Contact Unit: Prices Statistics
Tel: 3671300
Fax: 3952201

PRODUCER PRICE INDEX (MINING AND UTILITIES)

QUARTER 2, 2019

STATISTICS BOTSWANA

PRODUCER PRICE INDEX (MINING AND UTILITIES)

QUARTER 2, 2019

PRODUCER PRICE INDEX (MINING AND UTILITIES)

QUARTER 2, 2019

Table of Contents

1.0 INTRODUCTION....5
2.0 COMMENTARY....6
3.0 Technical notes....8
3.1 Determination of PPI- Basket....8
3.2 Weighting....8
3.3 coverage....8
3.4 Products Classification....8
3.5 Difference between Producer Price Index (PPI) and the Consumer Price Index (CPI)....8
3.6 Methodology....9
3.7 Data collection....9
3.8 Prices data used to construct Producer Price Index....9

1.0 INTRODUCTION

In order to effectively meet numerous needs of our wider users, Statistics Botswana has started producing Producer Price Indices (PPI), starting with PPI for the Mining and Electricity & Water Supply industries. The organisation started to compile PPI Mining and Utilities since 2017 however figures were not published so as to observe the trend before producing a publication for dissemination. This new indicator will be produced and published on quarterly basis. As a new output, it is currently not adhering to Special Data Dissemination Standard (SDDS) of the International Monetary Fund, which requires quarterly indicators to be disseminated with a lag of 90 days after the reference period.

The Producer Price Index (PPI) is a measure of the average change over time in the prices which domestic producers received for their products. They exclude any taxes, transport and trade margins that the purchaser may have to pay. PPI differs from Consumer Price Index (CPI) in that the PPI measures the change in prices received by the business for the goods and services produced, where-as the CPI measures the change in prices for the goods and services purchased by consumers.

Producer Price indices are used for different purposes, for example in contracts, wage negotiations and in the compilation of national accounts statistics.

A quarterly PPI allows short-term price inflation to be monitored through different stages of production. It is also used by government Departments/Ministries for economic analysis. The base year for the Producer Price Indices is 2017. This publication is for second quarter of 2019.

Being the first Producer Price Index to be produced in Botswana, it is subject to improvement as methods and data sources are enhanced. Feedback from users to improve the quality of the report is most welcome. Other families of PPI namely Agriculture and Manufacturing will be produced towards the end of 2020.

Dr. Burton S. Mguni
Statistician General
December 2019

2.0 COMMENTARY

2.1 Mining Producer Price Index

The Mining industry comprises of Coal, Diamond, Soda Ash, Gold, quarrying & sand. The Mining Producer Price Index moved to 99.2 in second Quarter of 2019, registering an increase of 10.0 percent from 90.2, which was recorded in the first Quarter of 2019. The increase was due to a rise in section indices of diamond and coal by 10.5 and 10.7 percent respectively.

The Mining Producer Price Annual Inflation for the second quarter of 2019 dropped to a negative 6.3 percent compared to 6.9 percent recorded in the first quarter of 2019. The producer price of quarter on quarter change in the Mining and Quarrying sector showed fluctuating trends due to the volatility of mineral prices. (Refer to table 1).

2.2 Utilities (Water and Electricity) Producer Price Index

Utilities covers Electricity and Water Supply industries. These are activities of providing electric power, water collection, treatment and distribution of water for domestic and industrial needs. The Utilities Producer Price Index in the second quarter of 2019 remained constant at 111.2, same index as in the first Quarter of 2019.

The year on year Utilities Producer Price inflation for the second quarter of 2019 recorded zero percent as opposed to 11.2 percent, which was registered in the first quarter of 2019 (Refer to table 2). The year on year rise in the first quarter of 2019 was attributed to an increase in the electricity tariffs by 31.9 percent for Government, 19.2 percent for Commercial companies, 10 percent for both Mining and households' consumers, which were effected on the 1st April 2018.

