An analysis of BRICS Food Policies, Strategies and Trade in Achieving Zero Hunger

Lessons for South Africa

Adrino Mazenda
School of Public Administration and Management, University of Pretoria, South Africa

Ajuruchukwu Obi
Department of Agriculture Economics and Extension, University of Fort Hare, South Africa

Tyanai Masiya
School of Public Administration and Management, University of Pretoria, South Africa

Abstract

This article examines the major food security policies and strategies pursued by the member countries of the Brazil, Russia, India, China and South Africa (BRICS) economic bloc against the backdrop of their food trade, with a specific focus on South Africa. The article builds on existing literature and draws from extensive document analysis covering food policy documents, food trade data, and a wide range of related development issues for the affected countries. The article concludes that BRICS food trade is being conducted in an environment that is characterised by significant policy differentials. It is revealed that South Africa exports more food than Russia, India and China despite severe constraints on the country's food sector that makes it the most food-insecure country within the bloc, despite having the lowest population. It is clear that South Africa's policies and strategies for addressing food insecurity are inadequate when compared to those of other BRICS member countries. On the other hand, other BRICS countries have implemented a range of successful policies such as crop diversification, contract farming, urban farming and agriculture mechanisation, the adoption of which would be highly beneficial to South Africa in its quest to improve its overall food security positioning within the BRICS family.

Introduction

Food security is an important thematic goal for the majority of developing countries, which focus on techniques to improve food access to the generality of the population. Without question, food insecurity is the most urgent concern of policy makers the world over.[1] Approximately 795 million people suffer from malnutrition or hunger globally, of which the majority reside in sub-Saharan Africa and Asia.[2] With approximately 60 per cent of its population having inadequate access to food on a daily basis, sub-Saharan Africa is the most affected region, where most households still live in abject poverty.[3] Among the most frequently mentioned causes of food insecurity are climate change, climatic variation, price shocks and low progression on agriculture technology. A regional approach to combating this problem, coupled with international cooperation, is therefore imperative.

BRICS has been identified as a potentially powerful economic bloc within whose framework the concerned countries can collectively contribute to fighting hunger and destitution among their populations. The notion of BRICS originated from work carried out at Goldman Sachs (2001), which identified Brazil, Russia, India and China (BRIC) as growing economies that were rapidly expanding to become a global economic powerhouse.[4] In 2011, BRIC expanded to embrace South Africa and became known as BRICS. The main objective of BRICS is to encourage commercial, political and cultural cooperation among BRICS member countries and pursue a theme of 'inclusive growth, sustainable solutions', the key pillar of which is poverty reduction. For a country like South Africa, this was tantamount to tackling food insecurity.

From inception, trade promotion has been at the heart of BRICS member countries. These countries, within the framework of BRICS, expressed their commitment to the Doha Development Agenda and the World Trade Organization (WTO) so as to strengthen the foundations of their international trade. The countries, however, cited the urgent need for the WTO to reduce protectionist practices that hurt developing countries and to give preference to the concerns of those developing nations.[5] Ironically, the same BRICS countries have maintained protectionist measures in the agriculture sector, a situation that is clearly detrimental to food trade. The protectionist anomalies translate into unfavourable food balance of trade for South Africa. It is a well-known fact that South Africa's trade with the BRIC nations predates its accession to the group. Data available from 2008 to 2017 shows that South African food imports were mostly from India, Brazil and Russia, while exports to those countries were insignificant. This translates to adverse terms of trade for South Africa. One area of the economy that can be visibly hurt by adverse terms of trade is food security. So understanding how trade participation is related to levels of food security for the cooperating countries is very important. At one level, it will provide insights into what aspects of the relationship need to be adjusted to achieve desired levels of food security. At another level, it may help ascertain the wisdom of continued membership.

To date, studies on the food security position of BRICS as a bloc have been limited. Most of these studies have focused on agricultural cooperation within BRICS and strategies to combat food insecurity of individual BRICS partner members.[6] Consequently, this article aims to provide an account of efforts to promote food security in the bloc with specific emphasis on South Africa. In that regard, the food security position of BRICS will be analysed with the following specific

research question addressed: 'How sustainable is South Africa's food security strategy and policies as a member of BRICS?'

