uses the population growth and movement in the price of fish in order to produce estimates for other years.

Another method is to use the information from the household income and expenditure surveys or HIES<sup>28</sup>. For instance, some households might say that they get their income from fishing and this then forms the basis of the output of the commercial fishermen operating from their households. Some might say that they get their income from catering business, or sewing business, and from these one might get some idea of the extent and the magnitude of the informal activities. In some cases information from the Tax office could be used to construct the cost-structure (and the production account) of these informal activities, in addition to what people in the households report in the HIES.

In some cases casual observations and informal discussions provide the basis of the estimates. For instance, when estimating 'other agricultural' output, which includes growing and selling vegetables, national accountants would go out and count the number of commercial plots on the island, and from the discussions

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<sup>28</sup> This is the Household Income and Expenditure Survey—one was conducted in 1996 and the second one in 2006. The first one was quite small and limited while the second one covers many islands and asks more questions.

with the concerned households, they might get some crude estimates of their income and costs. These information then form the basis of the estimates for the output of the informal agricultural activities. Often the national accountants would ask other staff of their observations and views in order to confirm what they have seen or believe to be the situation. Indeed there is a lot of personal judgment involved in estimating the contribution of the informal sector.

In the case of copra cutting and seaweed cultivation, the total output is easy to estimate because there is only one central agency (i.e. one for each) responsible for the collection and selling of the commodities, namely the Copra Society and the Seaweed company. The total tonnage recorded by these agencies are assumed to be the total production of the households involved in the copra and seaweed production. For copra cutting the total output is obtained by multiplying the total tonnage by the corresponding price and a small proportion (say 15%) is deducted as intermediate consumption to arrive at the value added. The same method is applied to the seaweed production but there is no intermediate consumption because it is assumed that there are no costs related to the cultivation and the packing of raw seaweed.

Although the activities of the copra cutters and the seaweed growers can be considered as 'informal' in the sense that they do not have an established office or base, no formal license to operate, no proper accounts, etc. they are considered as 'formal' production activities in this manual because they are part of an organized industry, at least there are government controlled authorities (the Copra Society and the Seaweed company) that receive and resell the products from these activities. In other words, the tonnage of copra and seaweed produced and the prices used are readily available—unlike other informal activities that rely on ad-hoc and very irregular surveys, and on casual observations. This is why one of the tables on GDP shown in this manual classifies copra and seaweed production in the formal sector.

## 10. Difference between nominal and real GDP

When current prices are used to value outputs or value-added then the calculated GDP is known as nominal GDP however when constant price is used then we get real GDP. In other words when we measure output in real terms, i.e. by removing price effects, then we get real GDP. If on the other hand we use current or contemporary prices then the calculated GDP is known as nominal GDP. Let us illustrate this by a simple example.

Let us assume that the economy is made up of only coconuts, i.e. the output (and GDP) of the country is entirely dependent on tonnage of copra produced and sold. Furthermore assume that there are no costs of production, i.e. no intermediate consumption. We draw up several scenarios below.

**1st scenario:** nominal GDP shows constant increase over the years (e.g. starting from \$20,000 in 2000 and reaching \$25,000 in 2005, but real GDP remains the same. If we use the price of \$200/ton (i.e. the 2000 price) throughout the years on the production then our real GDP remains at \$20,000, i.e. no change at all. The nominal GDP increases is due entirely to the price increase.

	2000	2001	2003	2004	2005
Tonnage	100 tons	100 tons	100 tons	100tons	100 tons
Price	\$200/ton	\$210/ton	\$220/ton	\$230/ton	\$250/ton
Value(=nominal GDP)	\$20,000	\$21,000	\$22,000	\$23,000	\$25,000
If Price constant	\$200/ton	\$200/ton	\$200/ton	\$200/ton	\$200/ton
Real output or GDP	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000

**2<sup>nd</sup> scenario:** nominal GDP shows marked increase over the years (e.g. starting from \$20,000 in 2000 and reaching \$42,500 in 2005, and real GDP also shows some increase, starting from \$20,000 and reaching \$34,000 in 2005. Note the increase in nominal GDP is greater than that of real GDP because it incorporates both the increase in volume and increase in price. Real GDP incorporates only the change in tonnage.

	2000	2001	2003	2004	2005
Tonnage	100 tons	110 tons	120 tons	150tons	170 tons
Price	\$200/ton	\$210/ton	\$220/ton	\$230/ton	\$250/ton
Value(=nominal GDP)	\$20,000	\$23,100	\$26,400	\$34,500	\$42,500
If price constant	\$200/ton	\$200/ton	\$200/ton	\$200/ton	\$200/ton
Real GDP	\$20,000	\$22,000	\$24,000	\$30,000	\$34,000

## **11. How to obtain real GDP**

As explained in the preceding section, real GDP can be derived from nominal GDP by simply removing the 'price effects' from the nominal figures. This is sometimes known as the deflation process and there are several ways of going about it. These will be explained below.

The most obvious and simple way is simply by applying the RPI<sup>29</sup> movements or the inflation rates on the nominal GDP. For instance, if nominal GDP grows by 5% and the inflation rate is 3.5%, then the real growth rate is 1.5%, and from this percentage the real GDP can be calculated (see table below). The question or the problem here is which inflation rate or deflator to use. One major drawback in the use of one single indicator or index is that GDP is composed of several industries or sectors and a single deflation is somewhat very gross and not very realistic. This is because not all goods and services included in the GDP estimate enter the RPI 'basket of goods'. In other words, the deflation process using a single deflator of the RPI is not a very objective or realistic way of deflating GDP. If there is a single GDP deflator, which has been systematically calculated, then applying this on nominal GDP may be accepted otherwise the resulting GDP will remain susceptible to queries and criticisms. The idea is illustrated below.

