**PRODUCER PRICE INDEX - MANUFACTURING (PPI-M)**

**4th Quarter 2022**

 **(Base year: 2018 =100)**

**1.** **Introduction**

The Producer Price Index for the Manufacturing sector (PPI-M) measures pure price changes in the effective prices received by producers for that part of their output, which is sold on the domestic market (in Mauritian rupees) and therefore excludes Export Oriented Enterprises.

This issue of the Economic and Social Indicators (ESI) presents a series of monthly PPI-M for the period January 2022 to December 2022 and quarterly indices from the first quarter of 2021 to the fourth quarter of 2022. The weights for the PPI-M have been derived from the results of the 2018 Census of Economic Activities.

Indices prior to January 2022 are posted on Statistics Mauritius website in the historical series of manufacturing statistics:

<https://statsmauritius.govmu.org/Pages/Statistics/By_Subject/Indices/SB_Indices.aspx>

The methodology used for the computation of PPI-M is annexed.

**2. Changes during fourth quarter 2022**

**2.1 Manufacturing Sector**

The Producer Price Index for the manufacturing sector registered a decrease of 0.2 points (-0.1%) from 148.1 in September 2022 to 147.9 in December 2022. The main reason for the net decrease was lower prices of “Food products and beverages” (-1.0%), “Other transport equipment” (-3.1%) and “Basic metals” (-3.6%), partly mitigated by higher prices of “Rubber and plastic products” (+3.6%), “Chemicals and chemical products” (+0.8%), “Fabricated metal products” (+0.9%), “Wearing apparel” (+0.7%) and “Other non-metallic mineral products” (+0.8%).

On a monthly basis, PPI-M decreased by 0.2 points (-0.1%) in both October and November, followed by an increase of 0.2 points (+0.1%) in December 2022 (Table 1a).

**2.2 Manufacture of Food Products and Beverages**

The Producer Price Index for “Food products and beverages”, which accounts for 44.7% of the total weight, registered a net decrease of 1.5 points (-1.0%) from 145.5 in September 2022 to 144.0 in December 2022. This decrease was mainly attributable to lower prices of “Vegetable and animal

 oils and fats” (-17.1%), “Animal feed” (-1.2%) and “Grain mill products” (-1.0%), partly mitigated by higher prices of “Dairy products” (+2.8%), “Processing and preserving of meat” (+1.0%) and “Other food products n.e.c” (+1.7%) of which “Spices, sauces, condiments and other food products n.e.c” (+1.6%).

On a monthly basis, the index for this activity group decreased by 1.1 points (-0.8%) in October, 0.4 points (-0.3%) in November and remained unchanged in December (Table 1b).

**2.3 Manufacture of Chemicals and Chemical Products**

The Producer Price Index for “Chemicals and Chemical Products”, which accounts for 8.9% of the total weight, registered a net increase of 1.2 points (+0.8%) from 156.7 in September 2022 to 157.9 in December 2022. This increase was mainly attributable to higher prices of “Fertilizers and nitrogen compounds” (+8.2%), partly offset by decreases in the prices of “Basic chemicals” (-6.5%).

On a monthly basis, this index increased by 0.6 points (+0.4%) in October, 0.1 points (+0.1%) in November and 0.5 points (+0.3%) in December (Table 1c).

**2.4 Manufacture of Rubber and plastic products**

The Producer Price Index for “Rubber and plastic products”, which accounts for 2.8% of the total weight, registered a net increase of 5.4 points (+3.6%) from 148.3 in September 2022 to 153.7 in December 2022. This increase was attributable to higher prices of “Plastic products” (+3.6%).

On a monthly basis, this index increased by 5.4 points (+3.6%) in October and remained unchanged from November to December (Table 1c).

**3. Change in quarterly PPI-M**

**3.1 Manufacturing Sector**

The average PPI-M for the fourth quarter of 2022 stood at 147.8, i.e. an increase of 1.1 points (+0.7%) from 146.7 in the third quarter of 2022. This increase was mainly attributable to higher prices of “Food products and beverages” (+1.6%), “Wood and products of wood & cork; articles of straw and plaiting materials/ Paper and paper products” (+4.1%), “Chemicals and chemical products” (+1.4%), “Rubber and plastic products” (+4.0%) and “Printing and reproduction of recorded media” (+3.8%), partly offset by lower prices of “Fabricated metal products” (-4.6%) (Table 2a).

Compared to the corresponding quarter of 2021, the average PPI-M for the fourth quarter of 2022 increased by 21.1 points (+16.7%), mainly explained by higher prices of “Food products and beverages” (+18.6%), “Chemicals and chemical products” (+26.7%), “Furniture” (+22.0%), “Wood and products of wood & cork; articles of straw and plaiting materials/ Paper and paper products” (+36.1%), “Rubber and plastic products” (+29.3%) and “Wearing apparel” (+12.0%).

