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# TECHNICAL ASSISTANCE REPORT

## BOTSWANA

### Report on the Price Statistics Mission

**JANUARY 2022**

**PREPARED BY**

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## Glossary

AFS	IMF's Regional Technical Assistance Center for Southern Africa - AFRITAC South
BMTHS	Botswana Multi Topic Household Survey
BAMB	Botswana Agricultural Marketing Board
BISIC	Botswana International Standard Classification
CPC	Central Product Classification
CPI	Consumer Price Index
HBS	Household Budget Survey
IIP	Index of Industrial Production
IMF	International Monetary Fund
ISIC Rev. 4	International Standard Industrial Classification of All Economic Activities Revision 4
OOH	Owner occupied housing costs
PPI	Producer Price Index
SB	Statistics Botswana
TA	Technical Assistance

## SUMMARY OF MISSION OUTCOMES AND PRIORITY RECOMMENDATIONS

1. **A technical assistance (TA) mission was conducted by the International Monetary Fund's (IMF) Regional Technical Assistance Center for Southern Africa (AFS)<sup>1</sup> during November 22–26, 2021 to continue assisting Statistics Botswana (SB) with developing the producer price index (PPI).** Due to ongoing COVID-19 related travel restrictions, this mission was conducted remotely using Microsoft Teams, WhatsApp, and email. Previous missions to assist with developing price indexes were held in February 2019 and October 2020.
2. **A broad range of representative price indexes are essential in understanding inflationary pressure in the economy and to better-inform economic policy making by the authorities.** National accounts require robust producer price indexes to develop more reliable volume measures to improve estimates of economic growth.
3. **SB reinstated dissemination of the PPI in September 2021, following recommendations from the October 2020 TA mission.** Due to extreme volatility in the component mining index for diamonds, SB had to suspend dissemination of the PPI in late 2019 while improvements were implemented. The reinstatement of the PPI is welcome progress.
4. **The SB national accounts department have requested PPI coverage be expanded to include agriculture and manufacturing activities.** A preliminary sample of establishments for manufacturing industries was selected during the mission, and SB should plan to begin the initiation/recruitment phase of PPI price collection in early 2022. There are difficulties in the collection of price data from commercial farms. The mission identified and discussed different options to improve non-response, along with investigating potential sources of agriculture data that may be available from other government departments and industry associations.
5. **The consumer price index (CPI) currently excludes owner occupied housing costs (OOH).** SB have a regular rental survey and have indicated they would like to use the rental equivalence approach for measuring OOH in the CPI. The mission reviewed data from the national accounts, that provides housing stock and average rental price levels. These data appear suitable to compile expenditure weights for OOH, however, further quality assurance is needed. The authorities should consider testing the inclusion of OOH in CPI using these preliminary weights and disseminate internally within SB for assessment.
6. **The price statistics unit in SB is responsible for the development, compilation, and dissemination of all price indexes.** The unit consists of four full time staff. While the staff clearly

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<sup>1</sup>AFS provides TA and training to Angola, Botswana, Comoros, Eswatini, Lesotho, Madagascar, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Zambia, and Zimbabwe. AFS donors are the European Union, Switzerland, Germany, China, Mauritius, the United Kingdom, Netherlands, European Investment Bank and Australia.

show the capability for developing price indexes, they are limited by the number of resources available with which to develop, improve, and disseminate indexes. SB management should carefully review the staff and budgetary resources needed to continue an ambitious program to expand the PPI.

**7. The Covid-19 pandemic has restricted the amount of PPI development that has taken place.** As a result of the pandemic, resources have been prioritized for the compilation of CPI. Lockdown restrictions have also meant that planned engagement with establishments, farmers, and industry associations has not been possible. It is anticipated that this situation will improve as the Covid-19 pandemic stabilizes. The 2021 population census was postponed due to COVID-19 and will be conducted during 2022. Price statistics staff will be expected to support data collection activities, and this could impact progress.

