

# **A guide to the Consumer Price Index**

## **Maldives**

2012

Price and Economic Statistics Unit

National Accounts and Economic Statistics Section

Statistics Division

Department of National Planning

## **Contents**

### **Chapter 1: Introduction**

CPI – A widely used economic indicator released monthly

CPI now comprises of 3 linked series

The guide

Acknowledgement

### **Chapter 2: What is CPI?**

Overview of the current series

How is CPI used?

The CPI basket of goods and services

The relative importance of CPI items

Collecting prices for the CPI

Changes in quality

Periodic reviews of the CPI

How does the CPI relate to me?

### **Chapter 3: Using the CPI**

Interpreting index numbers

Analysing the CPI

Some examples of using the CPI

### **Chapter 4: Calculating the CPI**

Overview

Subdividing the basket

Collecting price data

Estimation of price movements for elementary aggregates

Calculating the current cost of the basket

### **Appendix 1: CPI Basket, 2012**

### **Appendix 2: Types of goods and services priced**

### **Glossary**

## CHAPTER 1: INTRODUCTION

### CPI – A WIDELY USED ECONOMIC INDICATOR RELEASED MONTHLY

1.1 The Consumer Price Index (CPI) is an important economic indicator. It provides a general measure of changes in prices of consumer goods and services purchased by the Maldivian households. The CPI is used for a variety of purposes, such as in the development and analysis of government economic policy, the adjustment of some government benefits and in individual building contracts. Depending on its usage, the CPI directly or indirectly affects the citizens of the country.

1.2 CPI figures are produced by the Department of National Planning for each month and are released on the Monday of the last week after the end of the reference period. They appear in the publication Consumer Price Index, Maldives. In addition, all CPI results appear on the DNP website <http://www.planning.gov.mv>

### CPI NOW COMPRISES 3 LINKED SERIES

1.3 The CPI was first compiled in 1985 with the assistance of International Monetary Fund (IMF).

1.4 The CPI now comprises 3 linked indexes. The CPI originally consisted of weights from 1983. Weights were updated in 1995, 2004 and 2012.

### THE GUIDE

1.5 The purpose of this guide is to provide a broad overview of the CPI; how to use the CPI and how the CPI is calculated. It takes into account changes made with the introduction of the June 2012 rebased CPI series in December 2012 and is suitable for general users.

### ACKNOWLEDGEMENT

1.6 A consultant from International Monetary Fund, Mr. Keith Woolford assisted in the compilation of the CPI and in designing the documentation on the rebased CPI series. The overall design and the material in this publication are largely based on Australian Bureau of Statistics (ABS) – A Guide to Consumer Price Index, with local specific examples inserted where necessary.

## CHAPTER 2: WHAT IS THE CPI?

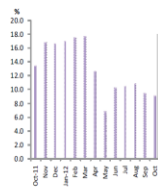
### WHAT IS THE CPI?

OCTOBER 2012

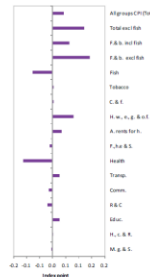
#### CONSUMER PRICE INDEX MALDIVES

TIME OF RELEASE: 3:00 PM (MALDIVES TIME) MON 26 NOV 2012

All groups CPI  
Monthly change  
(month on month)



Contribution to monthly  
change



#### INQUIRIES

For further information  
about these and related  
statistics, contact the  
Statistics Division at  
3349xxx or email  
stats@planning.gov.mv

#### KEY FIGURES

	% change	% change
All groups CPI (Total)	9.45	9.15
Total excluding fish	6.99	5.79
Food and beverages incl fish	13.78	17.90
Food and beverage excl fish	0.88	0.78
Fish	55.93	92.52
Tobacco	52.48	45.28
Clothing & footwear	18.34	9.82
Housing, water, electricity, gas & other fuels	4.81	4.99
Actual rentals for housing	5.92	5.46
Furnishing, household equip. & routine maint.	18.91	10.76
Health	-23.63	-25.20
Transport	6.00	2.18
Communication	-1.05	-0.17
Recreation & culture	4.20	0.21
Education	16.61	17.87
Hotels, cafes & Restaurants	23.67	18.77
Miscellaneous goods & Services	11.47	6.89

#### KEY POINTS

##### THE ALL GROUPS CPI

\* rose 0.05% in October 2012, compared with 0.01% in September 2012.

\* rose 9.15% through the year to the October 2012, compared with rise of 9.45% through the year to the September 2012.

##### OVERVIEW OF THE CPI MOVEMENTS

\* The most significant price rises this month were for fruits (+4.82%), fuels & lubricants (+2.73%), vegetables (+2.62%), dental services (+2.56%), maintenance & repair of personal transport equipment (+2.41%), secondary education (+1.72%) and services for the maintenance and repair of the dwelling (+1.45%).

\* The most significant price falls this month were for medical services (-5.80%), post-secondary non-tertiary education (-2.47%), equipment for the reception, recording and reproduction of sound and pictures (-1.22%) and telephone and telefax equipment (-1.21%).

### OVERVIEW OF THE JUNE 2012 = 100 SERIES OF CPI

*CPI measures price change of a  
fixed basket of goods*

2.1 This series of the Consumer Price Index, Maldives (CPI), is consistent with the previous series and has been designed as a general measure of inflation for the household sector as a whole. The CPI measures changes in the price of a fixed basket of goods and services purchased by consumers in private households.

2.2 The simplest way of thinking about CPI is to imagine a basket of goods and services comprising items bought by Maldivian households. Now imagine the basket is purchased each month. As prices change from one month to the next, so too will the total price of the basket. The CPI is simply a measure of the changes in the price of this fixed basket as the prices of items in it change.

*CPI reference population is all private households in the capital city and 4 major islands*

2.3 The CPI measures price changes relating to the spending pattern of all private households in the capital city and 4 major islands. The current CPI series represents about 41 % of all Maldivian households.

2.4 Ideally the CPI population group should encompass all households, but this is not possible due to substantial additional resources that would be required to collect prices from ALL 200 inhabited islands. Furthermore, with the current purchasing patterns existing in the islands, it would not be possible to collect prices from most of the islands, as items may not be available due to the relatively small populations dispersed across the country.

*Base period index number is 100.00*

2.5 The price of the CPI basket in the index reference base period is expressed as an index by assigning it a value of 100.00 and the prices in other periods are expressed as percentages of the price in the base period. For example, if the price of the basket had increased by 35% since the base period, then the index would be 135.00; similarly, if the price had fallen by 10% since the base period, the index would stand at 90.00. The current index reference base period for the CPI is June 2012.

*CPI does not measure price levels*

2.6 It is important to remember that the CPI measures price movements (i.e. percentage changes) and not actual price levels (Rufiya amounts). For instance, the index for condensed milk of 102.9 and the index for Milo of 100.1 in the month of August 2012 do not mean that condensed milk is more expensive than Milo. It simply means that the price of condensed milk has risen by more than the price of Milo since the base period.

*Is the CPI a cost of living index?*

2.7 The CPI frequently is called a cost-of-living index, but it differs in important ways from a complete cost-of-living measure. Both the CPI and a cost-of-living index measure the changes in prices of goods and services that are purchased by households. The CPI measures the changes in price of a fixed basket of goods and services whereas a cost-of-living index measures the change in the minimum expenditure needed to maintain a certain standard of living.

2.8 In practice, no statistical agency compile true cost-of-living measures as it is too difficult to do. A cost-of-living index requires both price and current household consumption for each period as well as an assessment of households' welfare which depends on a variety of physical and social factors that have no connection with prices.

As the CPI is intended to measure the overall inflation in prices of goods and services it is sometimes used as a proxy measure of cost of living or purchasing power.

## HOW IS THE CPI USED?

*The CPI is used as a macroeconomic indicator and for adjusting salaries, contracts and welfare payments*

*There are different price indices available*

2.9 The CPI affects almost all Maldivians because of the many ways in which it is used.

The two most common uses of the CPI are:

- As a macroeconomic indicator. The CPI, and other index series derived from CPI data, is used by the Government, central bank and businesses to monitor and evaluate levels of inflation in the Maldivian economy. Inflation and inflationary expectations play a major role in determining various aspects of Government and central banks' economic policy, and in the business and investment decisions of private firms and individuals.
- The value of many types of fixed payments such as social welfare benefits, construction contracts can be reduced over time when prices rise. The CPI may be used to adjust these payments to counter the effects of inflation. This process is referred to as 'indexation'. Indexation arrangements are also often applied to rental agreements, insurance coverage and welfare payments.