In order to answer this question this paper will concurrently answer the following sub-questions:

- How is the WTO inhibited from achieving its broad objective of international trade?
- How do food security approaches apply to the BRICS food security debate?
- What does an analysis of BRICS food trade with South Africa show?
- How do food security policies influence the BRICS food security position?
- What are the food security policies implemented in BRICS, particularly in South Africa, in pursuit of zero hunger?
- What food security strategies from BRICS member states can be adopted by South Africa in pursuit of zero hunger?

The article draws from extensive document analysis of the opinions of policy analysts, food trade databases, and secondary sources on the causes of low food output and trade, particularly from South Africa to BRICS nations. The first section provides an analysis of the main food security models. The second section explores the intra-BRICS food trade from the perspective of South Africa, looking specifically at food trade policy and food trade balances between South Africa and the other member countries. The third section discusses BRICS food strategies that can be adopted by South Africa. Section five draws conclusions and offers recommendations.

Food security conception and measurement approaches

Definitions of food security have improved considerably since the 1974 World Food Summit. The notion of food security as the 'availability at all times of adequate world food supplies for basic food stuff to offset fluctuations in production and prices' has become widely accepted, and complements the erstwhile view that 'food security exists when all people at all times, have physical, social, and economic access to sufficient, safe, and nutritious food, which meets their dietary needs and food preferences for an active and healthy life'.[7] The implicit mandate is for governments to outline four pillars of food security in its policies by focusing on availability, accessibility, utilisation and stability at all levels.

The food security definitions outlined above have yielded a plethora of food security models/theories/approaches with varying arguments to address food insecurity.[8] The models influence the food security policy formulation processes and form the theoretical anchors for the following six approaches: the human development and capability approach; entitlement approach; integrated approach; postmodernism approach; and income approach. These approaches and their associated models are discussed in the sub-sections that follow.

Human development and adaptability approach

The human capability approach puts emphasis on entitlements, that is, it is concerned with knowledge over commodities.[9] This implies that individuals of households should have the capability to

prevent food shortage and thus to survive deprivation caused by hunger.[10] This theory holds that skills improvement increases food availability by guaranteeing income, which therefore reduces vulnerability to hunger/food insecurity.[11] Food availability and entitlements are critical for reinforcing essential human capabilities. They therefore constitute a precondition for sustainable human development.

The theory also includes the food utilisation dimension, representing the ability of the human body to ingest and metabolise food through adequate diet, clean water, good sanitation and health care to reach a state of nutritional well-being where all physiological needs are met. The theory adds that basic capabilities such as good health, education, and ability to make effective household decisions and community life, are necessary for food security.[12]

This human development and capability approach provides a broader analysis of the food security phenomenon, in that it outlines how income is a determinant of food security depending on individual, macro-factors (inflation, employment), taste and preferences in food choices. More so, it postulates that food insecurity is due to poor health, low education and lack of other basic abilities that constitute a household's well-being.[13]

It is important for policy makers to focus on nutritional functioning and those nutrition-related capabilities that are crucial to human well-being. The households may help themselves by becoming food security agencies. For example, a household might expand his/her income-generating projects for its long-term food security.[14] To reinforce the strengths of the theory, previous studies reveal that the human development and capability factors constitute essential contributions towards the conceptualisation of the drivers of food insecurity.[15]

Entitlement approach

The entitlement approach postulates that food security is determined by an individual's access to food.[16] According to the theory, household food insecurity is not always caused by famine; it might be driven by the distributional impact of food supply and the differences in physical, social and economic access rather than national food availability. The entitlement approach focuses on people's command over food as a result of endowments, exchange conditions and production possibilities. This approach revolutionises the understanding of the approximate triggers of hunger and famine.[17] More so, the theory posits that households are socially embedded in communities and nations, and are affected by regional or global politics which might trigger economic shocks and disasters.[18] In addition, the theory suggests that increasing employment opportunities through pro-poor measures would enhance human capacity and ensure entitlement due to affordability. Findings from past studies[19] show that wars, ethnic conflicts, poorly formulated land reform policies, and government's failure to act on food issues were some of the major contributors to food insecurity. The entitlement theory is relevant to the study as it reflects on complex structural factors that apply to developing countries, issues that include power relations, increasing population and production failures.