**8. To support progress in the above work areas, the mission developed and agreed with the authorities a detailed action plan to guide the way forward.** The authorities agreed to complete the following priority recommendations,

**Table 1. Botswana: Priority Recommendations**

Target Date	Priority Recommendation	Responsible institutions
January 2022	Meet with the Botswana Agriculture Marketing Board to discuss availability of price data for PPI compilation.	Statistics Botswana
January 2022	Finalize the manufacturing establishment sample and prepare for price initiation/recruitment in Q1 2022.	Statistics Botswana
March 2022	Initiate/recruit commercial farms.	Statistics Botswana
June 2022	Test the inclusion of OOH in the CPI and disseminate an analytical index internally for assessment.	Statistics Botswana

Further details on the priority recommendations and the related actions/milestones can be found in the action plan under *Detailed Technical Assessment and Recommendations*.

# DETAILED TECHNICAL ASSESSMENT AND RECOMMENDATIONS

## A. Expanding PPI Coverage

**9. Manufacturing activities are an important component of the Botswana production sector.** Of note are the manufacturing industries for diamond cutting and manufacture of alcoholic beverages. These industries, along with several other manufacturing industries have also been flagged as being important for deflation purposes in the national accounts.

**10. To meet the needs of national accounts, PPI coverage will be expanded to include manufacturing activity.** The development of a PPI for manufacturing will require the collection of price data from establishments classified to manufacturing industries. Statistics Botswana classifies activities and establishments according to the Botswana International Standard Industrial Classification, Rev.4 (BSIC), which is aligned to the International Standard Industrial Classification Rev.4 (ISIC).

**11. A census of manufacturing was conducted by SB in 2019.** These data were made available during the mission to assist with a preliminary selection of establishments. These data provide a list of establishments classified by 4-digit BSIC (industry), total sales by establishment for the 2017/18 financial year, and the registered trading name and location of each establishment. No further details of sales broken down by product are currently available, but the prices unit should discuss the potential availability of these data with national accounts colleagues. Alternatively, these data can be collected as part of the initiation/recruitment phase of PPI price collection.

**12. To ensure broad coverage of an activity or industry, the sample should be selected to broadly represent total sales.** The mission demonstrated the various methods that can be used to select a sample of establishments, both statistical and judgmental, ultimately recommending a cut-off sample to be implemented. The use of a cut-off sample will provide the authorities with confidence that the sample provides adequate coverage of each industry but is also simple to implement and maintain.

**13. The cut-off sampling method was used to select a preliminary sample of establishments for manufacturing during the mission.** The mission used a cut-off threshold of 80 percent of total sales, both in terms of selecting the industries for inclusion, and to select establishments within an industry. The use of 80 percent as a threshold provides a balance of ensuring the sample is representative but manageable within the resources available. The preliminary list of industries selected (4-digit BSIC), and the sampled number of establishments within each industry is summarized in Table 2. In total, 36 establishments were initially sampled:

**Table 2. Botswana: Preliminary Sample of Establishments for Manufacturing PPI**

Table 2 Preliminary sample of industries to be included in the manufacturing PPI using a threshold sample							
Industry (BSIC)	Industry name	Count of establishments in frame	Total sales (pula)	% sales	cumulative sales	% of total establishments	No of establishments selected
3214	Diamond cutting and polishing activity	11	4,688,488,999	28.9	28.9	2.6	5
1103	Manufacture of Malt Liquors and Malt	1	1,657,505,000	10.2	39.2	0.2	1
1061	Manufacture of Grain Mill products	17	1,496,757,751	9.2	48.4	4.0	3
2930	Manufacture of parts and accessories for motor vehicles	5	1,159,572,674	7.2	55.5	1.2	2
1010	Processing and preserving of meat	28	1,043,062,883	6.4	62.0	6.6	3
1050	Manufacture of Dairy Products	3	618,229,035	3.8	65.8	0.7	2
1072	Manufacture of Sugar	2	540,013,000	3.3	69.1	0.5	2
1080	Manufacture of Prepared Animal Feed	3	512,555,442	3.2	72.3	0.7	2
2395	Manufacture of articles of concrete, cement and plaster	33	500,724,961	3.1	75.4	7.8	9
2420	Manufacture of basic precious and other non-ferrous metals	3	308,890,105	1.9	77.3	0.7	1
2813	Manufacture of other pumps, compressors, taps and valves	1	304,865,448	1.9	79.2	0.2	1
1812	Services related to printing	19	248,815,819	1.5	80.7	4.5	5
TOTAL ESTABLISHMENTS SELECTED							36