2.10 The CPI is the best known price index; but is not the ONLY one produced by DNP. Examples of other price indexes include:

- Producer Price Index
- Construction Material Index

2.11 Having determined that price index is required for a particular application it is important to carefully consider the range of available indexes and select the index which best meets the specific requirement. While DNP can provide technical and statistical guidance, it does not provide advice on indexation practices and it cannot tell users which index they should use. These are matters for users to determine.

## THE CPI BASKET OF GOODS AND SERVICES

*CPI basket based on 2009/10 HIES data*

*CPI basket includes items representative of all consumer goods and services*

*The CPI divisions*

2.12 The composition of the CPI basket is based on the pattern of household expenditure in the 'weighting base period', which is June 2012 for the new series of CPI. Information on the spending habits of the Maldivian households during 2009/2010 was obtained from the Household Income and Expenditure Survey (HIES 2009/2010) conducted by DNP. The HIES results provided the starting point for selecting the basket of goods and services priced for the CPI.

2.13 For practical reasons, the basket cannot include every item bought by households but it does include the most significant items. It is NOT necessary to include all the items people buy since many related items are subject to similar price changes. The idea is to select REPRESENTATIVE items so that the index reflects price changes for a much wider range of goods and services than is actually priced. Examples of the types of items included in the CPI basket are shown in Appendix 1.

2.14 When determining what items are to be priced for the CPI basket, various factors are taken into consideration.

Items:

- Must be representative of purchases made by the Maldivian population;
- Must have prices which can be associated with an identifiable and specific commodity or service (eg. 180gm Felivaru can fish, or cable TV charges for Basic package with 53 channels)
- Are not excluded on the basis of moral or social judgments. For example, some people may regard the use of tobacco as socially undesirable, but are included in the CPI basket because it has a significant expenditure and prices can be accurately measured.

2.15 The total basket is divided into 12 major divisions, each representing a specific set of commodities;

- Food and non-alcoholic beverages
- Tobacco & aracanut

- Clothing and footwear
- Housing, water, electricity, gas and other fuels
- Furnishing, household equipments and routine maintenance
- Health
- Transport
- Communication
- Recreation and culture
- Education
- Hotels, cafes & Restaurants
- Miscellaneous goods and services

2.16 These divisions are divided in turn into 34 sub divisions, and the sub divisions into 64 classes further divided into 108 expenditure classes. An expenditure class is a grouping of similar items, such as types of rice, fruits etc. See Appendix 2 for a full list of divisions, subdivisions, classes and expenditure classes. These are in accordance with the international classification of individual consumption according to purpose (COICOP).

## THE RELATIVE IMPORTANCE OF CPI ITEMS

2.17 The overall CPI provides a measure of the average rate of price change. In calculating an average measure of this type it is necessary to recognize that some items are more important than the others. Price changes for the more important items should have a greater influence on the average rate of price change than price changes for less important items. The relative importance of the goods and services in the CPI is determined by the relative household expenditure on each product. For example, how much more households spend on fish than on vegetables on average.

### *CPI weights*

2.18 Measures of expenditure on each of the CPI divisions, sub divisions, classes and expenditure classes are obtained primarily from the HIES. However, some adjustments are made to HIES data to account for known instances of under reporting and any other anomalies. The adjusted HIES data are then used to derive a 'weight' for each expenditure class.

2.19 The CPI weights reflect the relative expenditures of the population group as a whole and not those of any particular type or size of household. The weights reflect average expenditure of households and not the expenditure of an 'average household'. CPI relative weights for the COICOP groups are shown in Appendix 2.



*Basket is fixed in terms of underlying quantities at expenditure classes*

2.20 Although the weights are expressed in terms of expenditure shares, it is not the expenditure shares (where expenditure is given by the product of quantity and price) that are held constant (or fixed) from period to period. What are held constant are the quantities of products underpinning these expenditures such as the number of litres of petrol purchase each period on average by households. Weights are presented in expenditure terms because it is not possible to present quantity weights in a meaningful way e.g. the quantity of health services. The relative expenditure shares of items will change over time in response to changes in relative prices.

*Weights below the expenditure class can be varied*

2.21 While the implicit quantity weights are held constant at the expenditure class level, the weights of items within an expenditure class (eg; different types of breads) can be varied between periodic reviews to reflect changes in purchasing patterns. Any weight changes are introduced into the CPI in such a way as to not affect the level of the index.

*Update of fixed weights*

2.22 The average household monthly expenditure weights for the CPI expenditure classes are updated at five-yearly intervals with the timing linked to the availability of HIES data. The introduction of new weights resulting from these updates is released as a new CPI series. Updating the weights is a key objective of the overall CPI process.

## **COLLECTING PRICES FOR THE CPI**

2.23 The collection of prices in the selected islands are carried out by trained statistics staff of DNP, stationed in the islands, while some prices are collected through administrative records and special surveys.

*CPI goods and services priced at many different types of outlets*

2.24 Prices are collected in retail outlets where most households purchase goods and services. This involves collecting prices from many sources such as supermarkets and corner shops, restaurants and cafés, schools and educational institutions and other business entities and administrative offices. Prices are collected largely via personal visits, telephone and internet as appropriate.

*CPI is based on about 7,000 price quotations each month*

2.25 Prices for items such as electricity, piped water and telephone services are collected from the authorities concerned. Information on rent is obtained from a combination of currently occupied rented dwellings and newly advertised rentable dwellings. In total around 20 price quotations are obtained per month.

2.26 The frequency of price collection by item varies as necessary to obtain reliable price measures. Prices of some volatile items (i.e. their prices may vary many times each month) and for their prices, frequent observations are necessary to estimate a reliable average monthly price. Prices are collected two times a week for fish and fish products to account for its volatility.

2.27 For most other items, price volatility is not a problem (so far). There are few items whose prices are changed at frequent intervals, for example petrol where prices are set in line with the international prices (largely). In these cases frequency of price collection is modified accordingly.

*Prices collected are what people actually pay*

2.28 The prices used in the CPI are those that any member of the public would pay to purchase the specific good or service. Any taxes levied on goods and services (such as GST) are included in the CPI price. Similarly, prices include any subsidy or assistance provided directly by the government (Aasandha). Sale prices, discount prices and promotions are reflected in the CPI so long as the concerned products/ services are of normal quality.

2.29 To ensure that price movements are representative of the wider population, the brands and varieties of the goods and services which are priced are generally those which sell in the greatest volume in that location.

## **CHANGES IN QUALITY**

*Prices adjusted for changes in quality*

2.30 In concept, quality embraces all attributes of an item which consumers would consider before making a purchase. For example in the case of canned fish it would include the volume or weight of the contents, as well as the concentration and flavor.

2.31 As the CPI aims to measure price changes for the fixed basket of goods and services over time, identical or equivalent items must be priced in successive periods. However, products do change; their components or ingredients may change resulting in an improvement or

degradation in quality. As the characteristics of products are altered, the statisticians responsible for the price index attempt to separate the effects of a quality change from an underlying price changes so that the CPI measures 'pure' price change.

2.32 The requirement to take account of changes in quality, to ensure that the index reflects only pure price change, often pose difficult measurement problems and in some cases is impossible in practice. For example, while it is fairly easy to monitor changes in the price of bus or ferry tickets, it is difficult to attach a rupee value to changes in quality (eg. Frequency or punctuality of the service).

## PERIODIC REVIEWS OF THE CPI

*CPI is reviewed at five-yearly intervals*

2.33 Like any other long-standing and important statistical series, the CPI is reviewed from time to time to ensure that it continues to meet community needs. The DNP undertakes these reviews at five yearly intervals linked to the availability of results from the HIES.

2.34 An important objective of the reviews is to update item weights to reflect changes in the range of available goods and services and changes in household spending patterns. They also provide an opportunity to reassess the scope and coverage of the index and other methodological issues.

2.35 Following these reviews the new CPI series is linked to the old to form a continuous series. This linking is carried out in such a way that the resulting continuous series reflect only pure price changes and not differences in the cost of the old and new baskets. The index reference base period for the CPI is also updated, generally at similar frequencies.




## HOW DOES THE CPI RELATE TO ME?

*CPI is unlikely to reflect price experience of individual households*

2.36 The CPI is designed to measure changes in retail prices experienced by the general households in aggregate. The composition of the basket and the relative importance of items in it represent the expenditures of ALL households and not the expenditure patterns of average households of any particular household size or type. The basket comprises all consumer goods and services acquired over a 12 month period. It includes items acquired infrequently by an individual household (eg: Major electrical appliances, new motor vehicles), items that are acquired almost daily by all households (eg: fish and bread) and items that are only available at certain times of the year.