Integrated approach

The integrated approach focuses on agricultural methods adopted by farmers. It recommends an integral approach to improve agricultural output.[20] The theory accentuates five indicators of

food security: balanced growth; maintenance of human and institutional capital; local and global coordination, including inequality reductions; and applications of the precautionary principle. A study highlighted that integrated model indicators were identified as sustainable intensification of food security, which governments could utilise to assist farmers in adopting various strategies, for example, financial interventions or provision of agricultural technology to improve food security.[21] Similar findings were identified in other studies.[22] The empirical results revealed that factors such as farm age, off-farm income, farmer-association membership, and perceived water security have a positive impact on household food consumption per adult equivalent.

It is argued that food security focused on the flexibility, diversity and perceptions of local strategies which are mirrored by, if not reflective of, a larger movement toward postmodernism in the intellectual world.[23]

The postmodernism approach

The postmodernism approach states that there is need for continuous research and development to improve agricultural production.[24] The theory argues for the participation of farmers in decision making, that is; involvement of local farmers in decision making on appropriate strategies to enhance food security. In this instance, the theory identifies the need for diversification in the agricultural production systems to improve diet/nutrition.[25] Thus, the theory advocates that food security requires regular, if not sustainable research and development to draw on innovative ideas and approaches. The main theoretical prescripts of the model can be summarised as: (i) food security studies must not focus on food insecurity alone, but rather on how food insecurity manifests in a given context; (ii) participation in food insecurity initiatives should reach to the grassroots levels; and (iii) food security approaches must be tailored to promote new ideas.[26] In a nutshell, the theory views food security as a proactive strategy that guarantees a step towards creating postmodern food security.[27] The theoretical prescripts of the model are empirically tested in BRICS countries, with findings of political influence on the determination of food security initiatives, and recommendations on involving local farmers and communities in food security initiatives. The studies also suggested implementing innovative solutions in the food production sectors of the economy.[28]

Income-based approach

The income-based approach assumes that food insecurity is caused by lack of adequate income, albeit sufficient to purchase food that guarantees a basic household living standard.[29] As such, the theory proposes income-generating strategies governments can take to improve food security. The proposed strategies include increasing income for the poor, food aid and food relief programmes.[30] The theory's weakness lies in assuming that all people are employed in subsistence agriculture. This makes the theory practically non-applicable to the middle class and urban populations.[31] Literature supports this notion, and adds that the approach undervalues expenditure on food as the cost of local food is not often recorded.[32] Even though the theory was postulated for the subsistence rural population, it may be applied among the urban poor. Studies on the determinants of food security among rural and pro-poor in urban areas showed a positive relationship between an

increase in income and education on food security, hence highlighting the importance of income-generating strategies in reducing food insecurity.[33]

Towards a single framework for analysis

The foregoing approaches/theories share a number of features that can provide a basis for formulating a single framework for analysis of the food security situation in the BRICS environment. In the first instance, the approaches outline how government policies are critical towards improving food security. They identified innovativeness in the agriculture sector, income availability, and investments in research and development as key strategies to reduce food insecurity. More so, the theories stress the need to empower people through education, training and development and participation in food security forums.[34]

The next section discusses the South Africa-BRICS food trade. The section firstly explores the trade policy from the WTO perspective, unearthing the protectionist policies in the BRICS agriculture sector. This is followed by a detailed trend analysis on South Africa's food trade with BRICS. Food trade is a necessary strategy to food security through food access, household provisioning, and nutrition, that is, the import of nutritious food products.

BRICS-South Africa food trade

Food insecurity threatens sustainable development. Consequently, one of the key objectives of the BRICS bloc is to inhibit such threats. Food insecurity is 'when an individual fails to have access to sufficient nutritious food for normal growth, development and active health life'.[35] To cushion against food insecurity, governments must adopt policies on increasing agriculture yield. The agriculture tariff profiles for BRICS countries are varied and this has an effect on food trade. The BRICS trade policy, with specific focus on agriculture, is examined further in the next sub-sections.