### **Deriving real growth and real GDP**

	<i>2001</i>	<i>2002</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>
nominal GDP	1,000,000	1,050,000	1,250,000	1,340,000	1,650,000
growth rate		5.0	19.0	7.2	23.1
inflation rate		3.5	12.5	5.5	17.2
<b>real growth</b>		<b>1.5</b>	<b>6.5</b>	<b>1.7</b>	<b>5.9</b>
<b>real GDP</b>		<b>1,015,000</b>	<b>1,118,750</b>	<b>1,271,250</b>	<b>1,419,520</b>

Note the percentage of real growth is derived by subtracting real growth rate by the inflation rate. While this method is fairly simple and straightforward the resulting GDP is fairly crude because only one deflator is used on the whole GDP when in fact GDP is a composite of outputs of various industries. Deflating each component of the GDP therefore is a more reasonable way of obtaining real GDP, i.e. several deflators used on different and separate industries is a more preferable way. This is discussed below.

Another method is to use volume or price deflators on the nominal value added of the producing entities. For example in the case of copra cutters, the value added figures are deflated using volume deflators. A base year is required in this approach. Below is an example of how the nominal value-added of the copra cutters is deflated.

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<sup>29</sup> Usually the overall index or the 'All-index' figure that is used.

### Using volume deflator

	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
copra cutters VA	\$1,200	\$1,450	\$1,500	\$1,780	\$2,005
tonnage of copra produced	110	150	160	160	190
<b>volume deflator</b>	<b>0.69</b>	<b>0.94</b>	<b>1.00</b>	<b>1.00</b>	<b>1.19</b>
<b>real copra cutters VA</b>	<b>\$967</b>	<b>\$1,406</b>	<b>\$1,500</b>	<b>\$1,500</b>	<b>\$1,781</b>

Note the base year used is 2003 which means that all outputs are valued or priced using the 2003 prices. Sometimes the resulting estimates are known as GDP in constant prices (2003). When we look at the table we see that real VA in 2003 and 2004 are the same (both 1,500) whereas the nominal VA are different, \$1,500 in 2003 and \$1,780 in 2004. This reflects the fact that tonnage of copra produced in the two years are the same (160 each), i.e. real growth, which is closely related to volume or physical increase, is zero—the only cause of the growth is the price increase.

Now if we want to use price to deflate the nominal value added then we need a continuous series of prices. The movements of these prices will then be used to deflate the series of corresponding value-added. The example below uses fishing value-added and the base year is set at 2003. The intention is to remove the price effect leaving only physical or real growth.

### Using price as deflator

	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
fishing VA	\$2,800	\$3,900	\$3,900	\$5,000	\$4,500
price of fish (\$/kg)	0.78	0.90	1.15	1.15	1.25
<b>% price increase (2003 base year)</b>	<b>-0.32</b>	<b>-0.22</b>	<b>0.00</b>	<b>0.00</b>	<b>0.09</b>
<b>real fishing VA</b>	<b>\$4,055</b>	<b>\$4,748</b>	<b>\$3,900</b>	<b>\$5,000</b>	<b>\$4,161</b>

Using the table above we note that when there is no increase in the price of fish, yet the nominal value of fish increases, as in 2004, then it means that the volume of fish actually goes up, i.e. there is real increase or real growth. Now when the price of fish is below the base price (of 2003) but the nominal value added is the same as that of the base year, as in 2002, then it means the volume of fish produced or caught in 2002 is more than the 2003 catch.

In some cases it is difficult to get a continuous price series for a particular activity or industry and the alternative is to use the RPI movements. This is done for the wholesale and retail value-added.

## **12. How to make future estimates or forecasts of GDP**

Making GDP projections or forecasts is not usually done by staff of the NSO but sometimes people (including the IMF and other international or regional agencies) make their own projections or forecasts. This section therefore is not meant to document what has been done or what the NSO is currently doing in respect of GDP projections or forecasts but the focus here is more on how one could come up with crude estimates of GDP in future years. The techniques involved in forecasting can be very simple and straightforward but it can also be very complex and complicated. This section is not meant to document any method in detail, rather the intention here is simply to mention or point out some forecasting methods, and the reader is encouraged to consult proper documents or books that describe such techniques in detail.

Which forecasting technique to use depends very much on the resources and skills of the people in the office and while there is a temptation to go for the more advanced technique it is useful to recall here the problems faced by economists in the US when they tried to use very sophisticated structural equations involving different causal factors—their forecasted values were often very different with the actual GDP figures subsequently calculated. In other words, the projected or forecasted GDP figures were significantly wrong. This prompted Christopher Simms to come up with another forecasting method known as the vector auto-regression or simply the VAR. This method simply assumes that the future is determined by the past, in other words, the GDP of next year depends on this year's GDP, and on yesterday GDP, and on the previous years GDP, etc., etc. This technique basically regresses GDP on past values of GDP—hence the term auto-regression. Although many argue that this approach lacks structure the forecasted values turns out to be much closer to the actual values than the ones obtained through the more elaborate structural equations. In short this shows that sometimes very elaborate and sophisticated techniques do not necessarily produce the required results. In other words, in some instances simple but common sense forecasting could yield better results.

Below is a list of some of the forecasting techniques that people have used to estimate or forecast future GDP figures. It is not meant to be an exhaustive list nor a detailed description of the methods.

### **1. Using past growth rates to estimate future GDP figures**

This technique simply involves calculating growth rates in past years and using these to predict future GDP. For instance, if in the past few years the growth rate is about 5%, then one can assume that next year will grow by the same amount (i.e. 5%) as well—unless of course there is strong evidence or compelling reason to change the estimate, such as the change in investment policy, or the discovery of oil or other high priced minerals, or the change in weather patterns, etc. For



instance in Kiribati the copra industry depends very much on the weather pattern, and likewise the fishing cycle, especially for overseas boats fishing in Kiribati territorial waters, the *El Nino* effects is very important.

