



SHEFS

POLICY BRIEF 3

What's in it for me?
**Overconsumption of
broiler chicken products**

WHAT IS SHEFS?

SHEFS (Sustainable and Healthy Food Systems) is an international research programme using novel methods to generate and synthesise evidence, and to help decision makers create policies that deliver nutritious and healthy diets in an environmentally sustainable and socially equitable manner. The programme is funded by the Wellcome Trust.



ABOUT THIS SERIES

This series of five policy briefs draws on research conducted by South African and United Kingdom-based researchers within the SHEFS consortium. The series seeks to encourage policy makers working on the commercial broiler chicken system in South Africa to adopt a broad systems-based perspective in their work. This brief explores the implications of overconsumption of broiler meat.

BRIEFING 2

Highlights the systemic inequalities which are created by policies that favour large-scale commercial producers, and which, in turn, generate price-driven nutritional inequalities for consumers

BRIEFING 3

Explores the potential nutrition and health implications of policies aimed at increasing per capita consumption of broiler chicken meat

BRIEFING 1

Provides a broad overview of the challenges associated with current broiler industry policy in South Africa

BRIEFING 4

Highlights the fragmented nature of food safety governance within the context of the broiler chicken system and the potential risk of foodborne disease in South Africa

BRIEFING 5

Explores the hidden impact of the commercial broiler chicken system on the environment and the broiler system's climate change vulnerability

Obesity and hypertension risks of overconsumption

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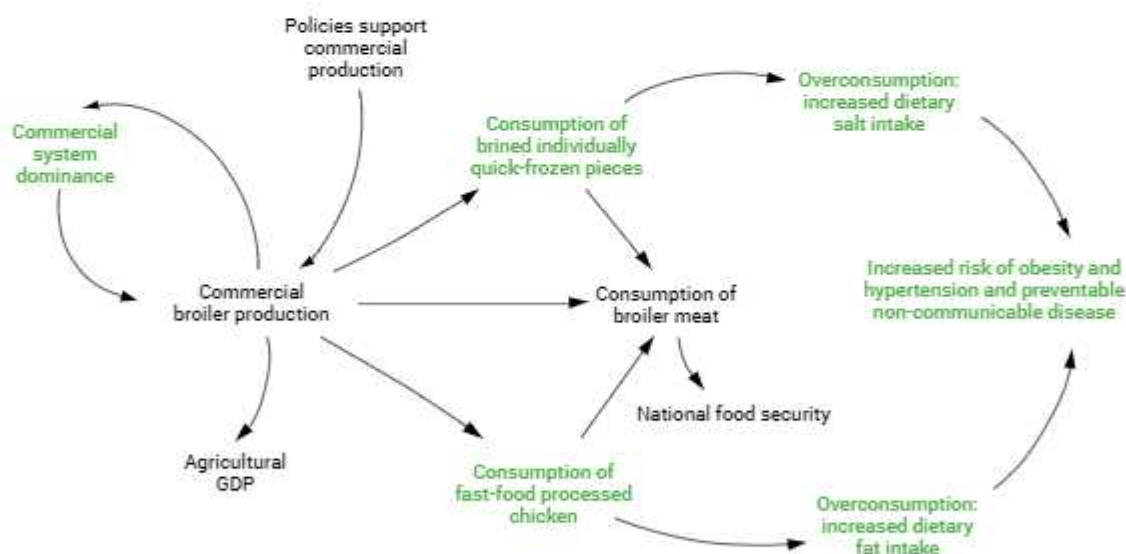
SUMMARY

This policy brief highlights the potential nutrition and health implications of policies aimed at increasing per capita consumption of broiler chicken meat, and the role of the commercial broiler system within this.

Commercial broiler chicken production is responsible for approximately 95% of local (national) chicken meat production. Existing policies aim to sustain supplies and retain affordability for consumers. However, the bulk of the products marketed through the system are individually quick-frozen pieces that have been brined¹, thus containing added salt. Furthermore, salt and fat are added during the fast-food processing of broiler chicken. This growing market prefers the commercial system as its supplier. Policies that promote an increase in per capita consumption of broiler meat should recognise the potential negative health and nutrition outcomes from overconsumption² of these products originating from the commercial broiler system.

FIGURE 1

- Current focus of commercial broiler policies and their intended outcomes
- Wider unintended consequences revealed with a food systems approach



RECOMMENDATION

Mitigate negative health and nutrition effects of policies promoting an increase in consumption of broiler products, the bulk of which have been brined or processed into fast-food.

