

strategy&

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South Africa Economic Outlook

Towards greater food security for our people

Precision agriculture, smart manufacturing, and retail planning can contribute to greater and more sustainable domestic food supply

23 May 2024

Ten key messages from this report.

South Africa Economic Outlook May 2024



1

The volume of food and beverages sold per capita at South African grocery stores and supermarkets declined by an estimated 3.2% in 2023. The inflation-adjusted buying power of salaries and wages declined by 1.0%. Household spending was also reprioritised as home loan repayments were at least 40% higher compared to three years ago.

2

In 2024, El Niño could cause a 25% drop in local white maize production. This, in turn, could result in maize meal prices rising by 10%-12% during 2024Q2. Following the annual increase in March of the national minimum wage (NMW), the ratio between the maize meal price and the NMW is increasing again, resulting in reduced affordability.

3

South Africa's population could grow by another four million people by 2030. To address its food security challenges, the country could explore three opportunities: implementing precision agriculture to enhance farm productivity, adopting smart manufacturing practices for more efficient resource use, and reducing food waste at the retail and consumer levels.

4

To feed the global and local population, the second green revolution – also referred to as the science-based revolution – will be driven not by new techniques but new technologies. It will focus on technological innovation and farmers acting proactively on real-time data through precision farming.

5

Precision agriculture tools support improved water use (e.g., water management software and remote irrigation monitoring), land use (e.g., data collection, robotic planting, and regenerative agriculture), crop yields (e.g., farm management software and predictive analytics), and livestock management (e.g., remote health monitoring and automated feeding systems).

6

Annual food loss and waste in South Africa includes 0.9 million tonnes (8% of the total) at the primary production stage, 2.1 million tonnes (19%) in post-harvest handling and storage, 5.4 million tonnes (49%) during processing and packaging (manufacturing), and 2.7 million tonnes (24%) at the wholesale, retail and consumer level.

7

South African food manufacturers mostly make use of demand planning when determining the volume of inputs needed for production. Demand planning involves forecasting and planning to meet future customer demand for products. However, demand forecasts can regularly be wrong by a significant margin.

8

Manufacturers need to improve demand forecasting to consider actual resource usage and client orders. A demand-driven material requirements planning (DDMRP) system improves on traditional demand planning by being more responsive to real-time demand fluctuations. This reduces inventories and surplus food items in the supply chain.

9

In line with the Sustainable Development Goals (SDGs), the South African Food Loss and Waste Initiative aims to halve the country's food waste by 2030. Food waste at the retail level declined marginally from 15.8kg per capita in 2019 to 15.4kg in 2022 – indicating a long way to go to reducing waste by 50% by 2030.

10

Reducing food waste at the retail and consumption level can be achieved by, for example, upgraded inventory systems to reduce excess stock that needs to be stored and handled, changing marketing practices to prevent over-purchasing and subsequent waste, and engaging consumers to raise awareness about the need for minimising waste.

About this document

PwC's [Megatrends](#) research has long warned that global food security is under pressure from climate change and demographic shifts. Furthermore, our recently released report '[Climate risks to nine key commodities](#)' found that around 40% of global maize and wheat production will be at risk of heat distress by 2050 due to climate change. This has raised some alarm bells about food security in countries where maize and wheat are staple foods.

Our food security concerns have been exacerbated by data showing that South Africans are buying less food. We estimate that the volume of food and beverages sold in the country's supermarkets declined by 3.2% per capita in 2023 due to a combination of adverse factors, including a decline in the buying power of salaries and wages. This weighed on nutritional security heading into 2024.

This edition of the South Africa Economic Outlook report examines how South Africa's long-term food security challenges need to be addressed across the entire supply chain – from farms to factories to shops. The country wastes and loses almost 11 million tonnes of food annually across the supply chain, amounting to nearly a third of its total food resources. However, this wastage can be reduced and food security can be bolstered through the application of appropriate techniques and technologies in the agricultural, manufacturing and retail sectors.