*CPI cannot be used to measure price levels*

- 2.37 The CPI does NOT measure the changes in living costs which maybe experienced by individual households as a direct consequence of their progression though the life cycle. For example, younger households may incur a higher proportion of their expenditure on housing and child care while those households entering the older age groups may incur increasing expenditures on medical services. However, changes in the demographic make-up of the household in aggregate and differences in expenditure pattern will affect the pattern of total household expenditure recorded in the HIES. In turn, these changes will be incorporated in the weighting pattern in the CPI.
- 2.38 The CPI is not designed to measure price levels; rather its purpose is to measure changes in prices over time. While price levels in a small region often differs from those in the capital city (some higher and others lower), the factors influencing price movements generally tend to be similar. Therefore the CPI can be expected to provide a reasonable indication of the changes in the prices in Maldives as a whole.
- 2.39 Similarly, the CPI cannot be used to compare price levels between capital cities. For example, the fact that Overall CPI index in Kulhudhuffushi (100.7) was higher than Male' (100.5) does not indicate that Kulhudhuffushi was more expensive to live in compared to Male'. Rather, it indicates that prices in kulhudhuffushi have risen more than in Male' since June 2012.
- 2.40 At the end of the day, the CPI is most useful as an indicator of price movements, whether it be for specific items, a particular island, or the economy as a whole. The CPI is not a precise measure of individual household price experiences.
- 2.41 To illustrate the process used to adjust for quality changes in items priced in the CPI, consider the case of a change in the size of coca cola can. In this example, coca cola can is priced in three periods (1, 2 and 3) and the size of the can is reduced from 500ml to 330ml between period 2 and period 3.

Period 1	Period 2	Period 3
		
Price: MVR 10.09	MVR 9.78	MVR 9.85

Using the observed prices produces the following measures of price change:

Percentage change from period 1 to period 2 =  
 $(9.78 - 10.09) / 10.09 \times 100 = -3.1\%$

Percentage change from period 2 to period 3 =  
 $(9.85 - 9.78) / 9.78 \times 100 = 0.7\%$

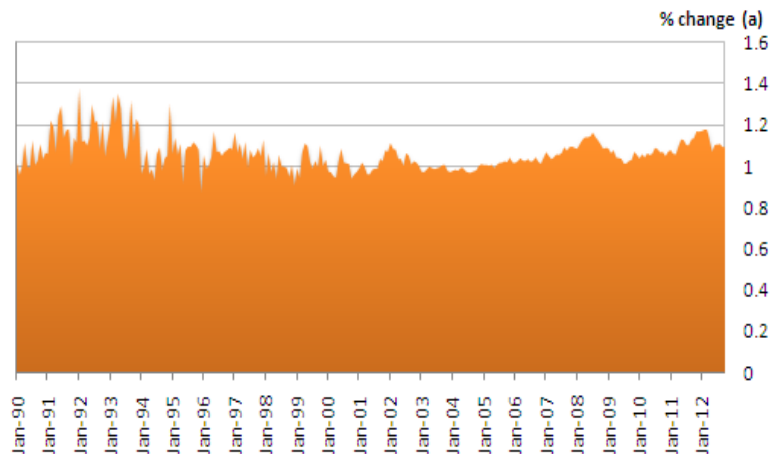
Percentage change from period 1 to period 3 =  
 $(9.85 - 10.09) / 10.09 \times 100 = -2.4\%$

2.42 However, this does not provide a measure of 'pure price' change because the item priced in period 3 is not identical to the item priced in the previous period. Hence, in this case for the period 3 the price of 330ml should not be entered to the data base, however in period 4 both period 3 and period 4 data should be entered. By doing this it will show pure price changes.

## CHAPTER 3: USING THE CPI

### USING THE CPI

#### CPI MOVEMENTS OVER THE PAST 23 YEARS



*Note: (a) Percentage change from corresponding month of previous year*

*Source: Consumer Price Index, Department of National Planning*

### INTERPRETING NUMBERS

### INDEX

*Why use index numbers?*

3.1 Deriving useful price measures for single, specific items such as yellow fin tuna is relatively straightforward. An estimate of the average price per kilogram in each period is sufficient for all applications. Price change between any two periods would simply be calculated by direct reference to the respective average prices.

3.2 However, if the requirement is for a price measure that covers a number of diverse items, the calculation of a 'true' average price is both complicated and of little real meaning. For example, consider the problem of calculating and interpreting an average price for two commodities as diverse as fish and washing machines. Because of this, price measures such as the CPI are typically presented in index form.

*Description of a price index*

3.3 Price indices provide a suitable and reliable way of presenting price information that overcomes problems associated with averaging across diverse items. The index number for a particular period represents the average price in that period relative to the average price in some base period for which, by convention, the average price has been set to equal 100.00.

3.4 A price index number on its own has little meaning. For example, the CPI All groups' index number of 100.2 in September 2012 says nothing more than the average

price in September 2012 was 0.2% higher than the average price in the base period June 2012 (when the index was set to 100.00). The value of index numbers stems from the fact that index numbers for any two periods can be used to directly calculate price change between the two periods.

*Percentage change is different to a change in index points*

- 3.5 Movements in indices from one period to any other period can be expressed either as changes in index points or as percentage changes. The following example illustrates these calculations for the All CPI group between the two time periods. The same procedure is applicable for any two periods.

	Index number
August 2012	100.75
Less August 2011	91.00
Change in index points	9.75
Percentage change	$9.75/91.0 \times 100 = 10.71\%$

*Movements in the CPI best measured using percentage changes*

- 3.6 For most applications, movements in price indices are best calculated and presented in terms of percentage change. Percentage change allows comparisons in movements that are independent of the level of the index. For example, a change of 2 index points when the index number is 120 is equivalent to a percentage change of 1.7%, but if the index number was 80 a change of 2 index points would be equivalent to a percentage change of 2.5% - a significantly different rate of price change. Only when evaluating change from the base period of the index will the points change numerically identical to the percentage change.
- 3.7 The percentage change between any two periods must be calculated, as in the above example, by direct reference to the index numbers for the two periods. Adding the individual monthly percentage changes will not result in the correct measure of long term percentage changes. That is the percentage change between July of the previous year and the July of current year typically will not equal the sum of the 12 month percentage changes. The error becomes more noticeable the longer the period covered and the greater the rate of change in the index. This can readily be verified by starting with an index of 100 and increasing it by 10% (multiplying by 1.1) each period. After four periods, the index will equal 146.4 delivering

an annual percentage change of 46.4%, not the 40% given by adding the twelve monthly changes of 10%.

*Calculating index numbers for periods longer than months*

3.8 Although the CPI is compiled and published as a series of monthly index numbers, its use is not restricted to the measurement of price change between particular months. Because a monthly index number can be interpreted as representing the average price during the month, index numbers for periods spanning more than one month can be calculated as the simple (arithmetic) average of the relevant monthly indices. For example, an index for the year 2011 would be calculated as the arithmetic average of the index numbers for January to December of 2011.

3.9 This characteristic of index numbers is particularly useful. It allows for comparison of average prices in one year (calendar or financial) with those in any other year. It also enables prices in say the current month compared with the average prevailing in some prior year.

## ANALYSING THE CPI

3.10 The monthly change in the Overall CPI represents the weighted price change of all the items included in the CPI. While publication of index numbers and percentage changes for components of the CPI are useful in their own right, these data are often not sufficient to enable important contributors to overall price change to be reliably identified. What is required is some measure that encapsulates both an item's price change and its relative importance in the index.

*Points contribution and points contribution change*

3.11 If the Overall CPI index number is thought of as being derived as the weighted average of indexes for all its component items, the index number for a component multiplied by its weight to the Overall index results in what is called its 'points contribution'. It follows that the change in a component item's points contribution from one period to the next provides a direct measure of the contribution to the change in the Overall CPI index resulting from the change in that component's price.

3.12 Information on points contribution and points contribution change (or points change) is of immense value when analysing sources of price change and for answering 'what if' type questions.



### *Data rounding conventions*

- 3.13 To ensure consistency in the data produced from the CPI, it is necessary to adopt a set of consistent rounding conventions or rules for the calculation and presentation of data. The conventions strike a balance between maximising the usefulness of the data for analytical purposes and retaining a sense of the underlying precision of the estimates. These conventions need to be taken into account when using CPI data for analytical or other special purposes.
- 3.14 Index numbers are always published to a reference base of 100.0. Index numbers and percentage changes are always published to two decimal places, with the percentage changes being calculated from the index numbers. Points contributions are also published to two decimal places, with points contributions change being calculated from the points contributions. Index numbers for periods longer than a month (e.g. Annual) are calculated as the simple arithmetic average of the relevant monthly index numbers.

The following questions and answers illustrate the uses that can be made of the CPI.