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²Brining, or plumping, is the process of injecting a solution of water, salt, phosphorus and flavouring into the meat.

³A state where intake exceeds an individual's requirements, thereby supplying an excess of nutrients or energy – leading to weight gain and obesity over time.

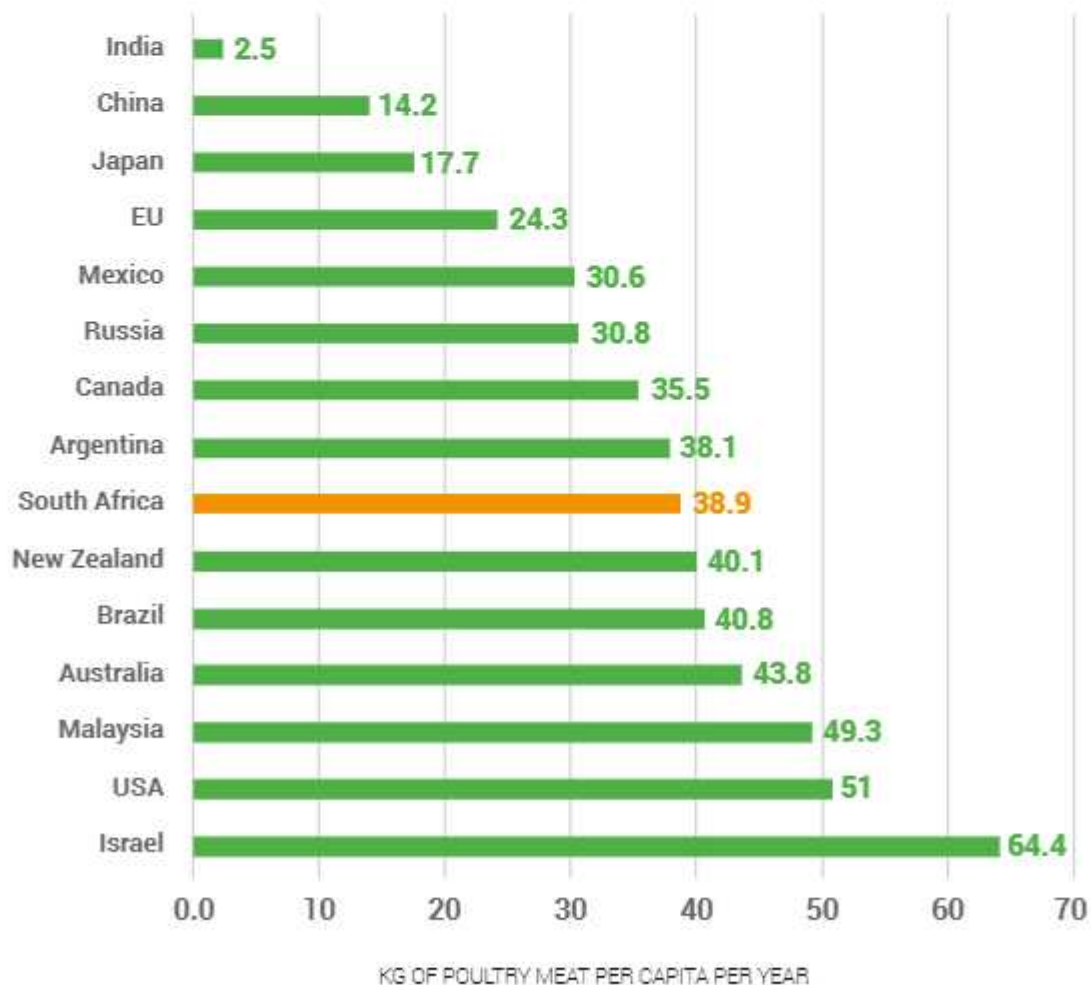


Introduction

The commercial broiler system in South Africa is the primary source ($\approx 95\%$) of locally produced broiler meat¹. Together with outputs from small-scale broiler producers, depleted hens from breeders and egg producers, and imported broiler meat, a total of 1.8 million tonnes is produced for consumption per year¹. Broiler meat is the most affordable meat option for South African consumers and plays an important role in household food and nutrition security^{2,3}. Annual average consumption per capita of broiler meat across all countries in Africa is only 6.7 kg, while South Africa has the highest on the continent at 39 kg^{1,4}. This puts South African consumption levels on a par with countries like New Zealand, Brazil and Argentina (Figure 2). However, given the wide socio-economic disparity in South Africa, consumption levels for low- versus high-income consumers are likely to be similar to the extremes in the low- and high-income countries of the world⁵.