Key elements of this report include:

- Deteriorating food security: South Africans are buying less food as their spending power declines ([page 5](#)).
- Precision agriculture: Technology is at the core of farming's second green revolution ([page 6](#)).
- Smart manufacturing: Improved demand forecasting can reduce surplus inputs and waste in food production ([page 7](#)).
- Retail planning: Better inventory management and marketing practices minimise shop and consumption wastage ([page 9](#)).

Lastly, we comment on how PwC assists our clients with precision agriculture, smart manufacturing, and retail planning ([page 10](#)).



Macroeconomic forecasts (23 May 2024)				
Baseline scenario	2022	2023	2024f	2025f
ZAR/USD	16.36	18.45	18.80	19.30
Consumer price inflation (%)	6.9	6.0	5.3	4.8
Repo rate (end-of-period)	7.00	8.25	8.00	7.25
Real GDP growth (%)	1.9	0.6	0.9	1.2
Unemployment rate (%)	32.7	32.1	32.5	32.8
Probability weighted average	2022	2023	2024f	2025f
ZAR/USD	16.36	18.45	18.83	19.38
Consumer price inflation (%)	6.9	6.0	5.3	4.9
Repo rate (end-of-period)	7.00	8.25	7.98	7.30
Real GDP growth (%)	1.9	0.6	0.9	1.1
Unemployment rate (%)	32.7	32.1	32.5	32.9

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South Africans are buying less food because of pressure on household finances. As a society, we need to make better use of our resources to ensure that food production is increased and that improved nutrition is available to more people. This requires agriculture to produce more soft commodities in a sustainable manner, manufacturers to make food and beverages products more efficiently, and for retailers and consumers to cause less loss and waste at the consumption level.

Lullu Krugel, PwC South Africa Chief Economist



Deteriorating food security: South Africans are buying less food as their spending power declines

South Africa Economic Outlook May 2024

Summary: We estimate the volume of food and beverages sold per capita in South Africa declined by 3.2% in 2023. This was the second year in a row that the real buying power of salaries and wages declined due to elevated inflation. Food inflation is again under pressure in 2024 due to the effects of drought on cereal production, with the price of maize meal set to increase as a proportion of the national minimum wage.

South Africans purchased 3.2% less food and beverages per capita in 2023 as the buying power of salaries declined again.

Data from Statistics South Africa (Stats SA) shows that inflation-adjusted sales at general retailers – representing retail trade of food and beverage products at non-specialised stores – declined by 2.2% in 2023. When accounting for population growth of an estimated 1.0% during the year, we calculate the volume of food and beverages sold per capita at grocery stores and supermarkets declined by 3.2% in 2023.

This decline in food and beverage sales volumes is strongly influenced by a weakening of consumer buying power. Salaries and wages increased by around 5.0% last year while consumer price inflation averaged near 6.0%. This implies a 1.0 percentage point decline in buying power following the near 3.0 percentage point decline in the preceding year. Families also needed to contend with the reprioritisation of spending. For example, the prime lending rate increased by 4.75 percentage points in the current monetary policy tightening cycle, and monthly home loan repayments are currently at least 40% higher compared to three years ago. Increased monthly debt service fees would have also diverted money from other spending categories, including food and healthcare. The financial strain caused by these and other structural factors (unemployment and poverty) resulted in two out of five South African adults needing to borrow money to purchase food in 2023, according to data from FinMark Trust.