### **SOME EXAMPLES OF USING CPI**

#### *CPI can be used to compare money value over time*

- 3.15 **Question 1:** What would MVR200 in 2008 be worth in the September 2011?
- 3.16 Response 1: This question is best interpreted as asking 'How much need to be spent in September 2011 to purchase what could be purchased in 2008 for MVR 200?' As no specific commodity is mentioned, what is required is a measure comparing the general level of prices in September 2011 with the general level of prices in the year 2008. The Overall CPI would be an appropriate choice.
- 3.17 Because CPI index is available for the year 2008 the only step is to multiply the initial MVR amount by the ratio of the index for September 2011 to the index for 2008.

The answer is then given by:

$$\text{MVR200} \times 92.19/72.61 = \text{MVR } 253.93$$

3.18 **Question 2:** What would be the impact of a 10% increase in fish prices on the Overall CPI in October 2012?

3.19 Response 2: Two pieces of information are required to answer this question; the overall index number for August 2012 (100.75), and the August 2012 points contribution for fish (0.07).

3.20 An increase in fish prices of 10% would increase fish points contribution by  $0.07 \times 10/100 = 0.007$  index points which would result in an overall index number of 100.76 for October 2012, an increase of 0.007%.

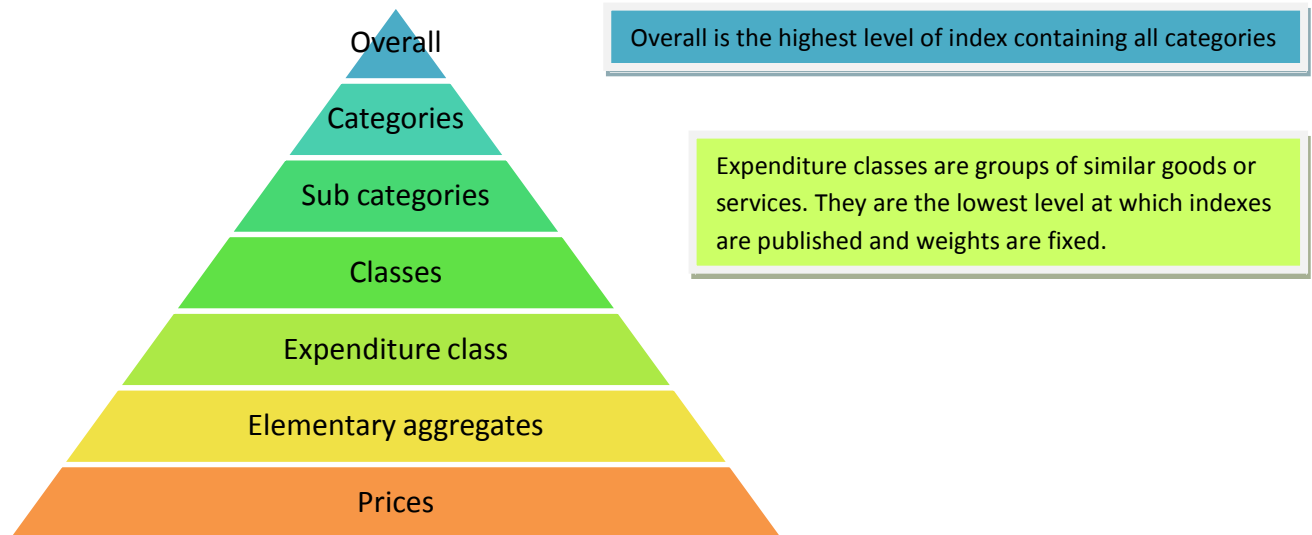
*Forecasting impact of price changes on the CPI*

3.21 **Question 3:** How does the CPI reflect changes in electricity prices?

3.22 Response 3: The Overall CPI measures price change for all goods and services. The example below sets out the price change for electricity compared to the overall CPI over the last 5 years. This shows that the price of electricity has increased much slower than the headline number.

	Overall Index	Electricity Index
August 2007	66.6	94.77
August 2011	91.00	95.94
August 2012	100.75	100.00
<hr/>		
%age change – 1 year ago (overall)		
$(100.75-91.00)/91.00 \times 100 = 10.7\%$		
%age change – 1 year ago (electricity)		
$(100.00-95.94)/95.94 \times 100 = 4.2\%$		
<hr/>		
%age change – 5 year ago (overall)		
$(100.75-66.60)/66.60 \times 100 = 51.3\%$		
%age change – 5 year ago (electricity)		
$(100.00-94.77)/94.77 \times 100 = 5.5\%$		
<hr/>		

## 4. CALCULATING THE CPI



### OVERVIEW

- 4.1 The CPI has previously been described in terms of a basket of goods and services which is 'purchased' each month. As prices change from one month to the next so too will the total cost (or price) of the basket. Of the various ways in which a CPI could be described, this description conforms most closely with the procedures actually followed. Using this description, the construction of the CPI can be thought of as being done in four major steps:

- 4.1.1. Subdividing the total expenditure into individual items for which samples can be selected
- 4.1.2. Collecting price data
- 4.1.3. Estimating price movements from individual items
- 4.1.4. Calculating the current period cost of the basket

### SUBDIVIDING THE BASKET

#### *Expenditure aggregates*

- 4.2 Based mainly on HIES, estimates are obtained for total annual expenditure of households in the country for all of the expenditure classes in the CPI. As estimates relate to the expenditure of households in aggregate, they are referred to as 'expenditure aggregates'.

- 4.3 While these expenditure aggregates are derived for well defined categories of household expenditure (e.g. rice), they are still too broad to be of direct use in selecting price samples. For this purpose, expenditure aggregates need to be subdivided into as fine a level of commodity detail as possible. As the HIES is generally not designed to provide such fine level estimates, it is necessary to supplement the HIES data with information from other sources. The processes involved are illustrated below by reference to a stylised example for the Rice expenditure class of the CPI.
- 4.4 Based on information reported in the 2009–10 HIES, the annual expenditure on rice by all households in Male' in the June 2011 is estimated at MVR244 thousand. Furthermore, breakdown on different vegetables is obtained from HIES.

The results are shown in the following table.

Type of rice	Market share	HIES data (a)
1 Rice, semi- or wholly m	40	969,865
2 Rice flakes, aveli	0	682
3 Rice, baasmathi	21	509,659
4 Rice, Red	2	38,206
5 Rice, normal	38	924,321
<b>Total Rice</b>	<b>100</b>	<b>2,442,733</b>

(a) after adjusting to inflation

- 4.5 The next stage in the process involves determining the rice for which price samples should be collected. This is generally not simple. In reaching decisions about precisely which items to include in price samples, the prices statisticians need to strike a balance between the cost of data collection (and processing) and the accuracy of the index. Factors taken into account include the relative significance of individual items, the extent to which different items are likely to exhibit similar price behaviour, and any practical problems associated with measuring prices to constant quality.
- 4.6 In this example with rice, it is decided to price 2 number of rice, and hence 3 number of rice is left unpriced.

Generally, a reasonable outcome where selection is a must would be to decide to construct price samples for some specific items (based on their significance) and separate price samples would not be constructed for items which have relatively small market shares. Generally, price samples would also not be constructed for items which would prove difficult to price due to constant quality differences.

*Elementary aggregates must have a price sample*

- 4.7 The items for which it is decided to construct specific price samples are referred to as 'elementary aggregates'. The expenditure aggregates for the items that are not to be explicitly priced are reallocated across the elementary aggregates in such a way as to best preserve the representativeness of the price samples. In this example, 2 number of rice is selected to be priced and hence allocation is done in two stages. First, the expenditure aggregate for unselected items would be allocated to similar items. The expenditure aggregates of items which are dissimilar would be allocated, on a proportional basis, across the selected items elementary aggregates.

Type of rice	Expenditure aggregates			Elementary aggregate
	Initial	Stage 1	Stage 2	
1 Rice, semi- or wholly m	969,865			
2 Rice flakes, aveli	682	682		
3 Rice, baasmathi	509,659	811,042	759,073	Basmati rice
4 Rice, Red	38,206	38,206		
5 Rice, normal	924,321	1,470,912	1,376,661	Long grain rice
<b>Total Rice</b>	<b>2,442,733</b>	<b>2,320,842</b>	<b>2,135,734</b>	

4.8 The rationale for this allocation is as follows. The price behaviour for all items 2 and 4 (Rice flakes, aveli, Rice, Red) is likely to be best represented by the average price behaviour of all other rice.

#### *Determining outlet types*

4.9 Having settled on the items for which price samples are to be constructed, the next step is to determine the outlet types (respondents) from which prices will be collected. In order to accurately reflect changes in prices paid by households for rice, prices need to be collected from the various types of outlets from which households purchase them. Price sample for each elementary aggregate that is representative of household shopping patterns is to have prices from general shops.