**14. The preliminary manufacturing sample omitted a small number of industries which were identified by national accounts as priorities.** These industries, such as manufacturing of wearing apparel (BSIC 1410) and manufacturing of plastics (BSIC 2220) only represent a relatively small proportion of sales but do represent a larger proportion of establishments in the manufacturing sector (for example, the wearing of apparel industry represents 13 percent of establishments but only 0.3 percent of sales). The preliminary sample was updated to include these missing industries. As a result, the number of establishments selected almost doubled from 36 to 66, with the total sales coverage of the sample increasing only by 2.3 percent, from 80.7 percent of total sales to 83.0 percent. This would almost double the resources needed to collect the price data from selected establishments. The price statistics unit should engage with their national accounts colleagues to discuss the preliminary sample and to agree if the priority industries are still required. Given the relatively small size of these industries, the mission recommended excluding them from the sample. The authorities should aim to finalize the sample by the end of December 2021.

**15. The exercise to initiate establishments for PPI is typically resource intensive.** It is recommended that establishments be initiated via a personal visit. Given the importance of price initiation, SB should ensure they prepare thoroughly ahead of the exercise. This will include contacting each sampled establishment ahead of the initiation visit to confirm the contact and location of the establishment, providing material that explains what will be required from the establishment ahead of the visit and agreeing a suitable appointment for the visit to take place. The mission discussed the importance of specification pricing, and the need to collect a sufficient level of detail for each transaction during the visit. Further details regarding specification pricing are provided in Annex III.

**16. Statistics Botswana will use purposive sampling to select the products and**

**transactions to be priced in discussion with the establishment.** This assumes that detailed sales by product within each establishment are not available from the census of manufacturing. If these data are available, then SB should use a cut-off threshold method to select the products within the establishment that represent a significant proportion of sales. However, if these detailed data are not available, then SB will need to identify the most important products for inclusion in discussion with the establishment. Once products have been identified, SB should aim to collect one or two representative price transactions per product for inclusion in the PPI. Further details on the methods to select products and transactions are provided in Annex IV.

**17. It is generally recommended to use detailed product weights in the compilation of a PPI.** The use of detailed weights is possible for the PPI as the sales by product are typically reported during a census of manufacturing or available during initiation of the establishment. If these data are not available, then it can be collected during the initiation visit. While the preferred source of data would be via the total sales values for each product line as reported by the establishment, there are other options available, such as using estimated proportions or ranking. These methods are detailed in Annex IV. Should these data be unavailable, or the establishments unwilling to provide the data, then as a last resort, equal weights should be assigned to each transaction.

**18. With a preliminary sample of manufacturing establishments in place, the authorities can make good progress with initiation/recruitment in early 2022.** While there are a few small issues to clear up with national accounts, the authorities should aim to finalize the sample of establishments by the end of 2021 and begin preparing to commence the price initiation exercise by March 2022.

***Recommended Actions:***

- The price statistics unit should discuss the availability of product level sales data for those establishments selected for the manufacturing PPI.
- The sample of establishments for a manufacturing PPI should be selected using a 'cut-off sample' methodology.
- SB should initiate each establishment for the manufacturing PPI by personal visit.
- Prepare for the initiation of establishments for PPI.
- Discuss with national accounts the proposed list of industries to be included in the manufacturing PPI.
- Finalize the PPI sample by end 2021.
- Commence the initiation of establishments for manufacturing PPI.
- The PPI should be compiled using detailed product level weights.

## **B. Agriculture**

**19. Intermittent progress has been made by SB with the development of a PPI for**

**agriculture activities.** There have been problems with collecting price data from commercial farms, but this problem has been exacerbated by the Covid-19 pandemic. The pandemic has also impacted the availability of price data from other government departments and industry associations. It is hoped that the pandemic is now stabilizing and therefore progress can be resumed on the development of a PPI for agriculture.

**20. The authorities should prioritize securing access to cereal crops price data from the Botswana Agriculture Marketing Board (BAMB).** The BAMB compile and disseminate monthly producer prices broken down by crop and by grade of crop reflecting the market price which cereal crop farmers receive per 50kg bag (see Annex V for an example). However, the BAMB website is currently inaccessible and engagement with the BAMB had been suspended due to Covid-19. During the mission, investigations showed that the BAMB continues to disseminate the price data via social media accounts, although the mission recommended not relying on social media as a data source for PPI. SB should arrange a meeting with the BAMB as soon as possible to discuss the price data they disseminate and to arrange supply of both current and historic price data. This engagement should allow the authorities to begin compiling preliminary indexes for the cereal crop component of agriculture, while further development of a wider agriculture basket takes place.