**3.2 Manufacture of Food Products and Beverages**

Compared to the previous quarter, the index for “Food products and beverages” increased by 2.2 points (+1.6%) in the fourth quarter of 2022. The index for “Food products” increased by 3.2 points (+2.1%), mainly explained by higher prices of “Processing and preserving of meat” (+4.2%), “Bakery products” (+5.2%) of which “Bread/Pastries and cakes” (+5.6%), “Animal feed” (+3.3%), “Dairy products” (+3.5%) and “Other food products n.e.c” (+1.5%) of which “Spices, sauces, condiments and other food products n.e.c” (+1.5%), partly offset by decreases in the prices of “Vegetable and animal oils and fats” (-3.4%) and “Grain mill products” (-1.4%). The index for beverages increased by 0.6 points (+0.5%) due to increases in the prices of “Soft drinks, mineral waters and other bottled waters” (+2.3%) and “Wines” (+2.9%).

Compared to the fourth quarter of 2021, the index for “Food products and beverages” increased by 22.6 points (+18.6%). The index for “Food products” increased by 28.9 points (+23.0%), mainly due to higher prices of “Vegetable and animal oils and fats” (+65.2%), “Processing and preserving of meat” (+21.9%), “Grain mill products” (+35.1%), “Animal Feed” (+19.4%), “Bakery products” (+14.2%) of which “Bread/Pastries and cakes” (+15.3%) and “Other food products n.e.c.” (+12.4%) of which “Spices, sauces, condiments and other food products n.e.c.” (+12.6%). The index for “Beverages” increased by 11.9 points (+10.4%), mainly due to higher prices of “Malt liquors and malt including non alcoholic beer” (+9.5%) and “Distilled potable alcoholic beverages” (+15.1%).

**3.3 Manufacture of Chemicals and Chemical Products**

The index for “Chemicals and Chemical Products” increased by 2.2 points (+1.4%) in the fourth quarter of 2022 when compared to the previous quarter. This increase was explained by higher prices of “Soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations” (+4.5%) and “Fertilizers and nitrogen compounds” (+8.2%), partly offset by lower prices of “Basic chemicals” (-12.4%).

Compared to the corresponding quarter of 2021, the index for “Chemicals and Chemical Products” increased by 33.2 points (+26.7%) in the fourth quarter of 2022. This increase was explained by higher prices of “Fertilizers and nitrogen compounds” (+79.2%), “Soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations” (+22.7%) and “Paints, varnishes and similar coatings, printing ink and mastics” (+18.4%).

**3.4 Manufacture of Rubber and plastic products**

The index for “Rubber and plastic products” increased by 5.9 points (+4.0%) in the fourth quarter of 2022 when compared to the previous quarter. This increase was explained by higher prices of “Plastic products” (+4.0%).

Compared to the corresponding quarter of 2021, the index for “Rubber and plastic products” increased by 34.8 points (+29.3%) in the fourth quarter of 2022. This increase was explained by higher prices of “Plastic products” (+29.3%).

 **4. Yearly Index**

The average yearly index for the manufacturing sector as a whole was 141.5 in 2022, i.e. 21.7 points (+18.1%) higher than the figure of 119.8 in 2021. The index for the “Manufacture of food products and beverages” was 135.7 in 2022 compared to 115.4 in 2021, showing an increase of 20.3 points (+17.6%). The index for the “Manufacture of chemicals and chemical products” stood at 146.8 in 2022, higher by 33.0 points (+29.0%) compared to 113.8 in 2021. The index for “Manufacture of rubber and plastic products” was 138.2 in 2022 compared to 113.8 in 2021, i.e. an increase of 24.4 points (+21.4%).

Figure 9 shows that the yearly indices for the manufacturing sector as a whole and that for “Manufacture of food products and beverages” had an upward increasing trend from 2019 to 2022. The indices for “Manufacture of chemicals and chemical products” and “Manufacture of rubber and plastic products” increased slightly from 2019 to 2020, followed by a rapid increase from 2020 to 2022.

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**Producer Price Index – Manufacturing (PPI-M)**

**Methodology for the computation of the PPI-M**

1. **Definition**

The Producer Price Index (PPI-M) measures changes in the effective prices received by producers in the manufacturing sector for that part of their output, which is sold on the domestic market. It reflects the price trends of a fixed basket of goods representative of the output of Non-Export Oriented Enterprises (Non EOE).

The concepts and definitions of the PPI-M largely follow the guidelines provided in the “IMF Producer Price Index Manual Theory and Practice”.

1. **Scope**

The PPI-M covers both large and small manufacturing establishments falling within divisions 10 to 33 of the National Standard Industrial Classification Rev.2 (NSIC Rev.2), which is an adapted version of the International Standard Industrial Classification (ISIC) Rev.4. The establishments are classified under 24 divisions, 71 groups, 137 classes and 240 sub-classes.