Some may use moving averages, say three or five year moving averages to smooth out irregularities or outliers.

## **2. Using graphs and regression equations to predict future values**

In this method a regression equation is used, and this can be derived using EXCEL or other specialized econometric packages such as Microfit, Eviews, etc. Once an equation is derived then one can easily plug in the year to be forecasted in order to obtain future GDP estimates. In general this method requires a long time series so that a proper trend and equation can be obtained. A single equation can be used or a set of equations, such as in the vector autoregression (VAR) approach. While the method may seem straightforward in actual fact the process or the procedure is fairly advanced and complicated. For instance before running the regression, one should apply first the unit root test to see whether the data is stationary or not, then other checks like structural breaks, cointegration tests, etc. have to be applied as well. These will not be explained here because of time and space constraint however the reader is encouraged to consult the relevant econometric texts for more detailed explanation.

There is ongoing research on better forecasting models but most of these need appropriate computer packages, some of which are fairly expensive. The current resources in Kiribati, at least in the NSO, is fairly limited and therefore it is very unlikely that such sophisticated packages could be purchased.

## **3. Using assorted indicators**

Sometimes one simply starts from the last GDP estimate available and then using relevant and available indicators, like exports volume, price movements, weather patterns and forecasts, fishing activity, construction index, etc, an estimate of future GDP can be made. This requires that the person or agency involved in the forecasting knows or has access to such information. The National Planning Office and the National Statistics Office should have some of these information.

### **13. Future direction**

It should be obvious from the discussions in this manual that the full national accounts system is a very large and complex system and while good progress has been made on one of the accounts, namely the production account (and the derivation of GDP), there is more work to be done. In view of the existing capacity and the capability in the NSO, it is likely that the work will continue for the next few years on the estimation of the GDP but perhaps going on to the other approaches as well, such as the income approach and the expenditure approach. However the immediate tasks would be to update the current series using more recent information and refining the estimates of the informal and subsistence sector. Further on, the expenditure approach (to obtain GDP) will be attempted and this should provide the opportunity to cross-check or validate the GDP estimates from the production side. In the medium term, the work on the income and outlay accounts and the capital or accumulation accounts would start. In any case the progress is very much dependent on the number of staff (and financial resources) assigned to the national accounts and on the availability of data from the sources. If concerted effort is made to improve the national accounts, including good support from international agencies and consultants, then Kiribati may be in a position to adopt the full SNA within the next five years—otherwise ten years or more would be a more realistic timeframe. Although many people are aware of GDP, very few people know that it is one of the major economic aggregates of the national accounts system and therefore it is a worthwhile exercise to ‘promote’ the national accounts system to government officials, policy makers, and researchers—this could be in the form of training workshops, seminars, etc. Lastly one of the prerequisites for transparency, accountability, and good governance is the provision of comprehensive and reliable statistics and the availability of GDP and other major economic aggregates therefore can be considered as a testimony of Kiribati resolve to follow internationally accepted norms and good practices.

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<b>Table 1: Formal GDP in Current Prices (\$A'000) - Revised June 2011</b>												
<b>Industry</b>	<b>1979</b>	<b>1980</b>	<b>1981</b>	<b>1982</b>	<b>1983</b>	<b>1984</b>	<b>1985</b>	<b>1986</b>	<b>1987</b>	<b>1988</b>	<b>1989</b>	<b>1990</b>
<b>Agriculture and Fishing</b>	<b>3,507</b>	<b>919</b>	<b>983</b>	<b>271</b>	<b>2,010</b>	<b>5,967</b>	<b>2,367</b>	<b>175</b>	<b>1,027</b>	<b>4,957</b>	<b>2,735</b>	<b>-303</b>
copra society	939	-1,466	-1,809	-1,222	379	2,492	730	-1,071	-496	118	-856	-1,668
copra cutters	2,529	2,319	2,750	1,879	1,244	2,918	1,786	1,115	1,904	4,086	2,839	1,191
formal fishing	39	66	42	-386	387	557	-149	131	-403	737	687	-59
seaweed growers									10	13	48	213
seaweed co.									12	3	17	20
Mining and Quarrying												
Manufacturing	-22	63	144	103	147	132	185	160	95	228	203	374
Electricity, Gas & Water Supply	460	283	347	336	560	752	722	612	876	841	759	849
Construction	1,101	975	1,035	994	765	782	1,070	1,560	1,455	920	1,246	1,093
Wholesale & Retail trade	2,408	3,089	3,266	4,148	3,069	2,808	3,111	3,446	3,877	4,888	4,744	5,026
Hotel & Restaurants	253	303	266	365	535	648	641	764	966	739	922	1,097
Transport and Storage	1,515	2,355	2,269	4,532	3,662	3,682	3,991	4,408	3,290	4,118	3,495	3,847
Communications	30	35	40	50	55	60	-287	36	583	735	1,167	1,181
Financial Intermediation	165	129	618	675	606	869	1,464	1,933	1,976	1,667	1,204	1,258
Real Estate (KHC,rented houses)												
Business Services												
<b>Government sector</b>	<b>6,155</b>	<b>5,320</b>	<b>5,646</b>	<b>5,161</b>	<b>6,152</b>	<b>6,338</b>	<b>6,578</b>	<b>6,461</b>	<b>7,244</b>	<b>7,571</b>	<b>8,617</b>	<b>8,909</b>
Other Community, Social & Persc	59	88	75	121	151	153	190	206	280	406	323	370
Less imputed bank service charge	-114	-111	-572	-643	-496	-832	-1,211	-1,602	-1,554	-1,110	-1,626	-1,883
<b>total</b>	<b>15,517</b>	<b>13,448</b>	<b>14,117</b>	<b>16,113</b>	<b>17,216</b>	<b>21,359</b>	<b>18,821</b>	<b>18,159</b>	<b>20,115</b>	<b>25,960</b>	<b>23,789</b>	<b>21,818</b>
Plus taxes on products	3,831	3,758	3,804	3,765	3,519	3,776	4,142	4,700	5,821	5,783	5,836	6,375
less subsidies	-254	-371	-631	-591	-437	-423	-439	-431	-429	-584	-496	-497
<b>GDP at market prices</b>	<b>19,094</b>	<b>16,835</b>	<b>17,290</b>	<b>19,287</b>	<b>20,298</b>	<b>24,712</b>	<b>22,524</b>	<b>22,428</b>	<b>25,507</b>	<b>31,159</b>	<b>29,129</b>	<b>27,696</b>