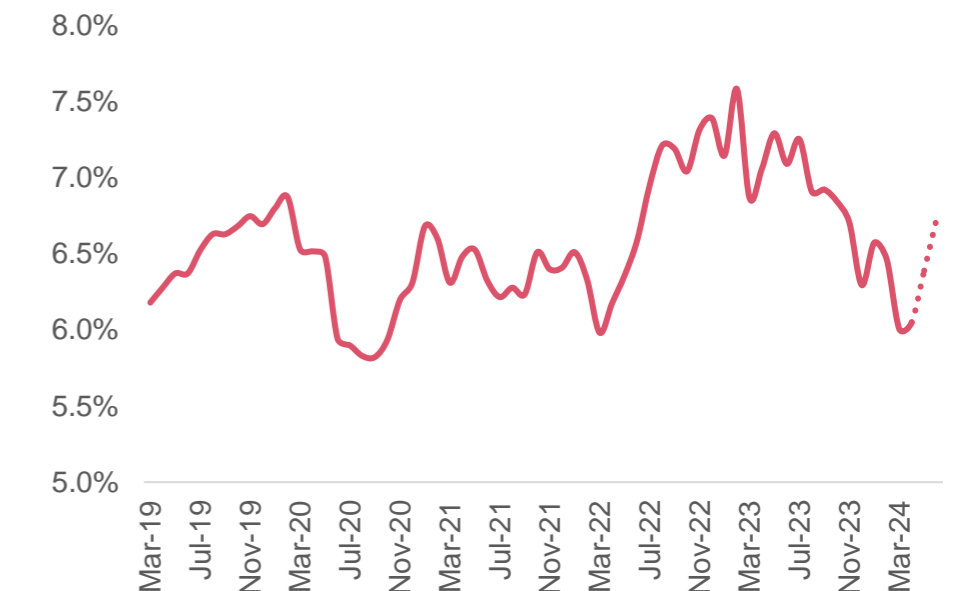
2024-2025 food security under pressure from El Niño-related droughts impacting staple food production and prices.

Food price inflation has declined to the lowest level in four years. However, nutritional security will be under pressure for the remainder of 2024 and heading into 2025. While real income growth is expected to be (marginally) positive this year, pressure on food prices has increased again. Southern Africa experienced its driest February this year in more than four decades. (A study by World Weather Attribution found that this was mainly caused by El Niño rather than human-caused climate change.) The drought resulted in water scarcity and lower crop yields across the region. South Africa is bracing for a significant drop in maize production this year, according to a late-March report by the Crop Estimates Committee (CEC). The committee projected at the time that the country's total maize production could decline by 3.2 million tonnes (almost 20%) this year compared to 2023. The white maize harvest – used in the production of maize meal products – was forecast to fall by a quarter, or around 2.2 million tonnes. The CEC confirmed in late-April that it still expected the white maize crop to shrink by 2.1 million tonnes this year.

The Agricultural Business Chamber of SA (Agbiz) warned in the wake of the CEC's March report that maize meal prices could increase by 10%-12% during the second quarter of the year – this would be on top of the 35% rise seen over the preceding 12 months. The increase suggested by Agbiz for 2024Q2 would take the price of a 30kg bag of maize meal from R294 in April towards R330 by June. To get a sense of what this means from a cost-of-living impact, we have calculated the ratio between the price for this 30kg bag and the national minimum wage (NMW). With the annual upward adjustment in March of the NMW to R27.58 per hour, the bag of staple food costs an equivalent of 6.0% of the monthly minimum income (R4,854.08 based on 22 work days). This was the lowest ratio in two years. However, by June this year, the measure could increase again to 6.7%.



Figure 1: Ratio between 30kg maize meal price and monthly NMW (%)



Sources: PwC Strategy& estimates based on data from National Treasury, Stats SA and Pietermaritzburg Economic Justice and Dignity (PMBEJD) Group

Three actions for the South African food industry to meet future demand for nutrition in a sustainable way.

Looking beyond the near-term food security concerns, there is a need to explore sustainable solutions to adequately feed South Africa's current population, which is expected to grow by another four million people by the year 2030, based on an annual population growth rate of 1.0%. "Major challenges remain", according to the United Nations, for South Africa to reach the Sustainable Development Goals (SDGs) associated with zero hunger. The remainder of this report focuses on three opportunities in the South African context, namely:

- Precision agriculture to increase farm production and sustainability
- Smart manufacturing making better use of resources
- Reduced food waste at the retail and consumption level

Precision agriculture: Technology is at the core of farming's second green revolution

South Africa Economic Outlook May 2024

Summary: The second green revolution will be built on new technologies that increase agricultural productivity. Survey data shows that innovation-active agribusinesses in South Africa are adopting precision agricultural tools like satellite imagery, drones, as well as air and soil sensors. The available technological solutions can improve water use, land use, crop yields and livestock management.