The following divisions have been excluded for reasons given in brackets:

1. Division 12: Manufacture of tobacco products (no longer manufactured in Mauritius)
2. Division 19: Manufacture of coke and refined petroleum products (weight in the overall index is not significant)
3. Division 21: Manufacture of basic pharmaceutical products and pharmaceutical preparations (weight in the overall index is not significant and change of products is too dynamic)
4. Division 33: Repair and installation of machinery and equipment (weight in the overall index is not significant and change of products is too dynamic)

However, Division 26: Manufacture of computer, electronic and optical products has been included in the current basket mainly because its weight in the overall index is significant.

The activities covered by the index represent around 97% of the gross output generated by the Non-EOE manufacturing sector during year 2018.

**3. Frame**

A list of all large establishments (engaging 10 or more persons) falling under the scope of the PPI-M was obtained from the 2018 Census of Economic Activities (CEA 2018). For small establishments (engaging less than 10 persons), the list of respondents at the CEA 2018 was used.

**4. Selection of establishments (producers)**

A sample of 126 large establishments was selected from the list of large manufacturing establishments. Those establishments were the most important ones in terms of Gross Output (GO) in their respective 5-digit sub-class.

Small establishments selected for price collection were those engaged in the manufacture of wearing apparel, fabricated metal products and wooden furniture, as these activities were the most important ones performed by small manufacturing establishments. A sample of 5 establishments was selected from the list of small manufacturing establishments.

Output of the selected establishments represented around 63% of the total GO generated by all establishments falling within the scope of the PPI-M.

**5. Selection of products to be priced**

Some 500 products have been selected for pricing. These are the most important ones in terms of contribution to the gross output or turnover of the selected establishments.

**6. Price collection**

Prices collected refer to the prices received by producers for the sale of their products on the local market. The prices exclude all taxes on products, namely excise duty and value added tax (VAT).

As from January 2018, prices are collected on a monthly basis and provisional monthly indices are compiled. The overall PPI-M on a monthly basis is published according to SDDS requirements.

For revised monthly and quarterly indices at division level and in some specific cases at even lower level, the selected establishments are visited on a quarterly basis and prices of the selected products are collected for each month of the reference quarter.

**7. Updating of weights**

***7.1 Historical background***

Statistics Mauritius first published a Producers Price Index limited to the “Manufacturing of food products, beverages and tobacco” in March 1994 with 1993 as base period (1993 = 100). The index was revised in June 2002 to cover all relevant industry groups of the former Non- EPZ manufacturing sector, based on the results of the 1997 Census of Economic Activities. The base period was 1998. The base year was subsequently revised to 2003, 2007 and 2013, based on the results of the 2002, 2007 and 2013 rounds of the Census of Economic Activities.

The current basket of goods has been updated based on the results of the 2018 Census of Economic Activities and the index is computed with year 2018 as base period.

**8. Index calculation**

 The PPI-M is computed according to the Laspeyres Formula.

The formula used is given below



 Where Ic = Index for current month

 Wi = Weight associated with product i

 Pci = Price of product i for the current month

 Poi = Price for product i for the base period (2018)

The PPI-M is calculated at the 5-digit sub-class level of the NSIC Rev.2 by the above formula. The lowest level indices are determined as a geometric average of the price relatives of the basic observations. Indices at the division level (2-digit code) are then derived as a weighted average of the indices of the products falling within each division. Finally, the overall index is obtained as a weighted average of the division indices.

**9. Uses of PPI**

1. The PPI is a leading indicator of the future status of inflation. Movement of PPI is usually indicative of a similar change of part of the Consumer Price Index (CPI). PPI can also be used in the economic analysis of inflation transmission process.
2. It provides specific price deflators for the computation of national accounts at constant prices in order to measure real growth
3. It is helpful in the formulation of contract agreement. It can be used as an escalation clause to protect buyers and sellers against inflation or deflation.
4. PPI is also used in econometric models, in forecasting and in inventory accounting.

**10. Missing prices**

In case of temporarily missing prices for products, imputation is carried out as per International Monetary Fund’s recommendations.

**11. Treatment of product permanently disappeared**

Products may disappear permanently for various reasons. The products may disappear from the market because new products have been introduced or the establishments from which the price has been collected have stopped selling the product. When a product disappears permanently, a replacement product of a similar nature will be included in the index.

**12. Treatment of quality change**

The index is a measure of only “PURE” price changes and should as far as possible measure the price changes of the same products. Hence, the products must not be affected by quality change. If the change is due to quality, an estimate of the proportion of the change attributed to the quality element is made and adjustment done accordingly.

**13. Reliability of the PPI-M**

The statistical accuracy of the PPI-M depends heavily on the quality of information provided by the selected establishments (respondents). This office places great emphasis on the need for reporting effective selling prices, i.e. prices after discounts and other price deductions rather than the list or catalogue prices.

Standard editing procedures are used to validate the accuracy and reliability of the data. Collected prices are validated during the field work and inconsistencies discussed with the respondents and corrected.

Further computer checks are made at office level when compiling the indices. Comparison is also made with the CPI and with the import/export price indices. Systematic analyzes of the source data are made in the context of weight and base year revisions that occur every five years.