Chart 1: Quarter on quarter percentage Change for Mining

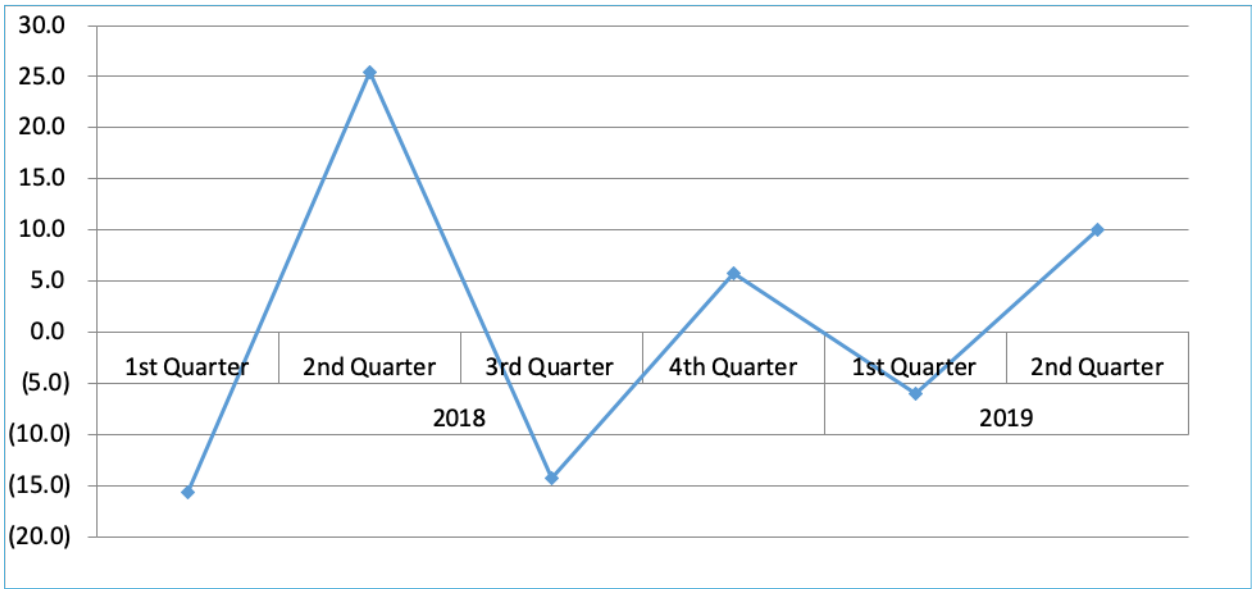

Table 1 Percentage change (Mining)

Year	Quarter	PPI Index	Quarter on Quarter change	Year on Year change
2017	Jan-Dec	100,0	-	-
2018				
	Quarter 1	84,4	-	-
	Quarter 2	105,9	25,5	-
	Quarter 3	90,8	(14,3)	-
	Quarter 4	95,9	5,7	-
2019	Quarter 1	90,2	(6,0)	6,9
	Quarter 2	99,2	10,0	(6,3)

Table 2; Percentage change Utilities (Water and Electricity)

Year	Quarter	PPI Index	Quarter on Quarter change	Year on Year change
2017	Jan - Dec	100,0	-	-
2018	Quarter 1	100,0	-	-
	Quarter 2	111,2	11,2	-
	Quarter 3	111,2	0,0	-
	Quarter 4	111,2	0,0	-
2019	Quarter 1	111,2	0,0	11,2
	Quarter 2	111,2	(0,0)	(0,0)

3.0 Technical notes

3.1 Determination of PPI- Basket

A price index is calculated by measuring the change in price of a 'fixed basket' of goods and services over time. The basket is selected based on the items (goods) which are relevant, reliable, representative of the industry, and comparable over a period of time. Data for weighting the items that form the PPI basket comes primarily from the sales/revenue of each mining company. The weights are key elements in the construction of PPIs in order to determine the impact that a particular price change will have on the overall index. Basing on the weights of products diamond, coal, gold and salt are representatives of the mining sector.
Water and Electricity weights were derived from the total revenues of the Utilities companies. The weight reference period of the basket is 2017.

3.2 Weighting

Weights refer to the relative importance of the items in the basket in terms of their revenue values. Weights are usually expressed as a percentage relative to other items in the basket, with all weights summing to 100. The weight of an item determines the impact that a particular price change will have on the overall Producer Price Index. An item which carries more weight has a greater impact on the overall producer price index than one with a lesser weight if both are subjected to the same price change. Weights will be reviewed every five years to ensure that they remain representative of the current economic condition.