The second green revolution will be built on new technologies that increase agricultural productivity.

The first green revolution took place after World War II at a time of worldwide depression and starvation. The world was in desperate need of a solution to the problem of rapidly deteriorating food security and needed to turn around the trend. The first green revolution entailed: new varieties of high-yielding cereal grains; distribution of hybridised seeds; synthetic fertilisers, pesticides and herbicides; modernised management techniques; and expansion of irrigation infrastructure.

Looking ahead, the World Bank is of the view that the number of people globally facing severe food insecurity could reach 956 million in 2028. The organisation's World Food Security Outlook October 2023 forecasts that 7.2% of South Africans (4.7 million people) could suffer from severe food insecurity by 2028. Severe food insecurity is characterised by household exposure to several of the following: forced to reduce the quantity of food, skipping meals, having gone hungry, or having to go for a whole day without food because of a lack of money or other resources.

Clearly, there is a need for increased food security both globally and locally, and therefore higher agricultural output without compromising resources in the process. This is where the second green revolution is critical. According to Frans Weilbach, PwC South Africa Partner and Africa Agribusiness Lead, the second green revolution – also referred to as the science-based revolution – will be driven not by new techniques but new tech-

nologies. It will focus on technological innovation and farmers acting proactively on real-time data through precision farming.

Traditionally, agriculture was practised by performing a particular task such as planting or harvesting according to a predetermined schedule. Our report '[The Sustainable Food Revolution: Future-proofing the world's food supply](#)' illustrated that agricultural production will be different going forward. Farming will be supported by technology that increases productivity and reduces environmental footprint. By collecting real-time data on weather, soil and air quality, crop maturity, equipment and labour availability, predictive analytics can be used to make smarter farming decisions. This is known as precision agriculture.

Innovative SA farmers are adopting satellite imagery, mapping technologies, as well as air and soil sensors.

There is no comprehensive data available on the rate of adoption of precision agriculture technologies in South Africa. The most recent indicative publication is the national Agricultural Business Innovation Survey 2016-2018 that looked at adoption by innovation-active agribusinesses in South Africa. (The 2019-2021 edition will be published within the next few months.) The 2016-2018 report indicates that six out of 10 (62%) South African agribusinesses are considered innovation-active, i.e., they took some scientific, technological, organisational, financial, or commercial steps during the period under review towards the implementation of an innovation. The survey found that, among innovation-active agribusinesses, half (52.9%) reported the uptake of precision agriculture. This is defined by the survey as using methods to observe, measure, and respond to inter- and intra-field variability in crops using satellite-like imagery and mapping technologies.

Table 1 lists examples from our blog '[How Consumer Packaged Goods companies and retailers can facilitate the next agricultural revolution](#)' on how technological solutions could improve water use, land use, crop yields, and livestock management.



Table 1: Technological solutions to improve farm productivity

Water use

- **Smart water management software:** Digital platforms provide farmers with decision support tools that analyse data and offer recommendations on irrigation scheduling, helping them make informed choices about how much water to apply and when.
- **Remote irrigation monitoring:** Mobile applications can monitor and control irrigation systems remotely, allowing farmers to make adjustments in real time. This level of control enhances responsiveness and reduces water waste.

Land use

- **Data collection:** Digitisation enables farmers to collect and analyse data from various sources, including sensors, satellite imagery, and weather stations. This data helps farmers to make informed decisions about planting, irrigation, fertilisation, and pest control.
- **Robotic planting and harvesting:** Automated machinery and drones equipped with GPS and other technologies can optimise planting and harvesting processes, ensuring that every inch of land is utilised efficiently. This helps to boost overall productivity.
- **Regenerative agriculture:** Introducing a holistic regenerative farming approach or selecting individual practices can help farmers to increase sustainability in various ways. Regenerative agriculture is an outcome-based farming approach that protects and improves soil health, biodiversity, climate, and water resources.