<b>Table 1: Formal GDP in Current Prices (\$A'000) - Revised June 2011</b>											
<b>Industry</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	
Agriculture and Fishing	2,101	2,660	1,939	3,280	2,894	3,124	2,084	3,942	4,714	786	
copra society	-1,398	-1,140	-1,426	-743	-1,845	-775	-555	-1,487	-1,107	-2,685	
copra cutters	2,551	3,227	2,790	3,644	4,106	3,544	2,066	4,956	5,035	2,530	
formal fishing	601	458	314	236	621	16	377	177	85	90	
seaw eed grow ers	337	111.5	68	130.4	203.9	411.2	369.2	289.6	343.2	574.4	
seaw eed co.	10	3	193	12	-192	-72	-173.8	6.5	358.1	276.9	
Mining and Quarrying	40	19	18	22	24	24	27	88	99	117	
Manufacturing	270	89	280	321	536	475	468	560	938	1,037	
Electricity, Gas & Water Supply	737	911	1,437	1,024	819	1,248	862	1,356	1,893	1,176	
Construction	1,988	969	887	1,082	1,217	1,180	1,371	4,378	4,960	5,829	
Wholesale & Retail trade	5,605	6,379	5,735	6,116	6,823	5,723	5,799	9,496	7,099	9,285	
Hotel & Restaurants	1,050	1,259	1,265	1,309	1,552	1,142	1,523	2,171	2,735	2,136	
Transport and Storage	3,934	4,277	4,720	5,881	4,442	4,580	6,408	7,187	7,773	8,472	
Communications	1,499	1,807	2,058	2,678	2,765	2,872	3,056	3,225	3,324	5,319	
Financial Intermediation	2,460	1,953	2,236	2,042	2,569	2,934	3,295	4,458	4,837	4,058	
Real Estate (KHC,rented houses)	980	831	769	1,218	1,180	1,464	1,730	1,522	1,591	1,763	
Business Services	546	589	608	661	662	712	749	894	934	932	
<b>Government sector</b>	<b>10,378</b>	<b>10,942</b>	<b>11,552</b>	<b>12,877</b>	<b>13,813</b>	<b>21,056</b>	<b>22,003</b>	<b>22,299</b>	<b>25,265</b>	<b>24,842</b>	
Other Community, Social & Personal Services	1,162	1,352	1,408	1,655	1,720	1,780	1,867	1,934	2,010	2,022	
Less imputed bank service charges	-1,523	-1,131	-949	-875	-1,274	-1,379	-1,331	-1,349	-1,519	-2,143	
<b>total</b>	<b>31,227</b>	<b>32,906</b>	<b>33,963</b>	<b>39,290</b>	<b>39,742</b>	<b>46,936</b>	<b>49,910</b>	<b>62,162</b>	<b>66,653</b>	<b>65,630</b>	
Plus taxes on products	7,122	7,672	8,820	9,243	11,277	11,599	11,334	13,684	14,708	15,532	
less subsidies	-3,519	-4,388	-4,212	-5,153	-6,897	-5,861	-3,224	-6,347	-10,325	-2,025	
<b>GDP at market prices</b>	<b>34,830</b>	<b>36,190</b>	<b>38,571</b>	<b>43,380</b>	<b>44,122</b>	<b>52,674</b>	<b>58,020</b>	<b>69,499</b>	<b>71,036</b>	<b>79,137</b>	

<b>Table 1: Formal GDP in Current Prices (\$A'000) - Revised June 2011</b>											
<b>Industry</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	
Agriculture and Fishing	-103	3,412	6,846	6,669	3,352	4,189	6,349	4,995	3,203	2,750	
copra society	-3,229	484	1,500	-184	313	-285	2,380	966	241	205	
copra cutters	2,835	2,715	4,910	6,291	3,159	4,940	4,492	4,659	3,601	3,260	
formal fishing	-482	123	376	363	-404	-725	-730	-750	-763	-777	
seaweed growers	525	239	293	235	322	300	268	200	164	82	
seaweed co.	247.6	-148	-232.9	-35.9	-37.8	-41	-60	-80	-40	-20	
Mining and Quarrying	105	100	94	66	44	62	61	44	49	46	
Manufacturing	928	1,226	689	970	1,544	1,494	2,939	2,250	834	829	
Electricity, Gas & Water Supply	2,096	2,108	2,105	1,530	666	461	306	1,860	1,765	1,469	
Construction	5,263	4,985	4,711	3,303	2,218	3,094	3,031	2,197	2,445	2,276	
Wholesale & Retail trade	9,713	10,995	9,949	7,460	7,017	4,184	6,869	10,210	8,719	10,741	
Hotel & Restaurants	1,941	1,505	1,070	929	940	1,149	1,133	1,093	999	125	
Transport and Storage	7,378	6,853	8,842	7,703	9,175	6,505	8,188	8,737	10,319	10,627	
Communications	5,849	5,669	5,273	4,610	6,555	6,652	7,018	6,869	6,478	5,992	
Financial Intermediation	5,294	5,084	6,788	7,594	9,608	10,353	9,560	11,172	11,896	9,817	
Real Estate (KHC, rented houses)	1,807	2,121	2,194	2,251	2,418	2,530	2,650	2,779	2,918	3,068	
Business Services	982	1,042	1,128	1,084	1,129	1,149	1,242	1,362	1,329	1,280	
Government sector	28,679	31,144	34,620	35,579	37,726	42,467	42,371	44,424	42,091	41,199	
Other Community, Social & Personal Services	2,141	2,220	2,302	2,322	2,357	2,365	2,510	2,505	2,764	2,746	
Less imputed bank service charges	-2,534	-2,588	-3,140	-3,340	-4,114	-5,624	-5,367	-6,443	-6,877	-5,658	
<b>total</b>	<b>69,540</b>	<b>75,876</b>	<b>83,471</b>	<b>78,731</b>	<b>80,635</b>	<b>81,031</b>	<b>88,859</b>	<b>94,054</b>	<b>88,932</b>	<b>87,306</b>	
Plus taxes on products	15,798	18,412	19,455	19,484	18,595	17,943	20,516	18,614	17,758	20,252	
less subsidies	-3,993	-3,200	-5,526	-4,736	-6,415	-6,007	-8,528	-9,962	-7,801	-8,361	
<b>GDP at market prices</b>	<b>81,345</b>	<b>91,088</b>	<b>97,400</b>	<b>93,479</b>	<b>92,815</b>	<b>92,967</b>	<b>100,847</b>	<b>102,706</b>	<b>98,889</b>	<b>99,197</b>	