FIGURE 2

CONSUMPTION OF POULTRY MEAT BY COUNTRY IN 2020 (AVERAGE PER CAPITA PER YEAR)⁶





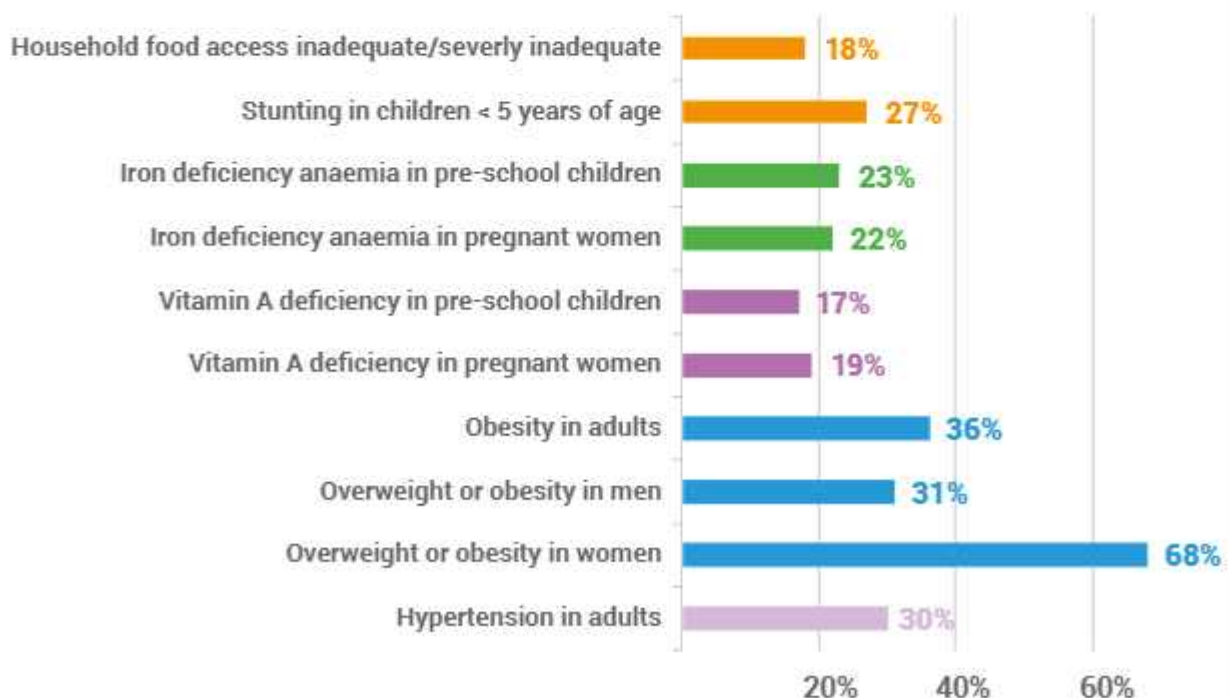
The broiler industry has been driven by policies within the South African Poultry Master Plan that were agreed at the end of 2019. The Plan's first objective is to increase the consumption of chicken meat on a per capita basis through a number of measures, including those that support the existing local industry, while driving demand through ensuring affordability for consumers. This is in recognition of the industry's leading contribution to agricultural GDP¹, and improving household food security by providing an affordable animal-sourced protein that is efficiently digested, absorbed and utilised by the human body¹².

There are several nutrition-related statistics that stand out in South Africa (**Figure 3**). While food security at the national level is considered relatively stable, 18% of households have inadequate or severely inadequate access to food^{3,5}. Despite recent progress, stunting levels in children persist at 27%⁷. In addition, the consequences of "hidden hunger" (a deficiency in micronutrients) affects a substantial proportion of vulnerable groups. Examples include iron deficiency anaemia, which affects 23% of pre-school children and 22% of pregnant women, and Vitamin A deficiencies, which are 17% and 19% respectively for the same

groups⁸. Livestock-derived food, including broiler meat, plays an important role in meeting the nutrition needs of pregnant women, mothers and infants⁹. Broiler meat contains omega-3 polyunsaturated fatty acids; highly digestible protein (22%), including several essential amino acids; and micronutrients such as B vitamins, iron, zinc and copper¹⁰. Therefore, the plan to increase consumption of broiler meat appears to be an appropriate strategy, in part, to address these nutrient deficiencies.