**21. SB expressed concerns about seasonally missing price data for various items in the agriculture basket.** In particular, some items, such as root vegetables are subject to seasonal availability. When dealing with seasonal unavailability, an attempt should be made to impute the missing price data until the actual prices return. The most suitable methods of imputation are the overall mean imputation and targeted imputation. The mission demonstrated how each method should be used, and additionally how these methods can be used more generally for imputation of missing price data. The use of the carry forward should be avoided unless the price is regulated or fixed.

**22. During the regular collection of price data, it is important to establish when a price is missing due to out of season periods or because the product is no longer available.** When a price is missing and it is not due to being out of season, it is generally acceptable to impute a missing price for three successive periods before a replacement transaction should be identified. SB should discuss missing price data with the establishment or farm and when a replacement is needed use a suitable method of quality adjustment to introduce the replacement into the index. The mission demonstrated the main implicit quality adjustment methods and recommended SB use the most appropriate method depending on the availability of price data.

**23. SB have continued to find it difficult to collect data for other products from farms.** SB have held initial discussions with the commercial poultry farms and horticulture farms and while these discussions have proved that suitable price data are likely to be available, a minimal amount of price data has been provided. In particular, the regular supply of price data from horticulture farms has been problematic. Following discussion at the TA mission in October 2020, SB initiated an outreach exercise which included sending commercial farms PPI material and a letter from the SB National Statistician to support the request for data. However, this exercise

was not successful due in large part to the Covid-19 pandemic.

**24. SB should consider a period of extensive face-to-face engagement with poultry and horticulture farms to encourage participation in the PPI.** This engagement should build on the outreach that has already taken place, but also consider getting support from the respective farming associations who may help in convincing farms to provide price data. The mission also discussed the potential use of legislation to support price collection. While SB have legislation that would support the collection of data, it was felt, on the back of difficulties stemming from the Covid-19 pandemic that using this would potentially generate undue bad feeling. It was also noted that the engagement exercise would be resource intensive, and the authorities may need to consider the resources that are available to support this work. In the longer term, if the engagement exercise is a success, then SB should be able to start compiling indexes for these areas of the agriculture basket.

**25. Identification of the larger commercial farms may lead to a more reliable supply of price data.** The authorities should engage with the Department of Agriculture Business Promotion to assist in identifying the large and reputable horticulture commercial farms. This will help to improve the sample size and response for an agriculture PPI.

**26. Despite the difficulties in getting price data from farms, SB are receiving regular price data from the two main egg farms in Botswana.** Both egg farms are providing monthly unit value prices for eggs, although one farm is providing additional detail with the price data being disaggregated separately based on the size of egg. These price data look stable and offer the potential to start the compilation of an index for eggs. SB should continue to work with the second egg farm to provide price data broken down by size of egg. However, if this is not available, SB should begin the compilation of a price index for eggs, and depending on the resulting index, consider disseminating this alongside the PPI for mining and utilities.

***Recommended Actions:***

- Arrange meeting with BAMB to agree the supply of price data for cereal crops.
- If the BAMB agree to provide price data, begin the compilation of a PPI for cereal crops.
- SB should use either the overall mean or targeted imputation to deal with missing seasonal prices.
- Commence intensive period of engagement with horticulture and poultry farmers to agree the provision of price data.
- Engage with the Department of Agriculture Business Promotion to identify the main commercial farms in Botswana.
- Work with second egg farm to provide price data by size of egg.
- Begin the compilation of preliminary egg price index and consider dissemination alongside the mining and utilities indexes.

## C. Improving the CPI

**27. The Botswana CPI currently excludes owner occupied housing costs (OOH).** These costs are important for consumers and should be included in the index. During the October 2020 TA mission, SB indicated they would like to use the rental equivalence approach for measuring OOH, making use of a rental survey that is currently conducted. At that time, there was no source of expenditure data available with which SB could calculate a weight to include OOH in the CPI.