<b>Table 2: GDP in Current Prices (\$A'000) - Revised June 2011</b>										
<b>Industry</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>
Agriculture, Forestry, Hunting & Fishing	16,267	17,933	18,224	19,905	19,430	19,923	19,511	23,075	24,619	21,100
<i>Agriculture</i>	11,433	12,618	12,151	13,950	13,142	13,816	12,955	15,841	16,957	13,166
<i>Fishing</i>	4,487	5,200	5,812	5,812	6,277	5,768	6,360	6,938	6,961	7,083
<i>Seaweed</i>	347	115	261	142	12	339	195	296	701	851
Mining and Quarrying	40	19	18	22	24	24	27	88	99	117
Manufacturing	4,052	3,963	4,240	4,361	4,527	4,528	4,663	4,974	5,441	5,629
Electricity, Gas & Water Supply	737	911	1,437	1,024	819	1,248	862	1,356	1,893	1,176
Construction	1,988	969	887	1,082	1,217	1,180	1,371	4,378	4,960	5,829
Wholesale & Retail trade	5,605	6,379	5,735	6,116	6,823	5,723	5,799	9,496	7,099	9,285
Hotel & Restaurants	1,050	1,259	1,265	1,309	1,552	1,142	1,523	2,171	2,735	2,136
Transport and Storage	3,934	4,277	4,720	5,881	4,442	4,580	6,408	7,187	7,773	8,472
Communications	1,499	1,807	2,058	2,678	2,765	2,872	3,056	3,225	3,324	5,319
Financial Intermediation	2,460	1,953	2,236	2,042	2,569	2,934	3,295	4,458	4,837	4,058
Real Estate	980	831	769	1,218	1,180	1,464	1,730	1,522	1,591	1,763
Owner Occupied Dwellings	8,474	10,472	10,588	10,705	10,824	10,943	11,271	11,458	11,656	11,753
Business Services	546	589	608	661	662	712	749	894	934	932
Public Administration and Defence	6,157	6,323	6,654	7,719	7,913	12,548	13,241	13,879	15,237	14,375
Education	2,718	2,992	3,206	3,311	3,400	5,508	5,533	6,042	6,468	6,735
Health	1,503	1,627	1,692	1,847	2,500	3,000	3,229	2,377	3,560	3,733
Other Community, Social & Personal Services	1,162	1,352	1,408	1,655	1,720	1,780	1,867	1,934	2,010	2,022
Less imputed bank service charges	(1,523)	(1,131)	(949)	(875)	(1,274)	(1,379)	(1,331)	(1,349)	(1,519)	(2,143)
Plus taxes on products	7,122	7,672	8,820	9,243	11,277	11,599	11,334	13,684	14,708	15,532
less subsidies	(3,519)	(4,388)	(4,212)	(5,153)	(6,897)	(5,861)	(3,224)	(6,347)	(10,325)	(2,025)
<b>GDP at market prices</b>	<b>61,252</b>	<b>65,810</b>	<b>69,404</b>	<b>74,750</b>	<b>75,473</b>	<b>84,469</b>	<b>90,913</b>	<b>104,503</b>	<b>107,100</b>	<b>115,796</b>
<b>of which:</b>										
<b>TOTAL "Formal Sector"</b>	<b>34,802</b>	<b>36,172</b>	<b>38,554</b>	<b>43,345</b>	<b>44,101</b>	<b>52,650</b>	<b>57,963</b>	<b>69,377</b>	<b>70,848</b>	<b>78,977</b>
<b>TOTAL "Informal Sector"</b>	<b>26,451</b>	<b>29,638</b>	<b>30,850</b>	<b>31,405</b>	<b>31,373</b>	<b>31,819</b>	<b>32,950</b>	<b>35,127</b>	<b>36,252</b>	<b>36,819</b>
<b>Informal Sector comprising:</b>										
<b>Monetary Activities</b>	<b>5,970</b>	<b>6,390</b>	<b>6,775</b>	<b>6,921</b>	<b>6,876</b>	<b>6,988</b>	<b>7,278</b>	<b>7,959</b>	<b>8,244</b>	<b>8,380</b>
other cash agriculture	2,096	2,148	2,200	2,253	2,219	2,253	2,334	2,523	2,657	2,716
cash fishing	1,457	1,778	2,061	2,091	2,121	2,157	2,244	2,535	2,578	2,622
mining	40	19	18	22	24	24	27	88	99	117
Household production for sale of food, beverages, handicrafts, etc.	2,293	2,349	2,406	2,465	2,427	2,464	2,553	2,689	2,767	2,815
domestic servants	83	95	90	90	85	90	120	125	142	110
<b>Non-monetary Activities</b>	<b>20,481</b>	<b>23,248</b>	<b>24,075</b>	<b>24,485</b>	<b>24,496</b>	<b>24,831</b>	<b>25,673</b>	<b>27,167</b>	<b>28,008</b>	<b>28,440</b>
subsistence agriculture	8,184	8,384	8,588	8,796	8,662	8,794	9,110	9,849	10,372	10,604
subsistence fishing	2,429	2,964	3,436	3,485	3,535	3,595	3,739	4,226	4,297	4,371
Household production for own consumption of food, beverages, handicrafts, etc.	1,394	1,428	1,463	1,499	1,476	1,498	1,552	1,635	1,683	1,711
owner-occupied dwellings	8,474	10,472	10,588	10,705	10,824	10,943	11,271	11,458	11,656	11,753