BRICS trade policy

The WTO is the sole institution to debate trade policy agreements among countries through the WTO Uruguay round implemented from 1986 to 1994 and the Doha round implemented from 2001 to date.[36] The purpose of WTO agreements is to promote free trade and protect domestic production. The Uruguay and Doha meetings/rounds endorsed the principles of the General Agreement on Tariffs and Trade (GATT) trade rules on all commodities, including textiles and agriculture. South Africa participated in the capacity of a developed country. This means the country participated in extensive cuts only in the maximum bound tariff rates. This differed from the BRICS tariff structure, which fell under unilateral liberalisation.[37] Russia is excluded because it joined in 2011. It is imperative to note that, based on the 2008 (Doha) round, average tariffs imposed on South African exports were about 8 per cent in China and 12 per cent for Brazil. In contrast, the average tariff rate by developed economies were lower, with the EU imposing at least 0.3 per cent, the US, 1.7 per cent and Japan, 3.5 per cent on trade partners.[38]

Reductions in barriers imposed by developed economies eroded the preference margins. On average 0.4 per cent was applied for import into the EU and about 0.5 per cent in Japan. It is

important to point out that various trade agreements outside BRICS entered into by BRICS member countries were detrimental to South Africa, which ended up facing negative preference margins in the bloc. The BRICS formalisation saw a massive shift in BRICS trade policies, such that the share of BRICS in global trade multiplied over the period 2011 to 2017. Amongst the policy adjustments, average tariff rates were reduced within the range of 9 per cent.[39] Table 1 presents a comparative analysis on the tariff rates implemented within the BRICS.

Table 1: BRICS Tariff Profiles

	Simple Average Bound Rate (%)		Simple Average Applied Rate (%)			Range (%)						
	Tariff binding Coverage (%)	Agric (AOA)	Non-Agric	All	Agric (AOA)	Non-Agric	All	Bound Rate	Applied Rate	Coefficient of variation (Applied Rate)	Non-ad valorem tariffs [(%) total tariff lines]	Duty free Imports [Agric & Non-Agric (%)]
Brazil	100	35.4	30.8	31.4	10.2	14.1	13.5	0-55	0-35	0.6	0.0	36.5
Russia	100	11.2	7.1	7.6	11.2	8.9	8.4	0-278	0-278	0.2	9.8	44.3
India	74.4	113.5	34.5	48.5	33.4	10.2	13.5	0-300	0-150	1.3	4.9	49.1
China	100	15.7	9.2	10.0	15.2	8.6	9.6	0-65	0-65	0.7	0.4	51.8
South Africa	96.1	40.4	15.7	19.0	8.4	7.4	7.6	0-597	0-96	1.4	2.6	110

Source: *Adapted from World Trade Organisation, 2018*

Brazil, Russia, and China made 100 per cent binding coverage on their products, while India and South Africa bound 74.4 per cent and 96.1 per cent respectively.

The tariff percentage of 100 per cent for Brazil, China and Russia on their products compared to South Africa and India's 74.4 per cent and 96.1 per cent tariff lines among member's tariff schedule indicate legal commitment in the WTO.[40] The BRICS bound tariff was a positive indication of the commitment towards fair trading practices. The purpose of these tariffs is to restrict imports through price increases of goods and services, hence discouraging consumption of products of non-BRICS countries.

The bound and applied tariff rates on agricultural products on South Africa are 40.4 per cent, India 113.5 per cent, and Brazil 35.4 per cent. The bound tariffs show commitments agreed upon by individual WTO member governments. The aim is to protect the agricultural sector in order to improve domestic food security. Consequently, the BRICS countries implemented the bound tariff on agriculture products to improve food processing and trading. However, South Africa has duty

free imports and is the largest amongst all BRICS economies. This translated to a negative food-trade balance with the BRICS economies.[41]