**28. SB have been increasing the sample of rental prices collected to better reflect owner occupied properties.** The rental survey collects prices for six representative housing strata in Botswana:

- Low cost 1 room house
- Botswana Housing Corporation house type LC48
- Botswana Housing Corporation Type 2 'improved'
- 2 ½ house with servant quarter
- 2-bedroom house
- 3-bedroom house with single garage

The price collection mainly takes place in the two major cities in Botswana: Gaborone and Francistown. While the larger property types are representative of the owner-occupied sector, SB have been expanding the sample to ensure this better reflects OOH. The mission reiterated that for OOH only market rent should be used, so the housing corporation strata should be omitted from index calculations.

**29. A suitable source of housing stock and average rental prices can be used to estimate total expenditure of the OOH sector.** The SB national accounts have provided data on housing stock and average rental prices from the 2015/16 Botswana Multi-Topic Household Survey (BMTHS). These data are broken down by cities/towns, urban villages, and rural areas. The mission reviewed these data and determined they are suitable to compile an expenditure-based weight for OOH. The weight would be compiled by taking the housing stock for OOH and multiplying this by the average annual rental price (the rental equivalent) in each area. However, the mission noted that there appeared to be a further breakdown of the housing stock and average rent available by type of property (within area), such as detached, semi-detached, flat etc. By introducing this additional level of stratification, SB should be able to compile a more accurate estimate of total expenditure that is less influenced by compositional effects. SB should investigate this source of data further before using it to compile a preliminary weight for OOH.

**30. In the medium term, the authorities should assess the impact of including OOH costs in the CPI.** SB should compile a weight for OOH using the BMTHS data discussed during the mission and use this along with the rental price survey to compile an analytical CPI including OOH. This analytical index should be disseminated internally within SB only and used to assess

the impact of OOH. In the longer term, the authorities should continue work to make the rental survey more representative of OOH and aim to include OOH in the headline CPI as part of the next CPI update.

**31. The CPI was last updated in 2018, using weights from the 2015/2016 Household Budget Survey (HBS).** The next HBS is scheduled to take place in 2022/2023, with the results expected to be available soon after. Therefore, in the longer-term the authorities should plan to update the CPI as soon as is possible after the 2022/2023 HBS data are available. This will likely be in 2023/2024.

**Recommended Actions:**

- SB should continue expanding the amount of rental prices collected to ensure the survey is representative of the OOH sector.
- Compile preliminary estimate of expenditure for OOH using data from national accounts.
- Discuss the potential to use the more detailed stratification of data by type of property and assess the impact of this level of data on the initial estimate of OOH expenditure.
- In the medium terms compile an analytical CPI including OOH and disseminate within SB only to trial the impact of including OOH.
- In the longer term, assuming the internal testing of the analytical CPI including OOH proves to be successful, aim to introduce OOH in the headline CPI at the next rebasing.
- SB should plan to update the CPI once data from the 2022/2023 HBS are available.

## D. Officials Met During the Mission

Name	Institution	E-mail Address
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## Annex I. Detailed Action Plan

**Annex Table 1. Botswana: Detailed Recommendations**

Priority	Action/Milestone	Risk Assumptions/ Verifiable Indicators	Target Completion Date	Actual Completion Date	Implementation Status
<b>Outcome: Develop and disseminate PPI</b>					
H	The price statistics unit should discuss the availability of product level sales data for those establishments selected for the manufacturing PPI.	Meeting held with national accounts and clear understanding of the availability of product level sales data.	December 2021		
H	The sample of establishments for a manufacturing PPI should be selected using a 'cut-off sample' methodology.	Preliminary sample of establishments selected for manufacturing industries.	November 2021	November 2021	Completed
H	SB should initiate each establishment for the manufacturing PPI by personal visit.	Initiation visits arranged for the sample of manufacturing establishments.	September 2022		
H	Discuss with national accounts the proposed list of industries to be included in the manufacturing PPI.	List of manufacturing industries agreed with national accounts.	December 2021		
H	Finalize the PPI sample by end 2021.	Sample of establishments for manufacturing PPI finalized.	December 2021		
H	Prepare for the initiation of establishments for PPI.	Establishments in the PPI sample contacted, and initiation visits arranged.	March 2022		
H	Commence the initiation of establishments for manufacturing PPI.	Price collection for manufacturing PPI started.	April 2022		
M	Where possible, the PPI should be compiled using detailed product level weights.	PPI compiled according to recommended best practice.			Ongoing