### **COLLECTING PRICE DATA**

#### *Selecting respondents*

4.10 When price samples have been determined, Statistics division staff determines from which general corner shops the prices will be collected. The individual outlets are chosen to be representative across the city. The prices are collected each month from the same respondents for the same items.

#### *Selecting items to price*

4.11 When a respondent is first enrolled in the collection process the field staff will determine, in conjunction with the outlet management, which specific items are best representative of each elementary aggregate. For example, at one outlet it might be decided that it is best representative of cucumbers to price it by pieces while; at another outlet it might be priced in kilograms.

4.12 An important part of the ongoing price collection process is the monitoring of the items for quality change. In the stylised rice example quality change could occur very rarely. Individual item prices are also compared with prices collected in the previous period to check their accuracy and to verify any large movements.

### **ESTIMATION OF PRICE MOVEMENTS FOR ELEMENTARY AGGREGATES**

4.13 Price samples are constructed for the sole purpose of estimating price movements for each elementary aggregate.

These estimates of price movements are required to revalue the expenditure aggregates to current period prices in much the same way as illustrated in the example on using price indexes (see 3.15–3.17 above). This is achieved by applying the period to period price movement to the previous period's expenditure aggregate for each elementary aggregate. It provides an estimate of the cost of acquiring the base period quantity of the elementary aggregate in the current month.

4.14 There is no single correct method for calculating the price movement for a sample of observations. Different methods involve choices as to:

- Whether the price movement for the sample is calculated as the average of each period's prices or as the average of price movements between periods for each item;
- The type of average used.

4.15 The two commonly used forms of average are the arithmetic mean and the geometric mean. For a sample of  $n$  price observations, the arithmetic mean is the sum of the individual prices divided by the number of observations, while the geometric mean is the  $n$ th root of the product of the prices. For example, the arithmetic mean of 4 and 9 is 6.5, while the geometric mean is 6 (the geometric mean is always less than or equal to the arithmetic mean).

*Geometric mean is the preferred method*

4.16 The method of calculating price change at the elementary aggregate level is important to the accuracy of the price index. The arithmetic average of price relatives (APR) approach has been shown to be more prone to (upward) bias than the other two methods. In line with various overseas countries, the statistics division of DNP is using the geometric mean formula for calculating elementary aggregate index numbers, for most of the elementary aggregates. Where the geometric mean is not appropriate the relative of

arithmetic mean prices (RAP) is used, specifically in health. The reasoning behind using geometric means is outlined below.

*Geometric mean allows for substitution*

- 4.17 At the elementary aggregate level of the index it is usually impractical to assign a specific weight to each individual price observation. The geometric mean applies weights such that the expenditure shares of each observation are the same in each period. In other words the geometric mean formula implicitly assumes households buy less (more) of items that become more (less) expensive relative to the other items in the sample. The other formulas assume equal quantities in both periods, (RAP) or equal expenditures in the first period (APR), with quantities being inversely proportional to first period prices. The geometric mean therefore appears to provide a better representation of household purchasing behavior than the alternative formula in those elementary aggregates where there is likely to be high substitutability in consumption within the price sample.

*Geometric mean not appropriate for all elementary aggregates*

- 4.18 The geometric mean cannot be used to calculate the average price in all elementary aggregates. It cannot be used in cases where the price could be zero (i.e. the cost of a good or service is fully subsidised by the government). It is also not appropriate to use geometric means in elementary aggregates covering items between which consumers are unable to substitute. An example of this is local government rates where it is not possible to switch from a high rate area to a low rate area without physically moving location.

## **CALCULATING THE CURRENT COST OF THE BASKET**

- 4.19 Once price movements are calculated for each elementary aggregate, they can be used to derive the expenditure aggregates that are then summed to derive the current cost of the basket. It is from the expenditure aggregates that index numbers are calculated at any level of the index. The stylised example above is continued to show the process for the rice expenditure class.



	Elementary aggregate	Price movement	Elementary aggregate
	Period 1	Period 1 to Period 2(a)	Period 2
<b>Elementary aggregate</b>			
Basmati rice	868,185	0.9929	862,060
Long grain rice	1,574,548	1.0031	1,579,408
<b>Total Rice</b>	<b>2,442,733</b>		<b>2,441,467</b>

(a) Geometric mean of price relatives

- 4.20 The expenditure aggregates are revalued to period 2 prices by applying the movements between period 1 and period 2. The expenditure aggregate for the expenditure class rice is the sum of the expenditure aggregates for the elementary aggregates comprising the expenditure class. Summing the elementary aggregates says that in period 2 it would cost 2,441,467 rufiyaa to buy the volume of rice in period 1 that cost 2,442,733 rufiyaa. The price change for rice between period 1 and 2 is simply the ratio of these expenditure aggregates, that is, a price decrease of -0.1% ( $2,441,467 / 2,442,733$ ). Thus if the price index for rice was 100.0 in period 1, it would be 99.9 in period 2.
- 4.21 The derivation of the expenditure class movement as shown above is mathematically equivalent to a weighted average of the price movements for the individual elementary aggregates. The same formula is used at higher levels of the index.
- 4.22 Similar procedures are used to derive price movements at higher levels of the CPI. For example, the current period cost of purchasing items in the Bread and cereal products sub-group of the CPI is obtained by summing the current period expenditure aggregates of the expenditure classes rice, bread, pasta products,, pastry-cook products and other cereal products. The ratio of the current and previous period expenditure aggregates for this sub-group gives the price movement for the sub-group.
- 4.23 Points contributions (see 3.11 above) are also calculated using the expenditure aggregates. The current period points contribution of a CPI component, for example the expenditure class rice, is the current period expenditure

aggregate for rice relative to the expenditure aggregate for the overall CPI multiplied by the current period overall index number.

- 4.24 The CPI publication does not show the expenditure aggregates, but rather the index numbers derived from the expenditure aggregates. Expenditure aggregates vary considerably in size and showing them would make the publication difficult to read and interpret. The published index numbers and points contributions are a convenient presentation of the information.

## APPENDICES

### Appendix 1:

#### CONSUMER PRICE INDEX BASKET, 2012

FOOD & BEVERAGES (93 ITEMS)	
FOOD (85 ITEMS)	
1	Basmati rice
2	Long grain rice
3	Bread - small
4	Bread - large
5	Pasta
6	Noodles
7	Buns
8	Cake
9	Whole wheat flour
10	wheat flour
11	Baby cereal foods, cerelac, nestum etc
12	Corn flakes
13	Cake mix
14	Biscuits - marie
15	Biscuits - cream cracker
16	Biscuits- sandwich
17	Apollo
18	Beef Frozen
19	Chicken - whole
20	Chicken - Drumsticks
21	Chicken - boneless
22	Chicken sausage
23	Yellow fin tuna
24	Skipjack tuna
25	Reef fish
26	Dried Fish, hiki mas
27	Smoked fish, valho mas
28	Dried and sliced fish pack
29	Mas mirus
30	Canned fish, Felivaru mas
31	Fish paste, rihaakuru
32	Processed liquid milk
33	Baby milk powder, enfalac, lactogen, SMA etc
34	Coast milk powder, anchor, nido, etc, Milk in solid forms except baby milk powder
35	Milo in solid form
36	Condensed milk, geri kiru

37	Yoghurt
38	Cheese
39	Flavored milk packed, Milo packet, liquid
40	Baby food, milupa etc
41	Eggs, chicken
42	Margarine
43	Olive oil
44	Cooking oil
45	lemon
46	Orange
47	Banana
48	Apples
49	Grapes, fresh
50	mango , huiy, ripe
51	Water Melon, karaa
52	Papaya, falho
53	Kurumba, young coconut
54	Kaashi, coconut
55	Pineapple, canned
56	Fruit cocktail, canned
57	Cabbages
58	Cucumber
59	Green chilly, githeyo mirus
60	Pumpkin , baraboa
61	Tomato
62	Beans, tholhi
63	Carrot
64	Garlic
65	Onion
66	Mugu, dhal red, yellow, Sanaa mugu
67	Baked beans canned
68	Green peas canned
69	Tomato paste
70	Potatoes
71	Sugar, nomal
72	Jams, fruit jellies and fruit or nut puree and pastes
73	Chocolate
74	Chocolate crumpy, Peanut butter with chocolate, Toffee
75	Candy
76	Ice cream
77	Diabetic sugar
78	Ginger