Crop yields

- **Farm management software:** Digital tools and management software help farmers plan their crop rotations, optimise field layouts, and analyse data to make data-driven decisions that impact yields.
- **Predictive analytics:** Artificial intelligence (AI) algorithms enable farmers to analyse historical and real-time data for predicting crop yields and optimise resource allocation, and can even identify or predict disease outbreaks.

Livestock

- **Remote health monitoring:** Wearable sensors and smart devices can monitor the health of individual animals in real time, detecting early signs of illness or distress and leading to prompt intervention. This monitoring reduces the risk of spread of disease, and improves the overall well-being of livestock.
- **Automated feeding systems:** Digital systems can automate and optimise the feeding process based on the specific nutritional needs of individual animals or groups. This not only improves efficiency, but also reduces overfeeding and waste.

Source: PwC Strategy&

Smart manufacturing: Improved demand forecasting can reduce surplus inputs and waste in food production

South Africa Economic Outlook May 2024

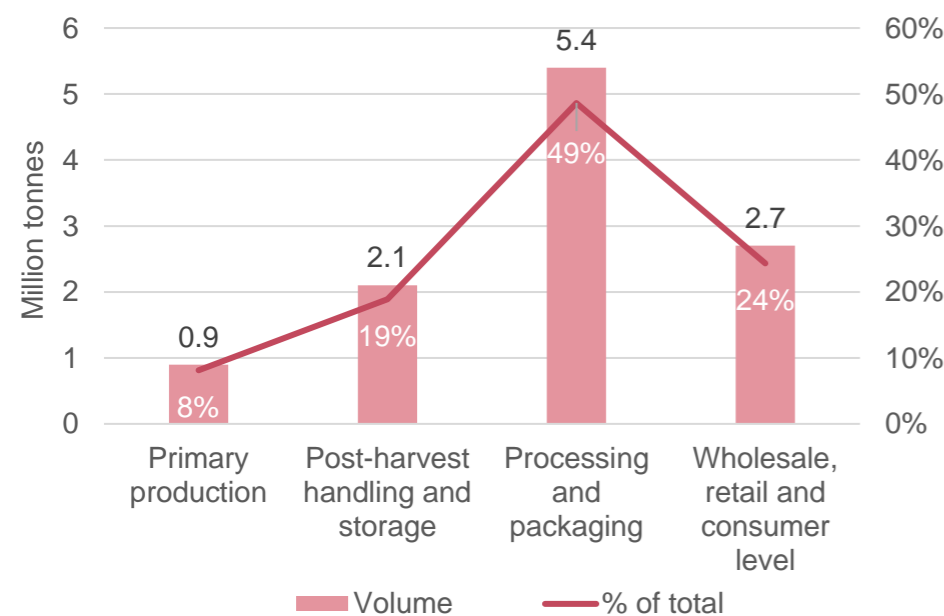


Summary: Nearly half of all food loss and waste in South Africa is at the manufacturing stage. Manufacturers make use of demand planning to determine input needs - but this forecasting is frequently wrong, resulting in surplus inputs or production. In turn, a demand-driven material requirements planning (DDMRP) system tracks actual usage and client orders and is more responsive to real-time demand fluctuations.

49% of food loss and waste is at the manufacturing level as expectations of customer demand are frequently wrong.

About a third of South Africa's food resources are lost or wasted every year. According to data from the Department of Forestry, Fisheries and the Environment (DFFE), 0.9 million tonnes (8% of the total) of food is lost and wasted at the primary production stage each year, 2.1 million tonnes (19%) in post-harvest handling and storage, 5.4 million tonnes (49%) during processing and packaging (manufacturing), and 2.7 million tonnes (24%) at

Figure 2: Annual food loss and waste



Source: DFFE

the wholesale, retail and consumer level. The large volume of loss and waste at the manufacturing level – nearly half of the 11.1 million tonne total – is caused by inefficiencies across the production process, including processing and packaging.