Priority	Action/Milestone	Risk Assumptions/ Verifiable Indicators	Target Completion Date	Actual Completion Date	Implementation Status
M	If data are unavailable to compile product level weights, then a Jevons equally weighted methodology should be used.	PPI compiled according to recommended best practice.			Ongoing
H	Arrange meeting with BAMB to agree the supply of price data for cereal crops.	Meeting held with BAMB	January 2022		
H	If the BAMB agree to provide price data, begin the compilation of a PPI for cereal crops.	Regular feed of price data agreed with BAMB.	March 2022		
M	SB should use either the overall mean or targeted imputation to deal with missing seasonal prices.	PPI compiled according to recommended best practice.			Ongoing
H	Commence intensive period of engagement with horticulture and poultry farmers to agree the provision of price data.	Engagement activity with farmers commences.	March/April 2022		
L	Check if additional level of price data is available by size of egg with the second farmer.	Confirmation received from farmer.	March 2022		
H	Begin the compilation of preliminary egg price index and consider dissemination alongside the mining and utilities indexes.	Preliminary PPI for eggs compiled.	March 2022		
<b>Outcome: Make improvements to CPI</b>					
M	SB should continue expanding the amount of rental prices collected to ensure the survey is representative of the OOH sector.	Additional price data collected for 2- and 3- bedroom house.	End 2022		Ongoing
M	Compile preliminary estimate of expenditure for OOH using data from national accounts.	Preliminary estimate of OOH expenditure compiled and	January 2022		

Priority	Action/Milestone	Risk Assumptions/ Verifiable Indicators	Target Completion Date	Actual Completion Date	Implementation Status
		assured with national accounts.			
M	Discuss the potential to use the more detailed stratification of data by type of property and assess the impact of this level of data on the initial estimate of OOH expenditure.	Meeting held with national accounts and an updated estimate of OOH expenditure compiled using up to date data.	February 2022		
M	In the medium terms compile an analytical CPI including OOH and disseminate within SB only to trial the impact of including OOH.	Analytical CPI including OOH compiled and disseminated within SB only.	July 2022		
M	In the longer term, assuming the internal testing of the analytical CPI including OOH proves to be successful, aim to introduce OOH in the headline CPI at the next rebasing.	CPI including OOH disseminated monthly	2024		Not started
M	SB should plan to rebase the CPI once data from the 2022/2023 HBS are available.	Rebased CPI compiled using up to date weights data.	2024		Not started
H	SB should carefully consider the staff and budgetary resources required to develop PPI.	Additional resources made available if required.	February 2022		Ongoing

## Annex II. Initiation of Establishments for PPI

Where possible, an establishment should be initiated to the PPI via a face-to-face visit, or as a last resort via telephone. Initiation by telephone is prone to higher rates of non-response. This initiation phase represents one of the key elements in the development of a PPI and it is essential that the establishment both understands why these data are needed, and what data they will be asked to provide.

The face-to-face visit should be used to collect a sufficient level of detail from the establishment that enables the National Statistical Office (NSO) to understand which product lines are most important within the establishment and to select the actual transactions that represent the majority of sales within a product line (see Annex IV).

The manufacturing PPI will be based on specification pricing, for which SB will need to collect detailed descriptions of the transactions from the establishment to ensure repeat pricing is possible. Care should be taken to ensure the specification collected are fully defined in terms of the characteristics that may influence the price. This may include the following:

- Type of product,
- Brand name or model number, and
- Main price-determining characteristics—size, weight, power, etc.
- Type of buyer—exporter, wholesaler, retailer, manufacturer, government.
- Type of contract—single or multiple deliveries, orders, one-year, agreed volume.
- Unit of measure—per unit, meter, ton.
- Size of shipment—number of units.
- Delivery basis—free on board, sale with or without delivery to customer.
- Type of price—average, list, free on board, net of discount; and
- Type of discount—seasonal, volume, cash, competitive, trade.

The price collected for the PPI should typically reflect what the establishment received for the transaction, so typically a basic price that represents an actual transaction that has taken place (and is expected to continue to be transacted) that excludes value added tax and any carriage terms.

SB may wish to develop supporting guidance material to send to establishments ahead of the initiation visit so they can prepare in advance for the data that is going to be requested, and to detail the ongoing requirement for the establishment to continue providing updated prices each period.

## Annex III. Product and Transaction Selection for Manufacturing PPI

SB will target the development of a manufacturing PPI using data from the census of manufacturing survey being collected to rebase the SB national accounts.