**Table 2: GDP in Current Prices (\$A'000) - Revised June 2011**

<b>Industry</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
Agriculture, Forestry, Hunting & Fishing	23,117	27,065	31,735	31,768	29,828	30,571	34,168	38,257	36,884	36,022
<i>Agriculture</i>	14,281	18,150	22,437	22,182	19,991	20,899	24,366	27,969	26,405	25,415
<i>Fishing</i>	8,063	8,825	9,238	9,387	9,552	9,413	9,594	10,168	10,355	10,545
<i>Seaweed</i>	773	91	61	199	284	259	208	120	124	62
Mining and Quarrying	105	100	94	66	44	62	61	44	49	46
Manufacturing	5,784	6,153	5,884	6,155	6,905	6,934	8,482	8,623	7,973	7,906
Electricity, Gas & Water Supply	2,096	2,108	2,105	1,530	666	461	306	1,860	1,765	1,469
Construction	5,263	4,985	4,711	3,303	2,218	3,094	3,031	2,197	2,445	2,276
Wholesale & Retail trade	9,713	10,995	9,949	7,460	7,017	4,184	6,869	10,210	8,719	10,741
Hotel & Restaurants	1,941	1,505	1,070	929	940	1,149	1,133	1,093	999	125
Transport and Storage	7,378	6,853	8,842	7,703	9,175	6,505	8,188	8,737	10,319	10,627
Communications	5,849	5,669	5,273	4,610	6,555	6,652	7,018	6,869	6,478	5,992
Financial Intermediation	5,294	5,084	6,788	7,594	9,608	10,353	9,560	11,172	11,896	9,817
Real Estate	1,807	2,121	2,194	2,251	2,418	2,530	2,650	2,779	2,918	3,068
Owner Occupied Dwellings	12,212	12,525	12,851	13,086	13,368	13,638	13,934	14,231	14,529	14,836
Business Services	982	1,042	1,128	1,084	1,129	1,149	1,242	1,362	1,329	1,280
Public Administration and Defence	15,430	16,805	19,080	19,712	21,894	26,525	26,489	27,697	25,423	25,047
Education	8,900	9,752	10,335	10,584	10,614	11,124	11,062	11,577	11,987	11,472
Health	4,349	4,586	5,205	5,282	5,218	4,818	4,820	5,150	4,681	4,681
Other Community, Social & Personal Services	2,141	2,220	2,302	2,322	2,357	2,365	2,510	2,505	2,764	2,746
Less imputed bank service charges	(2,534)	(2,588)	(3,140)	(3,340)	(4,114)	(5,624)	(5,367)	(6,443)	(6,877)	(5,658)
Plus taxes on products	15,798	18,412	19,455	19,484	18,595	17,943	20,516	18,614	17,758	20,252
less subsidies	(3,993)	(3,200)	(5,526)	(4,736)	(6,415)	(6,007)	(8,528)	(9,962)	(7,801)	(8,361)
<b>GDP at market prices</b>	<b>121,634</b>	<b>132,194</b>	<b>140,336</b>	<b>136,848</b>	<b>138,021</b>	<b>138,426</b>	<b>148,142</b>	<b>156,572</b>	<b>154,238</b>	<b>154,382</b>
<b>of which:</b>										
<b>TO TAL "Formal Sector"</b>	<b>81,241</b>	<b>90,988</b>	<b>97,329</b>	<b>93,420</b>	<b>92,763</b>	<b>92,882</b>	<b>100,742</b>	<b>102,588</b>	<b>98,746</b>	<b>99,059</b>
<b>TO TAL "Informal Sector"</b>	<b>40,393</b>	<b>41,206</b>	<b>43,007</b>	<b>43,428</b>	<b>45,258</b>	<b>45,544</b>	<b>47,400</b>	<b>53,985</b>	<b>55,492</b>	<b>55,323</b>
<b>Informal Sector comprising:</b>										
<b>Monetary Activities</b>	<b>9,365</b>	<b>9,522</b>	<b>9,949</b>	<b>9,995</b>	<b>10,534</b>	<b>10,622</b>	<b>11,026</b>	<b>12,762</b>	<b>13,381</b>	<b>13,290</b>
other cash agriculture	2,993	3,049	3,268	3,278	3,369	3,313	3,568	4,556	4,601	4,476
cash fishing	3,204	3,263	3,323	3,384	3,733	3,802	3,872	4,094	4,169	4,246
mining	105	100	94	66	44	62	61	44	49	46
Household production for sale of food, beverages, handicrafts, etc.	2,947	2,990	3,139	3,141	3,260	3,318	3,390	3,914	4,393	4,354
domestic servants	115	120	124	126	127	128	136	153	169	168
<b>Non-monetary Activities</b>	<b>31,028</b>	<b>31,684</b>	<b>33,058</b>	<b>33,433</b>	<b>34,724</b>	<b>34,923</b>	<b>36,375</b>	<b>41,222</b>	<b>42,110</b>	<b>42,034</b>
subsistence agriculture	11,683	11,903	12,759	12,797	13,151	12,931	13,927	17,787	17,961	17,474
subsistence fishing	5,341	5,439	5,539	5,640	6,222	6,337	6,453	6,824	6,949	7,077
Household production for own consumption of food, beverages, handicrafts, etc.	1,792	1,818	1,909	1,910	1,982	2,017	2,061	2,380	2,671	2,647
owner-occupied dwellings	12,212	12,525	12,851	13,086	13,368	13,638	13,934	14,231	14,529	14,836