South African food manufacturers mostly make use of 'demand planning' when determining the volume of inputs needed for production. Demand planning is a process that involves forecasting and planning to meet future customer demand for products. This, in turn, informs their supply planning: how much raw materials should be ordered, how production should be scheduled, and how orders should be allocated across the supply network. However, according to Vinesh Maharaj, PwC South Africa Director and Smart Manufacturing Leader, demand forecasts can regularly be wrong by a large margin. This can cause a surplus in food inputs if actual production is curtailed due to low sales, and a large surplus in food outputs if demand is less than what was anticipated when production was planned.

Many manufacturers also experience factory blindness – where old ways of working progressively evolve over time in the absence of innovative development to solve problems like loss and waste. The routine nature of factory work desensitises employees to inefficient and wasteful practices, hindering their ability to identify areas for improvement. As noted in our report '[Manufacturing Excellence 4.0](#)', this phenomenon typically occurs when workers have been conducting the same routine activities for many years and have become resistant to adapting them to be more efficient and effective. The blindness and lack of step changes in manufacturing maturity may result in inefficient methods. In the case of food manufacturing, this could include ingredients or final products being damaged and wasted.

Demand forecasts need to be responsive to actual usage and client orders to reduce input and output surpluses.

To improve production planning, many manufacturers have traditionally looked at just-in-time (JIT) programmes that allowed

them to adapt as demand went up or down. However, as our blog '[Inventory management and supply chain resilience in the age of disruption](#)' shows, the period since the arrival of COVID-19 has seen many global disruptions that make JIT challenging to use efficiently. In South Africa, JIT manufacturing is also challenging due to the inefficiencies and volatility in the country's logistics network. Over the past six to nine months, for example, severe delays at sea ports have disrupted many supply chains dependent on imported inputs. (See the [January](#) and [March 2024](#) editions of this report for more insights into the country's logistics challenges and potential solutions.)

The alternative to a JIT system is improving demand forecasting by working with a demand-driven material requirements planning (DDMRP) system. While demand planning relies on demand forecasts and manufacturers carrying buffer stock to cope with inaccurate forecasts and demand volatility, DDMRP tracks actual usage and client orders and is more responsive to real-time demand fluctuations. As such, inventories are reduced and the risk of surplus food items in the supply chain is minimised. A more advanced version of this is 'demand sensing', which uses AI, real-time supply chain data (rather than historical data), and different mathematical models to predict demand dynamically. Demand sensing creates shorter term demand plans (weekly and daily) that reflect real-world events such as weather changes and changes in consumer purchasing patterns.

Finally, to address factory blindness, management should:

- Promote inter-departmental shop floor reviews to gain fresh perspectives on routine activities within the business.
- Record key activities (e.g., duration, workforce, challenges, etc.) within a production cycle so that it can be reviewed for improvement at a later stage.
- Benchmark key process steps in the manufacturing process to leading industry-best practices to develop an improvement plan.
- Undertake shop-floor walks to observe processes and ensure continuous improvement initiation across the factory.



We need to make better use of our food resources. With half of food loss and waste occurring during the manufacturing process, it is imperative that food producers apply modern techniques to better plan their operations in order to minimise wastage. Modern technologies allow for better demand forecasts, production planning and input sourcing, thereby reducing surplus inputs and outputs at the factory level and the ultimate waste of food products. This also has significant financial benefits for the manufacturer.



Vinesh Maharaj, PwC South Africa Director and Smart Manufacturing Leader

Retail planning: Better inventory management and marketing practices reduce shop and consumption wastage



South Africa Economic Outlook May 2024

Summary: Retail food waste declined from 15.8kg per capita in 2019 to 15.4kg in 2022. However, the industry has a long way to go to reduce food waste by 50%, as aimed for by the South African Food Loss and Waste Initiative. To support this, retailers can upgrade inventory systems and the way products move from warehouses to retail spaces to significantly reduce excess inventory that needs to be stored and handled.