Table 3: Mineral Products and their Weights

Commodity Group	Weights (%)
1.0 Diamond	94,67
2.0 Gold	0,93
3.0 Soda Ash	1,05
4.0 Coal	1,94
5.0 Salt	0,74
6.0 Quarry	0,67

Table 4; Utilities Weights

Commodity Group	Weights (%)
Electricity	67.97
Water	32.03

3.3 Coverage

The Producer Price Index is not calculated separately for the regions. Products having a certain share in production are covered without a regional or district separation. The geographical coverage is national.

3.4 Products Classification

The following classifications are used; the Central Product Classification (CPC) to classify products and International Standard Industrial Classification (ISIC) to classify industries.

3.5 Difference between Producer Price Index (PPI) and the Consumer Price Index (CPI)

The Producer Price' index (PPI) measures the change in prices received by business for the goods and services they produce, where-as the Consumer Price Index (CPI) measures the change in prices for the goods and services purchase by consumers.

The PPI and the CPI differ in their treatment of imports. The CPI includes within its scope, goods and services purchased by households within Botswana and therefore includes imports. In comparison, the PPI does not

include imports, because imports are by definition not produced by domestic producers. For example imports compose a significant portion of the CPI, especially new-cars, substantial portion of clothing and food items.

It should also be noted that the PPI and the CPI differ in their categorization and treatment of trade and transportation. For instance, the PPI normally separates the costs of transporting, retailing, and wholesaling from the cost of the good itself and classifies trade and transportation as services. In comparison the prices for goods as measured by the CPI usually include the value of the goods, the value of transporting the goods, and the trade margins associated with the sale of the goods.

Another distinction is that prices measured by the CPI include sales and excise taxes, while prices measured by the PPI exclude those taxes. All prices collected for goods covered in the PPI are the revenue received by the producers. Sales and excise taxes are excluded in the price because they do not represent revenue of the producer. The prices collected for goods contained in the CPI are the out-of-pocket expenditure by consumers for that items. Again in CPI, sales and excise taxes are included in the price because they are necessary expenditures by consumers for the items.

The main use of the PPI is to deflate revenue streams in order to measure real growth in output while the primary use of the CPI is to adjust income and expenditure streams for changes in the cost of living.

3.6 Methodology

Botswana PPI is calculated using a modified Laspeyres index. The major advantage of using modified Laspeyres is that it allows for substitution in elementary indices. The Laspeyres index compares the base period revenue for a set of goods to the current period revenue for the same set of goods.

The formula is approximated as follows;

$$I_i = [(\Sigma Q_o P_o (P_i/P_o))/\Sigma Q_o P_o] \times 100$$

Where: P_o is the price of a commodity in the base period;

P_i is the price of a commodity in the current period; and

Q_o is the quantity of the commodity in the base period.

In this form, the index is the weighted average of price relatives (price ratios for each item $= P_i / P_o$. The expression $Q_o P_o$ represents the weights in value form.

3.7 Data collection

Monthly data on revenue/sales and volume is requested from mining companies and utilities authorities. This information is needed to calculate the price per unit for each item. However the unit price for water and electricity are based on tariff pricing because the monthly revenue do not correlate with the consumption.

3.8 Prices data used to construct Producer Price Index

PPI measures the average change over time in the selling prices received by domestic producers. The prices included in PPI Mining and Utilities are from the transaction prices for mining products, water and electricity bills.
Monthly information on sales in pula and volume, is requested from mining companies. The price per unit is calculated from the information provided by companies. The pricing method used is unit value where total revenue for each category is divided by the quantity to give a price per unit (such as price per carat for the diamond, or price per tonne for other products). The use of unit value is only suitable where the products in the calculation are homogeneous. All mining and a sample of quarrying companies are included in the sample. The tracking of price movements of a particular item (good) should be done in such a way that the item price tracked is consistent with its characteristics (size, model/shape and quality). In the case of mining it is difficult to classify minerals because they come up with different size, shape and quality and hence we use the average price per unit instead of direct prices.

In order to calculate the Utilities' Producer Price Index (PPI) the price tariff was used in the short term. This was due to inconsistent in monthly consumption values and sales data, hence the unit value calculated was unstable meaning the monthly sales received by companies did not correlate with the consumption for that particular month. However plans are on the way to work with the utilities companies to get comparable data in the long term.

PRODUCER PRICE INDEX (MINING AND UTILITIES)

QUARTER 2, 2019