However, overconsumption of unhealthy broiler products is associated with the risk of obesity and hypertension, and the related non-communicable diseases of stroke, coronary heart disease, type 2 diabetes and cancer, among others^{11,12}. In South Africa, 36% of adults are classified as obese, with 68% of women and 31% of men being classified as overweight or obese⁷. In addition, hypertension affects over 30% of adults, and dietary salt intakes are estimated to be 2–3 times over the government-recommended levels¹³. These challenges persist, despite government efforts to control them through legislating the Health Promotion Levy (sugar tax) and establishing national dietary guidelines on sugar, salt and fat intakes.

FIGURE 3
SOUTH AFRICAN NUTRITION RELATED STATISTICS³⁻¹³





Research findings



“Large integrated companies divert products towards the growing and more lucrative quick-service restaurant industry”

Per capita consumption levels of broiler meat in South Africa have doubled over the past two decades, driven largely by urbanisation of the population, together with improvements in their socio-economic status and a growth in the number of middle-class consumers¹⁴. A further driver has been the increasing modernisation of the broiler meat market, which is dominated by a small number of supermarket chains, and a burgeoning network of local and international franchised fast-food or quick-service restaurant companies^{15,16}. They employ aspirational marketing techniques¹⁷, have outcompeted smaller retailers and traditional markets, and occupy prime locations on high streets, and also within shopping malls, which have become pervasive even in rural areas^{17,18}.

Government relaxation of broiler import tariffs over the past 15 years has allowed imported products to supplement local production to meet demand and maintain affordability¹⁹. Over 45% of imported broiler meat was in the form of frozen bone-in portions, which competed directly with locally produced individually quick-frozen (IQF) pieces. The latter was the mainstay of the market for local large-scale producers with approximately 53% of their production marketed as IQF through large-scale supermarkets. The industry's response to competitive pressure from imported products has been two-fold.

Initially, brining was used by the industry as a means of product enhancement (retaining moisture and adding flavour), and to improve affordability of IQF pieces. Although regulations in 2016 capped brining levels at a half, or possibly even a quarter, of what had reportedly been used, an estimated 85% of the IQF pieces marketed are still currently brined at the maximum 15% by weight¹⁷. A further response by the large integrated companies has been to divert products away from the IQF pieces market and towards the growing, and more lucrative, quick-service restaurant industry¹⁷. The latter offers preferential contracts to the largest producers, due to their reliable supply chains, their ability to produce birds that meet required specifications, and their

¹⁷ Technique of appealing to the aspirations and dreams of consumers rather than their reality, and generating positive emotional reactions to the product or brand.



high levels of quality control and safety standards¹⁷. The fast-food market is predicted to have a compound annual growth rate of 8% between 2019 and 2026²⁰. Quick-service or fast-food restaurants are visited at least once a week by most consumers, predominantly by those aged 20–35 years old, and KFC currently has the highest number of outlets nationwide²⁰. In South Africa, broiler meat is the favoured raw material used in fast-food processing, which follows trends seen internationally, and over 7% of the total broiler meat is distributed through fast-food restaurants^{14,20,21}. The fast-food processing of broiler meat increases the salt and fat content, and lowers the meat content (by more than half in the case of “chicken nuggets”), through the addition of batter, which improves flavour, moisture content, texture and affordability^{22,23}.

Given that the bulk of the broiler meat consumed in South Africa is in the form of brined IQF and processed fast-food products, policies that aim to increase per capita consumption of broiler meat will potentially exacerbate the health risks associated with obesity and hypertension. This would add to the health burden of preventable non-communicable diseases. Options for policy makers to consider include fiscal interventions, such as the Health Promotion Levy on sugar, which could be extended to include high fat content fast-food products. In addition, restrictions on fast-food advertising and planning consents for outlets, which have been used in the UK, could also be considered. To reduce dietary salt intake, a further reduction in the brining limits of 2016, or complete prohibition of brining, as is the case in Zambia and Brazil, could also be considered.



RECOMMENDATION

Mitigate the negative health and nutrition effects of promoting an increase in consumption of broiler products, the bulk of which have been brined or processed into fast-food.





Conclusion

The commercial broiler production system is synergistically linked to the modern formal retail system. The bulk of the products arising from the system consist of brined IQF pieces and highly processed fast-food chicken. In light of this, policies that support this primary supply chain, and the broad objective to increase per capita consumption of broiler meat, should address potential nutrition and health risks. Mitigating steps should be taken to reduce dietary salt and fat intakes associated with consumption of brined frozen chicken and fast-food chicken products.