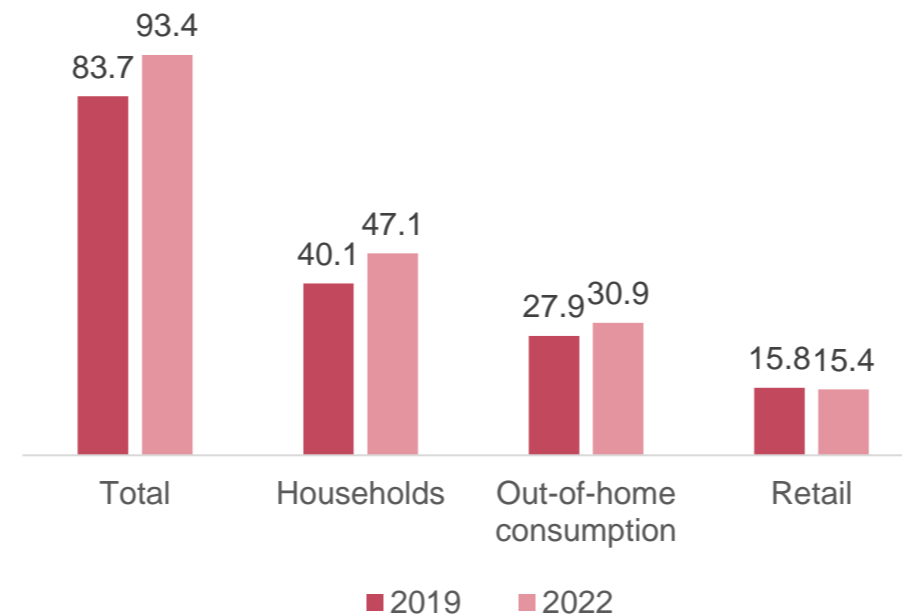
Sustainable Development Goals (SDGs) aim to halve per capita food waste at the retail and consumption level by 2030.

SDG 12.3 aims to halve global per capita food waste at the retail and consumer levels by 2030. This could have a notable impact on South Africa's food security as a quarter of food loss and waste is recorded at the retail and consumption level. An academic meta-study published in the Journal of Cleaner Production in 2021 showed that the major factors behind food loss and waste at the retail level globally is: the poor management of perishable food items, stakeholder attitude toward surplus production, buyer-supplier agreements relating to take-back of unsold stock, and supply chain interruptions.

On a positive note, work is underway in South Africa to reduce retail-level food waste and to report on this endeavour. The South African Food Loss and Waste Initiative was launched in 2020 by the Consumer Goods Council of South Africa (CGCSA) in partnership with the Department of Trade, Industry and Competition (DTIC), with co-funding by the European Union, with the aim of drastically reducing food waste. We have already seen some progress being made: estimates by the UNEP indicate that South Africa's food waste at the retail level declined from 15.8kg per capita in 2019 to 15.4kg in 2022. While this small progress is certainly good news, the local retail industry has a long way to go to reducing per capita food waste by 50% by 2030. The initiative is currently collecting 2023 data from signatories on their loss

and waste reduction journey to better understand baseline food loss and waste, reduction targets, and progress to date.

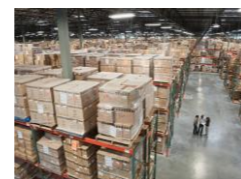
Figure 3: Food waste per capita (kg)



Source: UNEP

Upgraded inventory systems can significantly reduce excess inventory and wastage.