<b>Table 3: GDP in Constant 2006 Prices (\$A'000) - Revised June 2011</b>										
<b>Industry</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>
Agriculture, Forestry, Hunting & Fishing	29,158	32,170	32,366	32,445	35,391	30,397	28,960	31,581	32,184	30,180
<i>Agriculture</i>	20,735	20,156	20,760	20,519	22,632	18,101	16,205	19,356	19,849	17,369
<i>Fishing</i>	7,894	11,789	11,499	11,545	12,415	11,682	12,278	11,840	11,890	12,055
<i>Seaweed</i>	528	225	108	381	344	614	478	384	445	757
Mining and Quarrying	71	35	30	37	32	31	36	114	129	151
Manufacturing	4,594	4,475	4,702	4,776	5,047	5,064	5,124	5,273	5,648	5,993
Electricity, Gas & Water Supply	162	165	171	184	185	180	201	232	260	293
Construction	3,560	1,735	1,513	1,845	1,579	1,531	1,779	5,679	6,434	7,562
Wholesale & Retail trade	5,605	6,316	5,623	5,938	6,823	5,733	5,702	9,008	6,618	6,465
Hotel & Restaurants	795	805	828	817	904	927	949	970	992	1,014
Transport and Storage	5,136	5,402	6,063	7,224	5,357	5,473	7,550	8,366	8,957	6,460
Communications	2,896	2,957	3,233	3,381	3,475	3,799	3,930	4,118	4,266	4,469
Financial Intermediation	1,554	1,436	1,854	1,829	2,099	2,546	3,328	4,907	5,440	4,105
Real Estate	1,014	852	780	1,224	1,221	1,518	1,788	1,564	1,625	1,807
Owner Occupied Dwellings	10,895	11,015	11,137	11,261	11,385	11,511	11,639	11,767	11,898	12,029
Business Services	805	787	796	841	838	850	882	1,016	1,042	992
Public Administration and Defence	11,026	11,323	11,347	13,163	10,265	16,278	17,177	18,005	19,766	18,647
Education	4,867	5,358	5,467	5,646	4,411	7,146	7,177	7,838	8,391	8,736
Health	2,691	2,914	2,885	3,150	3,243	3,891	4,189	3,084	4,618	4,842
Other Community, Social & Personal Services	1,162	1,339	1,380	1,607	1,720	1,783	1,836	1,835	1,874	2,190
Less imputed bank service charges	(916)	(820)	(781)	(781)	(1,034)	(1,180)	(1,345)	(1,500)	(1,725)	(2,170)
Plus taxes on products	7,122	7,596	8,647	8,974	11,277	11,619	11,146	12,981	13,712	16,923
less subsidies	(3,519)	(4,345)	(4,129)	(5,003)	(6,897)	(5,871)	(3,170)	(6,021)	(9,625)	(2,206)
<b>GDP at market prices</b>	<b>88,679</b>	<b>91,514</b>	<b>93,912</b>	<b>98,558</b>	<b>97,319</b>	<b>103,225</b>	<b>108,876</b>	<b>120,817</b>	<b>122,502</b>	<b>128,483</b>
<b>of which:</b>										
<b>"Formal Sector"</b>	<b>49,105</b>	<b>52,805</b>	<b>54,543</b>	<b>59,843</b>	<b>55,626</b>	<b>65,004</b>	<b>70,171</b>	<b>81,447</b>	<b>82,504</b>	<b>87,888</b>
<b>"Informal Sector"</b>	<b>39,574</b>	<b>38,709</b>	<b>39,369</b>	<b>38,715</b>	<b>41,693</b>	<b>38,221</b>	<b>38,704</b>	<b>39,370</b>	<b>39,998</b>	<b>40,595</b>
<b>Informal Sector comprising:</b>										
<b>Monetary Activities</b>	<b>9,058</b>	<b>8,881</b>	<b>9,027</b>	<b>8,918</b>	<b>9,540</b>	<b>8,865</b>	<b>9,021</b>	<b>9,250</b>	<b>9,433</b>	<b>9,595</b>
other cash agriculture	3,360	3,129	3,205	3,010	3,556	2,778	2,798	2,846	2,895	2,941
cash fishing	2,960	3,002	3,045	3,089	3,133	3,186	3,241	3,296	3,352	3,409
mining	71	35	30	37	32	31	36	114	129	151
Household production for sale of food, beverages, handicrafts, etc.	2,583	2,620	2,658	2,696	2,734	2,781	2,828	2,876	2,925	2,975
domestic servants	83	94	88	87	85	90	118	119	132	119
<b>Non-monetary Activities</b>	<b>30,516</b>	<b>29,829</b>	<b>30,342</b>	<b>29,797</b>	<b>32,153</b>	<b>29,356</b>	<b>29,684</b>	<b>30,120</b>	<b>30,565</b>	<b>31,000</b>
subsistence agriculture	13,117	12,216	12,513	11,749	13,883	10,843	10,924	11,111	11,302	11,480
subsistence fishing	4,934	5,004	5,076	5,148	5,222	5,311	5,401	5,493	5,587	5,682
Household production for own consumption of food, beverages, handicrafts, etc.	1,571	1,593	1,616	1,639	1,662	1,691	1,719	1,749	1,778	1,809
Owner-occupied dwellings	10,895	11,015	11,137	11,261	11,385	11,511	11,639	11,767	11,898	12,029