References

1. SAPA, *South African Poultry Association: Industry Profile 2020*. 2020, South African Poultry Association.
2. McHiza, Z.J., et al., *A Review of Dietary Surveys in the Adult South African Population from 2000 to 2015*. *Nutrients*, 2015. 7(9): p. 8227.
3. Meissner, H.H., M.M. Scholtz, and A.R. Palmer, *Sustainability of the South African Livestock Sector towards 2050 – Part 1: Worth and impact of the sector*. *South African Journal of Animal Science*, 2013. 43(3): p. 282.
4. Ritchie, H., and M. Roser, *Meat and Seafood Production & Consumption*. 2018 [05/10/2018], Available from: <https://ourworldindata.org/meat-production>
5. Labadarios, D., et al., *Food security in South Africa: a review of national surveys*. *Bulletin of the World Health Organization*, 2011. 89(12): p. 891.
6. STATS SA, *General Household Survey 2019*. 2020, Statistics South Africa: Pretoria.
7. NDoH, Stats SA, SAMRC, and ICF, *South Africa Demographic and Health Survey, Key indicators*. 2017: Pretoria, South Africa, and Rockville, Maryland, USA.
8. World Bank, *Overcoming Poverty and Inequality in South Africa: An Assessment of Drivers, Constraints and Opportunities*. 2018, The World Bank, Washington DC, USA.
9. Grace, D., et al., *The influence of livestock-derived foods on the nutrition of mothers and infants during the first 1,000 days of a child's life, in ILRI Research Report 44*. 2018, International Livestock Research Institute (ILRI): Nairobi, Kenya.
10. Marangoni, F., et al., *Role of poultry meat in a balanced diet aimed at maintaining health and wellbeing: an Italian consensus document*. *Food Nutr Res*, 2015. 59: p. 27606.
11. Willett, W., et al., *Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems*. *The Lancet*, 2019. 393(10170): p. 447.
12. Zhang, Y., and D.Z. Zhang, *Red meat, poultry, and egg consumption with the risk of hypertension: a meta-analysis of prospective cohort studies*. *J Hum Hypertens*, 2018. 32(7): p. 507.
13. Eksteen, G., and V. Mungal-Singh, *Salt intake in South Africa: a current perspective*. *Journal of Endocrinology, Metabolism and Diabetes of South Africa*, 2015. 20(1): p. 9.
14. Queenan, K., et al., *A Qualitative Analysis of the Commercial Broiler System, and the Links to Consumers' Nutrition and Health, and to Environmental Sustainability: A South African Case Study*. *Frontiers in Sustainable Food Systems*, 2021. 5.
15. Igumbor, E.U., et al., *"Big Food," the Consumer Food Environment, Health, and the Policy Response in South Africa*. *PLOS Medicine*, 2012. 9(7): p. e1001253.
16. Otterbach, S., et al., *Using Google data to measure the role of Big Food and fast food in South Africa's obesity epidemic*. *World Development*, 2021. 140.
17. Queenan, K., et al., *A food systems approach and qualitative system dynamics model to reveal policy issues within the commercial broiler chicken system in South Africa*. *PLOS One*, 2022. 17(6).
18. Campbell, M., *South African supermarket expansion in sub-Saharan Africa*. *Third World Thematics: A Third World Quarterly (TWQ) Journal*, 2017. 1(5): p. 709.
19. Queenan, K., et al., *A Systems Analysis and Conceptual System Dynamics Model of the Livestock-derived Food System in South Africa: A Tool for Policy Guidance*. *Journal of Agriculture, Food Systems, and Community Development*, 2020. 9(4): p. 275.
20. Allied Market Research. *South Africa Fast Food Market Statistics; Industry Forecast 2019–2026*. 2019 [22/02/2021], Available from: www.alliedmarketresearch.com/south-africa-fast-food-market
21. Marx-Pienaar, N., et al., *The South African quick service restaurant industry and the wasteful company it keeps*. *International Journal of Sustainable Development and Planning*, 2020. 15(1): p. 57.
22. Hafid, H., et al., *Chicken nugget nutrition composition with an additional variation of breadfruit flour*. *IOP Conference Series: Earth and Environmental Science*, 2019. 382(1).
23. McDonald's. *Nutrition calculator and ingredients list*. 2022 [03/05/2022], Available from: <https://www.mcdonalds.com/gb/en-gb/good-to-know/nutrition-calculator.html>



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