SB will determine the scope of the manufacturing PPI in discussion with national accounts colleagues, who will advise on any priority industries and using the results of the value of production output (total sales) from the census of manufacturing. These data will show the relative size of each manufacturing industry (classified using BSIC) based on total sales.

Within each selected manufacturing industry, SB will use cut off sampling to select a representative set of establishments. The use of cut off sampling will ensure the sample adequately covers approximately 80 percent the sales of the industry.

Within each establishment, if product level turnover is available from the census of manufacturing, SB will use this to select the products to be included for PPI initiation, again using a cut off threshold approach. The list of selected products should broadly represent the total value of output (using sales as a proxy) for the establishment. Smaller products may be combined with other products to form a combined product stratum if needed. Typically, an establishment will provide one to two representative transactions for pricing per selected product, with no single establishment providing more than 15 to 20 price transactions. On average, each establishment should provide four to five transactions. Ideally, an attempt should be made to collect two transactions, one for the domestic market and, if applicable, one for the export market. If there is no export market, then only one price will be collected. It was noted that manufacturing activity in Botswana is mainly for the domestic market apart from diamond mining activities.

If no product level sales are available from the census, then SB should attempt to collect this during the initiation visit to the establishment. There are three approaches that can be used:

- Collect the actual total of sales by each product direct from the establishment.
- Collect an estimated proportion of sales for each product from the establishment, which can then be applied to the total sales already collected by national accounts to estimate the product level detail.
- Ask the establishment to rank (largest to smallest) each product in terms of total production. These rankings can then be used to calculate an estimated relative importance which is then used to disaggregate the values of production as follows:

Product	Ranking	Calculation	Contribution
A	1	4	40% (4/10)
B	2	3	30% (3/10)
C	3	2	20% (2/10)

D	4	1	10% (1/10)
		Total 10	100%

If the establishment is unable (or unwilling) to provide any further detail on the relative importance of each product line, then SB will need to compile the PPI using an equally weighted methodology.

The price transactions will be selected purposively by the establishment to reflect those items that represent a significant proportion of sales within a selected product. Importantly, these transactions should be those that establishments expect to be available for forthcoming price collection. SB should provide advice to the establishments on how to select a representative transaction for pricing.

## Annex IV. Example of Price Data Available from BAMB



**OCTOBER 2021**

**PRODUCER PRICES**

PRODUCT		MARKET PRICE		CONTRACT PRICE	
		Per Bag/50kg	Per Ton	Per Bag/50kg	Per Ton
Sorghum	Grade 1	129.30	2,585.40	130.00	2,600.00
	Grade 2	90.50	1,809.80		
	Grade 3	63.30	1,266.80		
Millet	Grade 1	155.00	3,100.00	200.00	4,000.00
	Grade 2	108.50	2,170.00		
White Maize	Grade 1	111.50	2,230.00	135.00	2,700.00
	Grade 2	78.05	1,561.00		
	Grade 3	54.60	1,092.70		
Yellow Maize	Grade 1	116.40	2,327.50	135.00	2,700.00
	Grade 2	81.50	1,629.20		
	Grade 3	57.00	1,140.50		
Sunflower (30kg)	Grade 1	134.70	4,446.30	135.00	4,500.00
	Grade 2	88.70	2,927.80		
Groundnuts	Grade 1	600.00	12,000.00	600.00	12,000.00
	Grade 2	420.00	8,400.00		
Tswana Cowpeas	Grade 1	450.00	9,000.00	500.00	10,000.00
	Grade 2	315.00	6,300.00		
Black Eye Beans	Grade 1	450.00	9,000.00	500.00	10,000.00
	Grade 2	315.00	6,300.00		
Jugo Beans/ Ditloo	Grade 1	600.00	12,000.00	600.00	12,000.00
	Grade 2	420.00	8,400.00		
China Peas	Grade 1	355.00	7,100.00	390.00	7,800.00
	Grade 2	248.50	4,970.00		
Sugar Beans	Grade 1	500.00	10,000.00	525.00	10,500.00
	Grade 2	350.00	7,000.00		
White Harricots	Grade 1	350.00	7,000.00	Not contracted	
	Grade 2	245.00	4,900.00		
Tepary Beans	Grade 1	350.00	7,000.00	Not contracted	
	Grade 2	245.00	4,900.00		