With a quarter of total food loss and waste recorded at the wholesale, retail and consumer level, changes to how retailers plan their logistics and interact with their shoppers can have a significant contribution towards reducing food waste. In our experience, three actions can play an important role in this area:



1. Upgrade demand planning systems: Implementing advanced technology in inventory management can revolutionise the way planners understand consumer demand trends. Planners and store managers need real-time perspectives on actual demand to understand volume movements and restocking needs in the very short term. A better view on actual

demand improves the deployment of stock across stores. This not only minimises waste but also streamlines operations, leading to substantial cost savings. Available technologies include automated tracking systems, real-time data analytics, and predictive stocking algorithms. These technologies are all designed to understand true demand, optimise inventory levels and reduce unnecessary surplus.



2. Modify store and marketing practices: Moving away from promotions like 'buy one, get one free' can help prevent over-purchasing and subsequent waste at the consumption level. Elsewhere, advocating for clearer product labelling can assist consumers in making informed decisions, while better packaging designs can help in preserving the freshness and extending the shelf life of products. These changes not only contribute to sustainability but also encourage responsible consumption patterns among customers.



3. Engage consumers: Through targeted social media campaigns, businesses can raise awareness about the importance – from both a financial and sustainability perspective – of minimising waste. Sharing simple yet effective usage tips, creative recipes to repurpose common foods, and storage advice can empower consumers to make a difference. By fostering a community of informed and conscientious shoppers, companies can play a pivotal role in promoting sustainable habits.

Aside from the contribution to food security, reducing food waste also has clear financial benefits for retailers. Our article '[Why business should cut food waste](#)' notes that Champions 12.3 (a global coalition dedicated to tackling food waste) analysed 700 food manufacturing, retail, and service companies in 17 countries and found that half of those that invested in reducing measures to reduce food waste saw at least a 14-fold return on those investments. Even more interesting was the finding that big payoffs came from small changes – such as consumer education and clear date labelling – that helped minimise food surpluses close to the consumption stage.

Economics services and contacts.

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How we can help.

- **Precision agriculture** - Our agribusiness experts are at the forefront of the latest trends and innovations across the agricultural value chain. We have a deep understanding of food security challenges the world faces and have worked with governments and private sector organisations around food security strategies. Technological advancements in recent decades are shaping the future of agriculture through digitisation, with innovation in precision agriculture at the core of what we see as a more sustainable future for farming.
- **Smart manufacturing** - Factories rely on projections of future demand to determine production volumes. This strategy relies on demand forecasts and manufacturers carrying buffer stock to cope with inaccurate forecasts (this happens frequently) and demand volatility. Manufacturers need to improve demand forecasting to track actual usage and client orders – this will be more responsive to real-time demand fluctuations. These demand-driven material requirements planning (DDMRP) systems reduce the risk of surplus food items in the supply chain.
- **Retail planning** - The challenges posed to the end-to-end supply chains range from supply delays or cancellations, delivery restrictions, and changes in demand, among many other factors. This is challenging retail companies to deliver on their customer service promise while maintaining an efficient cost base and asset utilisation – all while being sustainable over the long term. Our supply chain experts are helping companies develop connected supply chains that unify processes across the organisation. This, in turn, can result in less waste and more value for consumers.

Our services

The PwC South Africa Strategy & Economics team is a specialised unit of economists who serve our clients in a variety of ways. Our services include:

Measure your impact on the economy and society

- Economic Impact Assessment (EIA)
- Socio-Economic Impact Assessment (SEIA)
- Regulatory Impact Analysis (RIA)
- Environmental, Social and Governance (ESG)
- Total tax contribution
- Localisation calculations

Make decisions about risk and investment

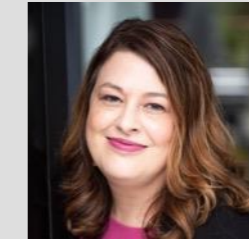
- Macroeconomic research
- Market entry analysis
- Country and industry risk assessments
- Commercial due diligence assistance

Plan for future economic scenarios

- ESG scenario planning
- Economic and political scenario planning
- Industry and macroeconomic modelling
- IFRS 9 audit assist

Please visit our website to learn more:

<https://www.strategyand.pwc.com/a1/en/solutions/purpose-led-economics.html>



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