79	Chillie packed, dried/ powdered, Mirus packet, hiki / muguraafa
80	Curry powder, hawaadhu, mixed spices packed / canned etc
81	Salt, fine Ionu
82	Chilli Sauce
83	Chicken rings and kind, Pop Corn, Potato chips and kind, Other snacks
84	Short eats, hedhikaa foni (sweet)
85	Short eats, hedhikaa kulhi (saltish)
<b>BEVERAGES (8 ITEMS)</b>	
86	Coffee, decaffeinated or roasted
87	Tea leaves
88	Mineral waters
89	Soft drinks
90	Energy drink
91	Fruit juices and vegetable juices (sunquick, etc) - Liquid form
92	Juice, (foster clark etc) - Solid form
93	Fruit juices and vegetable juices (packet juices)
<b>NON FOOD (168 ITEMS)</b>	
<b>TOBACCO &amp; ARACANUT (4 ITEMS)</b>	
94	Cigarettes
95	Aracanut
96	Supari
97	Roasted Aracanut packets
<b>CLOTHING (21 ITEMS)</b>	
98	Clothing materials
99	Trousers - Men
100	Jeans- Men
101	Shirts- Men
102	T- shirts- Men
103	Boxer shorts - Men
104	Jeans -women
105	Pants -bel-women
106	Shirts - Women
107	T-shirts- Women
108	Panties -women
109	Brassieres
110	Tailoring service
111	Uniform - Boys
112	Infant-overall
113	T - shirts -boys
114	T - shirts -Girls
115	Jeans - boys
116	Jeans - girls

117	Designed shawls
118	Office tie
<b>FOOTWEAR (6 ITEMS)</b>	
119	Rubber Slipper – men’s
120	School shoes - boys
121	School shoes - girls
122	Office shoes - man
123	Sports shoes - kids
124	Sports shoes - adult
<b>HOUSING (12 ITEMS)</b>	
125	Rents
126	Plywood
127	Paints
128	Portland cement
129	Tiles
130	Roofing sheet
131	Construction charges
132	Piped water charges
133	Garbage collection
134	Electricity charges
135	Cooking gas
136	Kerosene
<b>FURNISHING (24 ITEMS)</b>	
137	Bed
138	Wardrobe
139	Wooden chair
140	Mattress
141	Bed sheet
142	Refrigerators
143	Washing machine
144	Stove
145	Oven
146	Ceiling fan
147	Iron
148	Rice cooker
149	Plate
150	Drinking tumblers
151	Water pump
152	Insecticides/sheltox
153	Mosquito kit
154	Washing powder
155	Softener
156	Bleach

157	Dish wash- Maama lemon
158	Toilet cleaner
159	Broom
160	Salary for household maid
<b>HEALTH (17 ITEMS)</b>	
161	Panadol tablet
162	Forceaval
163	Digene
164	Zental
165	Strepsil
166	Actified
167	Haliborange
168	Moove
169	Balm
170	Band aid
171	Spectacles
172	General consultation fee
173	Specialized consultation
174	Dental filling
175	HB blood test
176	Chest X ray
177	Whole abdomen scan
<b>TRANSPORT (11 ITEMS)</b>	
178	Motor cycles
179	Diesel
180	Petrol
181	Maintenance and repair services of motorcycles
182	Bus fare
183	Taxi fare
184	Domestic airfare – Male'-Gan-Male', Male'-Hanimaadhoo-Male', Male'-Kaadhehdhoo-Male',Male'-Kahdhoo-Male'
185	International airfare - Male' - Colombo - Male'
186	International airfare - Male'- Trivandrum- Male'
187	Ferry service
188	Passenger fare - to islands by sea.
<b>COMMUNICATION (5 ITEMS)</b>	
189	Mobile phone
190	Land line telephone charges
191	Pre paid charges
192	Post paid charges
193	Internet charges
<b>RECREATION (20 ITEMS)</b>	
194	Compact set/ lava jahaa

195	DVD player
196	Television
197	Digital camera
198	Laptop
199	Changing computer mother board
200	Toy car
201	PS2
202	Game CD
203	Aerobics
204	Cable TV charges
205	Passport photo
206	Drawing block
207	Religious book
208	Children story book
209	Pencil
210	Pen
211	Color pencil
212	Eraser
213	Monitor book
<b>EDUCATION (6 ITEMS)</b>	
214	Pre-school fee
215	Primary school fee
216	Secondary school fee
217	High school fee
218	Quran class fee
219	Diploma fee
<b>RESTAURANTS (8 ITEMS)</b>	
220	Nasigoreng
221	Fish & chips
222	Pizza
223	Morning breakfast
224	Coffee
225	Lunch Packet
226	4 Roashi + Fish Curry + tea + dhufun
227	Rice + Chicken curry + tea + dhufun
<b>HOTELS (1 ITEMS)</b>	
228	Guest house room rate
<b>MISCELLANEOUS GOODS AND SERVICES (33 ITEMS)</b>	
229	hair cut - Gents
230	hair cut - Ladies
231	Facial cleaning
232	Eye brow making/ trimming



233	Baby diaper
234	Sanitary pad
235	Tissue
236	Towels
237	Baby shower gel
238	Shower gel
239	Baby oil
240	Baby shampoo
241	Baby lotion
242	Baby cologne
243	Hair cream
244	Tooth paste
245	Shampoo
246	Lotion
247	Cologne
248	Facewash
249	Facial cream
250	Roll-on
251	Shaving foam
252	Aftershave
253	Body spray - men
254	Perfume - women
255	Razor
256	Tooth brush - Adult
257	School bag
258	Hand bag
259	Wallet (men's)
260	Visa fee
261	License fee

## APPENDIX 2: CPI relative weights for COICOP groups

<b>COICOP groups, sub-groups &amp; expenditure classes</b>	<b>Republic</b>	<b>Male'</b>	<b>Atolls</b>
<b>TOTAL CONSUMPTION EXPENDITURE</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>
<b>1. FOOD AND NON-ALCOHOLIC BEVERAGES</b>	<b>28.44</b>	<b>23.78</b>	<b>32.41</b>
<b>FOOD</b>	<b>26.12</b>	<b>21.62</b>	<b>29.97</b>
Bread and cereals (ND)	4.09	2.92	5.10
Rice	1.25	0.76	1.66
Bread	0.30	0.45	0.18
Pasta products	0.45	0.33	0.55
Pastry-cook products	0.36	0.31	0.40
Other cereal products	1.74	1.07	2.31
Meat (ND)	1.04	1.29	0.83
Fresh, chilled or frozen meat of beef, sheep and goat	0.09	0.16	0.03
Fresh, chilled or frozen meat of poultry	0.70	0.84	0.58
Other preserved or processed meat and meat preparations	0.25	0.29	0.22
Fish (ND)	8.65	7.64	9.50
Fresh, chilled or frozen fish	3.88	3.78	3.98
Dried , smoked or salted fish and seafood	0.71	0.70	0.72
Other preserved or processed fish and seafood and fish and seafood preparations	4.05	3.17	4.81
Milk, cheese and eggs (ND)	4.89	3.59	6.00
Fresh milk	0.09	0.10	0.08
Preserved milk	3.14	2.30	3.86
Yoghurt and cream	0.26	0.23	0.28
Cheese and curd	0.03	0.03	0.03
Other milk products	0.82	0.57	1.03
Eggs	0.56	0.36	0.73
Oils and fats (ND)	0.94	0.59	1.24
Butter, margarine and other vegetable fats	0.03	0.02	0.05
Olive oil	0.02	0.03	0.01
Edible oils	0.89	0.54	1.19
Fruit (ND)	1.67	1.24	2.03
Citrus fruits (fresh)	0.24	0.22	0.26
Bananas	0.28	0.27	0.28
Apples	0.16	0.16	0.16
Other fresh, chilled or frozen fruits	0.44	0.30	0.56
Dried fruit	0.41	0.22	0.58
Preserved fruit and fruit -based products	0.14	0.08	0.19
Vegetables(ND)	1.70	1.53	1.84