<b>Table 3: GDP in Constant 2006 Prices (\$A'000) - Revised June 2011</b>										
<b>Industry</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
Agriculture, Forestry, Hunting & Fishing	29,953	29,921	33,117	34,173	30,946	32,861	32,945	33,637	32,592	30,292
<i>Agriculture</i>	18,219	17,692	20,435	21,358	18,836	20,899	20,788	21,249	20,070	20,110
<i>Fishing</i>	11,129	11,954	12,429	12,613	11,832	11,703	11,926	12,167	12,390	10,154
<i>Seaweed</i>	605	275	253	203	278	259	231	222	132	27
Mining and Quarrying	119	113	106	75	50	62	61	44	49	46
Manufacturing	5,952	6,310	5,888	6,247	6,894	6,934	8,344	7,556	6,375	6,490
Electricity, Gas & Water Supply	306	283	363	419	433	461	486	462	435	362
Construction	5,944	5,630	5,320	3,730	2,505	3,094	3,031	2,197	2,445	2,276
Wholesale & Retail trade	6,389	7,498	6,084	4,076	5,409	4,184	4,000	4,109	4,007	4,996
Hotel & Restaurants	1,047	1,079	1,102	1,109	1,142	1,149	1,740	1,638	1,749	1,627
Transport and Storage	5,397	5,928	6,179	5,240	6,520	6,505	6,119	5,715	5,486	5,147
Communications	4,548	4,916	5,172	5,560	5,640	6,652	6,789	6,925	7,068	7,232
Financial Intermediation	5,778	5,661	7,530	8,033	9,977	10,353	9,005	9,547	9,547	9,547
Real Estate	1,820	2,126	2,188	2,251	2,418	2,530	2,650	2,779	2,918	3,068
Owner Occupied Dwellings	12,283	12,543	12,808	13,079	13,355	13,638	13,926	14,220	14,521	14,828
Business Services	970	1,010	1,074	1,063	1,100	1,149	1,156	1,165	1,126	1,110
Public Administration and Defence	17,427	18,980	21,549	22,263	24,727	26,525	26,489	27,697	25,423	25,047
Education	10,052	11,014	11,672	11,954	11,987	11,124	11,062	11,577	11,987	11,472
Health	4,912	5,180	5,878	5,966	5,893	4,818	4,820	5,150	4,681	4,681
Other Community, Social & Personal Services	2,187	2,198	2,239	2,279	2,321	2,365	2,408	2,165	2,205	2,245
Less imputed bank service charges	(2,784)	(2,912)	(3,481)	(3,534)	(4,278)	(5,624)	(5,042)	(5,492)	(5,492)	(5,492)
Plus taxes on products	16,073	18,404	18,732	19,224	18,255	17,943	19,451	14,905	13,653	15,688
less subsidies	(4,062)	(3,199)	(5,321)	(4,673)	(6,298)	(6,007)	(8,085)	(7,977)	(5,998)	(6,477)
<b>GDP at market prices</b>	<b>124,309</b>	<b>132,683</b>	<b>138,201</b>	<b>138,535</b>	<b>138,997</b>	<b>140,716</b>	<b>141,354</b>	<b>138,020</b>	<b>134,777</b>	<b>134,186</b>
<b>of which:</b>										
"Formal Sector"	<b>82,681</b>	<b>90,761</b>	<b>95,125</b>	<b>94,907</b>	<b>94,412</b>	<b>95,172</b>	<b>94,925</b>	<b>90,719</b>	<b>86,565</b>	<b>85,053</b>
"Informal Sector"	<b>41,628</b>	<b>41,922</b>	<b>43,076</b>	<b>43,628</b>	<b>44,584</b>	<b>45,544</b>	<b>46,429</b>	<b>47,301</b>	<b>48,213</b>	<b>49,134</b>
<b>Informal Sector comprising:</b>										
<b>Monetary Activities</b>	<b>9,792</b>	<b>9,861</b>	<b>10,107</b>	<b>10,210</b>	<b>10,401</b>	<b>10,622</b>	<b>10,817</b>	<b>10,997</b>	<b>11,203</b>	<b>11,405</b>
other cash agriculture	3,055	3,010	3,138	3,147	3,234	3,313	3,376	3,438	3,501	3,565
cash fishing	3,471	3,535	3,600	3,666	3,733	3,802	3,872	3,943	4,015	4,089
mining	119	113	106	75	50	62	61	44	49	46
Household production for sale of food, beverages, handicrafts, etc.	3,029	3,085	3,142	3,199	3,258	3,318	3,378	3,440	3,504	3,568
domestic servants	118	119	121	123	125	128	130	133	135	137
<b>Non-monetary Activities</b>	<b>31,836</b>	<b>32,061</b>	<b>32,969</b>	<b>33,418</b>	<b>34,184</b>	<b>34,923</b>	<b>35,612</b>	<b>36,304</b>	<b>37,010</b>	<b>37,729</b>
subsistence agriculture	11,925	11,750	12,250	12,284	12,625	12,931	13,179	13,421	13,667	13,918
subsistence fishing	5,786	5,892	6,000	6,110	6,222	6,337	6,453	6,571	6,692	6,814
Household production for own consumption of food, beverages, handicrafts, etc.	1,842	1,876	1,910	1,945	1,981	2,017	2,054	2,092	2,130	2,169
Owner-occupied dwellings	12,283	12,543	12,808	13,079	13,355	13,638	13,926	14,220	14,521	14,828