Cabbages	0.05	0.05	0.05
Vegetables cultivated for their fruit (fresh, chilled or frozen)	0.39	0.33	0.45
Root crops, non-starchy bulbs and mushrooms (fresh, chilled or frozen)	0.77	0.82	0.73
Dried vegetables	0.07	0.06	0.08
Other preserved or processed vegetables	0.29	0.18	0.38
Potatoes	0.12	0.10	0.14
Sugar, jam, honey, chocolate and confectionery(ND)	1.11	0.79	1.38
Sugar (fresh, chilled or frozen)	0.60	0.25	0.90
Jams, fruit jellies and fruit or nut puree and pastes	0.03	0.04	0.02
Chocolate (fresh, chilled or frozen)	0.14	0.18	0.11
Confectionery products	0.12	0.12	0.12
Edible ices and ice cream	0.15	0.14	0.15
Other sugar products	0.07	0.06	0.08
Food products n.e.c (ND)	2.04	2.03	2.05
Salt, spices and culinary herbs	0.59	0.37	0.78
Other food products n.e.c	1.45	1.66	1.27
<b>NON-ALCOHOLIC BEVERAGES</b>	<b>2.31</b>	<b>2.16</b>	<b>2.44</b>
Coffee, tea and cocoa (ND)	0.63	0.49	0.75
Coffee	0.48	0.37	0.58
Tea	0.15	0.12	0.17
Mineral waters, soft drinks, fruit and vegetable juices (ND)	1.68	1.67	1.69
Mineral or spring waters	0.62	0.91	0.37
Soft drinks	0.41	0.24	0.56
Fruit and vegetable juices	0.65	0.52	0.76
<b>2. TOBACCO AND ARACANUT</b>	<b>2.25</b>	<b>1.26</b>	<b>3.11</b>
<b>TOBACCO</b>	<b>1.67</b>	<b>0.87</b>	<b>2.35</b>
Tobacco (ND)	1.67	0.87	2.35
Cigarettes	1.67	0.87	2.35
<b>ARACANUT</b>	<b>0.59</b>	<b>0.39</b>	<b>0.76</b>
Aracanut	0.59	0.39	0.76
Aracanut and related products	0.59	0.39	0.76
<b>3. CLOTHING AND FOOTWEAR</b>	<b>3.89</b>	<b>3.33</b>	<b>4.37</b>
<b>CLOTHING</b>	<b>2.99</b>	<b>2.68</b>	<b>3.26</b>
Clothing materials (SD)	0.52	0.44	0.59
Clothing materials	0.52	0.44	0.59
Garments (SD)	2.16	2.01	2.29
Garments for men	0.99	0.87	1.09
Garments for women	0.66	0.73	0.61

Garments for children (3 to 13 years) and infants (0 to 2 years)	0.51	0.42	0.59
Other articles of clothing and clothing accessories (SD)	0.32	0.23	0.39
Other articles of clothing and clothing accessories	0.32	0.23	0.39
FOOTWEAR	0.90	0.65	1.11
Shoes and other footwear (SD)	0.90	0.65	1.11
Shoes and other footwear	0.90	0.65	1.11
<b>4. HOUSING, WATER, ELECTRICITY, GAS AND OTHER FUELS</b>	<b>23.29</b>	<b>33.25</b>	<b>14.77</b>
<b>ACTUAL RENTALS FOR HOUSING</b>	<b>11.68</b>	<b>24.02</b>	<b>1.13</b>
Actual rentals paid by tenants	11.68	24.02	1.13
Actual rentals paid by tenants	11.68	24.02	1.13
<b>MAINTENANCE AND THE REPIAR OF THE DWELLING</b>	<b>3.11</b>	<b>1.22</b>	<b>4.73</b>
Materials for the maintenance and repair of the dwelling (ND)	2.50	0.59	4.12
Materials for the maintenance and repair of the dweling	2.50	0.59	4.12
Services for the maintenance and repair of the dwelling (S)	0.61	0.63	0.60
Services for the maintenance and repair of the dwelling	0.61	0.63	0.60
<b>WATER SUPPLY AND MISCELLANEOUS SERVICES RELATING TO THE DWELLING</b>	<b>1.58</b>	<b>3.05</b>	<b>0.32</b>
Water supply (S)	1.40	2.79	0.21
Water supply	1.40	2.79	0.21
Refuse collection (ND)	0.19	0.26	0.12
Refuse collection	0.19	0.26	0.12
<b>ELECTRICITY, GAS AND OTHER FUELS</b>	<b>6.92</b>	<b>4.97</b>	<b>8.59</b>
Electricity	4.50	3.12	5.68
Electricity	4.50	3.12	5.68
Gas (ND)	1.75	1.11	2.29
Natural gas	1.75	1.11	2.29
Liquid fuels(ND)	0.68	0.74	0.62
Liquid fuels	0.68	0.74	0.62
<b>FURNISHING HOUSEHOLD EQUIPMENTS. AND ROUTINE MAINTANANCE</b>	<b>8.71</b>	<b>7.38</b>	<b>9.86</b>
<b>5. FURNITURE AND FURNISHINGS, CARPETS AND OTHER FLOOR COVERINGS</b>	<b>2.07</b>	<b>2.19</b>	<b>1.97</b>
Furniture and furnishings (D)	2.07	2.19	1.97
Furniture and furnishings	2.07	2.19	1.97
<b>HOUSEHOLD TEXTILES</b>	<b>0.31</b>	<b>0.32</b>	<b>0.31</b>
Household textiles (SD)	0.31	0.32	0.31
Household textiles	0.31	0.32	0.31
<b>HOUSEHOLD APPLIANCES</b>	<b>2.46</b>	<b>2.04</b>	<b>2.83</b>
Major household appliances whether or not electrical (D)	2.22	1.86	2.52

Refrigerators, freezers and fridge-freezers	0.52	0.42	0.60
Clothes washing machines, clothes drying machine and dish washing machines	0.74	0.62	0.85
Cookers	0.25	0.22	0.28
Heaters, air conditioners	0.44	0.46	0.42
Other major household appliances	0.26	0.15	0.37
Small electrical household appliances (SD)	0.24	0.17	0.31
Small electrical household appliances	0.24	0.17	0.31
<b>GLASSWARE, TABLEWARE AND HOUSEHOLD UTENSILS</b>	<b>0.89</b>	<b>0.76</b>	<b>1.00</b>
Glassware, tableware and household utensils (SD)	0.89	0.76	1.00
Kitchen and domestic utensils	0.89	0.76	1.00
<b>TOOLS AND EQUIPMENT FOR HOUSE AND GARDEN</b>	<b>0.55</b>	<b>0.28</b>	<b>0.79</b>
Tools and equipment (D)	0.55	0.28	0.79
Tools and equipment	0.55	0.28	0.79
<b>GOODS AND SERVICES FOR ROUTINE HOUSEHOLD MAINTENANCE</b>	<b>2.43</b>	<b>1.80</b>	<b>2.97</b>
Non-durable household goods (ND)	1.72	1.05	2.30
Cleaning and maintenance products	1.24	0.86	1.57
Other non-durable household articles	0.48	0.19	0.73
Domestic services and household services (S)	0.71	0.75	0.67
Domestic services	0.71	0.75	0.67
<b>6. HEALTH</b>	<b>5.42</b>	<b>3.34</b>	<b>7.19</b>
<b>MEDICAL PRODUCT, APPLIANCES AND EQUIPMENT</b>	<b>3.20</b>	<b>1.88</b>	<b>4.32</b>
Pharmaceutical products (ND)	2.43	1.24	3.45
Pharmaceutical products	2.43	1.24	3.45
Therapeutic appliances and equipment (D)	0.77	0.65	0.87
Therapeutic appliances and equipment	0.77	0.65	0.87
<b>OUT-PATIENT SERVICES</b>	<b>2.22</b>	<b>1.46</b>	<b>2.88</b>
Medical Services (S)	1.75	1.19	2.23
Medical services	1.75	1.19	2.23
Dental services (S)	0.07	0.09	0.05
Dental services	0.07	0.09	0.05
Paramedical services (S)	0.40	0.18	0.60
Services of medical analysis laboratories and X-ray centres	0.40	0.18	0.60
<b>7. TRANSPORT</b>	<b>5.44</b>	<b>5.02</b>	<b>5.79</b>
<b>PURCHASE OF VEHICLES</b>	<b>2.57</b>	<b>2.85</b>	<b>2.34</b>
Motor-cycles (D)	1.73	2.28	1.26
Motor- cycles	1.73	2.28	1.26
Fuels and lubricants(ND)	0.52	0.06	0.90
Fuels and lubricants	0.52	0.06	0.90
Maintenance and repair of personal transport	0.33	0.51	0.17

equipment(ND)			
Maintenance and repair	0.33	0.51	0.17
<b>TRANSPORT SERVICES</b>	<b>2.86</b>	<b>2.17</b>	<b>3.46</b>
Passenger transport by road (S)	0.98	0.74	1.18
Passenger transport by road	0.98	0.74	1.18
Passenger transport by air (S)	0.41	0.39	0.43
Passenger transport by air	0.41	0.39	0.43
Passenger transport by sea and inland waterway (S)	1.48	1.04	1.85
Passenger transport by sea and inland waterway	1.48	1.04	1.85
<b>8. COMMUNICATION</b>	<b>4.75</b>	<b>4.95</b>	<b>4.58</b>
<b>TELEPHONE AND TELEFAX EQUIPMENT</b>	<b>1.16</b>	<b>1.34</b>	<b>1.00</b>
Telephone and telefax equipment (D)	1.16	1.34	1.00
Telephone and telefax equipment	1.16	1.34	1.00
<b>Postal, TELEPHONE AND TELEFAX SERVICES</b>	<b>3.59</b>	<b>3.61</b>	<b>3.58</b>
Telephone and telefax services (S)	3.59	3.61	3.58
Telephone and telefax services	3.59	3.61	3.58
<b>9. RECREATION AND CULTURE</b>	<b>5.10</b>	<b>3.88</b>	<b>6.15</b>
<b>AUDIO-VISUAL, PHOTOGRAPHIC AND INFORMATION PROCESSING EQUIPMENT</b>	<b>2.71</b>	<b>2.07</b>	<b>3.26</b>
Equipment for the reception, recording and reproduction of sound and pictures (D)	1.12	0.88	1.33
Equipment for the reception, recording and reproduction of sound	0.20	0.11	0.27
Television sets, video-cassette players and recorders	0.92	0.76	1.06
Photographic and cinematographic equipment and optical instruments (D)	0.15	0.17	0.13
Photographic and cinematographic equipment	0.15	0.17	0.13
Information processing equipment (D)	1.36	0.90	1.75
Information processing equipment	1.36	0.90	1.75
Repair of audio-visual, photographic and information processing equipment (S)	0.08	0.12	0.04
Repair of audio-visual, photographic and information processing equipment	0.08	0.12	0.04
<b>OTHER RECREATIONAL ITEMS AND EQUIPMENT, GARDENS AND PETS</b>	<b>0.68</b>	<b>0.46</b>	<b>0.87</b>
Games, toys and hobbies (SD)	0.68	0.46	0.87
Games, toys and hobbies	0.68	0.46	0.87
<b>RECREATIONAL AND CULTURAL SERVICES</b>	<b>0.88</b>	<b>0.73</b>	<b>1.01</b>
Recreational and sporting services (S)	0.12	0.19	0.06
Recreational and sporting services	0.12	0.19	0.06
Cultural services(S)	0.76	0.55	0.94

Television and radio taxes and hire of equipment	0.60	0.40	0.77
Other services	0.16	0.15	0.17
<b>NEWSPAPERS, BOOKS AND STATIONERY</b>	<b>0.83</b>	<b>0.61</b>	<b>1.02</b>
Books (SD)	0.27	0.19	0.34
Books	0.27	0.19	0.34
Stationery and drawing materials(ND)	0.56	0.42	0.68
Stationery and drawing materials	0.56	0.42	0.68
<b>10. EDUCATION</b>	<b>2.50</b>	<b>3.15</b>	<b>1.94</b>
<b>PRE-PRIMARY AND PRIMARY EDUCATION</b>	<b>0.67</b>	<b>0.73</b>	<b>0.62</b>
Pre-primary and primary education (S)	0.67	0.73	0.62
Pre-primary and primary education	0.67	0.73	0.62
<b>SECONDARY EDUCATION</b>	<b>1.72</b>	<b>2.32</b>	<b>1.21</b>
Secondary education (S)	1.72	2.32	1.21
Secondary education	1.72	2.32	1.21
<b>POST-SECONDARY NON-TERTIARY EDUCATION</b>	<b>0.11</b>	<b>0.11</b>	<b>0.11</b>
Post-secondary non-tertiary education (S)	0.11	0.11	0.11
Post-secondary non-tertiary education	0.11	0.11	0.11
<b>11. RESTAURANTS AND HOTELS</b>	<b>3.02</b>	<b>4.09</b>	<b>2.11</b>
<b>CATERINNG SERVICES</b>	<b>2.93</b>	<b>3.98</b>	<b>2.03</b>
Restaurants, café's and the like (S)	2.93	3.98	2.03
Restaurants	0.61	0.72	0.51
Café's, bars and the like	2.32	3.26	1.52
<b>ACCOMMODATION SERVICES</b>	<b>0.10</b>	<b>0.11</b>	<b>0.08</b>
Accommodation services (S)	0.10	0.11	0.08
Accommodation services	0.10	0.11	0.08
<b>12. MISCELLANEOUS GOODS AND SERVICES</b>	<b>7.18</b>	<b>6.57</b>	<b>7.70</b>
<b>PERSONAL CARE</b>	<b>5.24</b>	<b>4.53</b>	<b>5.86</b>
Hairdressing salons and personal grooming establishments (S)	0.12	0.16	0.08
Hairdressing salons and personal grooming establishments	0.12	0.16	0.08
Other appliances, articles and products for personal care (ND)	5.13	4.37	5.78
Other appliances, articles and products for personal care	5.13	4.37	5.78
<b>PERSONAL EFFECTS N.E.C</b>	<b>0.47</b>	<b>0.43</b>	<b>0.50</b>
Other personal effects (SD)	0.47	0.43	0.50
Travel goods and other carriers	0.47	0.43	0.50
<b>OTHER SERVICES N.E.C</b>	<b>1.47</b>	<b>1.61</b>	<b>1.35</b>
Other services n.e.c (S)	1.47	1.61	1.35
Other services n.e.c	1.47	1.61	1.35

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## Glossary

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**Aggregation:** The process of combining lower level price indexes to produce higher level indexes.

**Overall:** This is commonly known as the 'headline' CPI and is the highest level of the CPI, containing all the categories, sub-categories, classes and expenditure classes.

**APR:** Arithmetic mean of price relatives.

**COICOP:** Classification of Individual Consumption according to Purpose

**Cost-of-living index:** A measure of the change in household income required to maintain a constant level of utility.

**CPI:** Consumer Price Index – a general indicator of the rate of change in prices paid by households for consumer goods and services.

**CPI basket:** A commonly used term for the goods and services priced for the purpose of compiling the CPI.

**Elementary aggregate:** The lowest level of commodity classification in the CPI and the only level for which index numbers are constructed by direct reference to price data.

**Expenditure aggregate:** The current cost in dollars per year of purchasing the same quantity of goods or services as was purchased in the weighting base period by the CPI population group.

**Expenditure class:** A group of similar goods or services. The level at which weights are fixed for the life of an index series and the lowest level for which indexes are regularly published.

**GM:** Geometric mean.

**Goods and Services Tax (GST):** An ad valorem tax applied to supplies (goods and services produced or delivered) by registered suppliers engaged in taxable activity. The GST is effectively only paid by final consumers. The legislated rate of GST is 6%.

**Categories:** The first level of disaggregation of the CPI. There are 11 groups in the CPI.

**Household Income and Expenditure Survey (HIES):** A sample survey conducted by DNP/Stats to determine the expenditure patterns of private households. Data from the 2009–10 HIES was the primary source of information for the expenditure weights for the CPI.

**Indexation:** The periodic adjustment of a money value according to changes in a price index.

**Inflation (deflation):** A term commonly used to refer to changes in price levels. A rise in prices is called inflation, while a fall is called deflation.

**Link factor:** A ratio used to join a new index series to an old index series to form a continuous series.



**Matched sample:** In a matched sample, items that are priced from period to period are identical in all respects.

**Price index:** A composite measure of the prices of items expressed relative to a defined base period.

**Price levels:** Actual money values in a particular period of time.

**Price movements:** Changes in price levels between two or more periods. Movements can be expressed in money values, as price relatives or as percentage changes.

**Price relative:** A measure of price movements; the ratio of the price level in one period to the price level in another.

**Private households:** Households living in private dwellings. Private dwellings exclude prisons, non self-care units for the aged, defence establishments, hospitals and other communal dwellings.

**Quality adjustment:** The elimination of the effect that changes in the quality or composition of an item have on the price of that item in order to isolate the pure price change.

**RAP:** Relative of arithmetic mean of prices

**Reference base:** The period in which the CPI is given a value of 100.0. The CPI is currently on a reference base of 2012.

**Splicing:** A technique used to introduce new items or respondents into the index calculations so that the level of the index is not affected.

**Sub-categories:** A collection of related expenditure classes.

**Transaction prices:** The prices actually paid by consumers to acquire goods or services.

**Utility:** Often defined as the satisfaction derived from consumption of a good or service.

**Weight:** The measure of the relative importance of an item in the index regimen. Weights can be expressed in either quantity or value terms. Value weights are used in the CPI.

**Weighting base period:** The period to which the fixed quantity weights relate to. The weighting base period for the new series of CPI is June 2012.

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FOR MORE INFORMATION

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Internet [www.planning.gov.mv](http://www.planning.gov.mv)

Information and referral services

National Accounts and Economic Statistics Section of the Statistics Division can assist you in understanding better the methodology of CPI and inflation.

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