In 2017, the BRICS countries sought to improve trade balances among member countries. The countries agreed on reduction in tariff rates and to relax import restrictions by removing quota systems. However, licences are now the major regulating instrument on imports in BRICS.[42] While protectionist agreements were made, the BRICS also agreed on trade remedies, such as anti-dumping actions, duty countervailing measures and safeguard actions.[43] The anti-dumping measures were taken to prevent China and India from practicing dumping when trading. The Brazilian government uses countervailing duties to protect domestic primary industry. South Africa makes less use of these trade remedies. As a result, the country is experiencing an overall negative trade balance compared to BRICS.[44]

South Africa's food trade profile with BRICS

This section explores South Africa's food trade profile within the BRICS. Food trade is necessary as a strategy to enhance food security. Food trade helps sustain the food security position of countries in need. This is, however, most sustainable if there are trade agreements abolishing specific tariffs on agriculture.

South Africa's lower trade tariffs and low protectionist measures translated into a negative food trade balance with the BRICS economies.[45] Table 2 presents the food trade balance of South Africa with other BRICS member countries.

Table 2: South Africa-BRICS Food Trade Balance (USD millions)

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Brazil	-915	0	-222	-61	-103	-95	1	0	-3	-378
Russia	2	0	0	8	-33	-235	-247	98	-79	82
India	-737	-631	-1,04	7	0	-2	-570	-147	-3	-38
China	-845	-1,55	-2,78	-3,05	-2,73	-3,53	-3,58	-3,59	-4,57	-4,29

Source: *International Trade Centre, 2018*

Differentials in trade policy amongst the BRICS as well as preferential trade with regional partners translated into a negative food trade balance for South Africa with all BRICS partners since 2008. Issues of policy differentials have been debated since 2010, but evidence suggests that no reforms have been implemented.

The negative food trade balance between South Africa and BRICS is accentuated by South Africa being a heavily import-oriented economy. The food exports are almost insignificant. South Africa concentrates on food exports into the Southern African Development Community (SADC) region, which is mostly food insecure due to numerous economic and climatic challenges. Further, the economic challenges facing South Africa culminated in the food sector, as such production is meant only to support the local food market with surplus for the SADC region. Table 3 shows South African food exports with the rest of the BRICS countries.

Table 3: South African Food Exports to BRICS (USD millions)

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Brazil	0	0	0	0	0	0	0	0	0	161
India	0	1	0	1	0	0	0	0	4	0
China	0	1	17	0	0	120	34	0	35	8,69
Russia	1	0	73	0	0	1	149	202	0	0

Source: *International Trade Centre, 2018*

Food sustainability in Brazil and India as well as numerous protectionist measures in the agriculture sector made it difficult for South African food exports to enter the BRICS countries. Food exports to China are still low despite the country's economic diplomacy with Africa – and a reliance on smallholder agriculture, which remains inadequate to feed the large population. Food exports to Russia were also insignificant, particularly in the following four years: 2011, 2012, 2016 and 2017.

Despite the challenges facing South Africa in accessing the BRICS market, South Africa trade policy is relaxed towards BRICS countries. This is shown in the tariff discussion section presented under Table 1, and culminates in high food import figures as shown in Table 4.

Table 4: South African Food Imports from BRICS (USD millions)

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Brazil	6,83	51,63	29,03	54,17	121,86	65,08	351	21,13	61,245	589
India	48,1	22,2	20,69	68,43	149,18	214,67	148,03	106,54	116,72	124,80
China	16,57	36,16	10,71	4,86	222,95	170,03	4,96	5,21	1,65	8,65
Russia	0	0	0	24,07	24,38	71,85	273,18	48,04	131,29	96,18

Source: *International Trade Centre, 2018*

Poorly aligned South African trade policy and food sustainability in BRICS countries promoted the latter's food market access in South Africa. To ensure food sustainability, Brazil adopted various reforms leading to the achievement of the 2015 Millennium Development Goal on food access to every household.[46] Similarly, Russia showed commitment to food security in the nation's Vision 2030 targeting to increase agriculture output by 25 per cent annually.[47] India strengthened her food security position through value addition, skills development for agriculture human resources, agro-meteorology, mechanisation and financial technology.[48] China's progress was pinned by the 1978 land reform. Since then, the country has restructured its agriculture system through agriculture incentives, mechanisation and human resource skills development.[49]

South Africa imports food from BRICS mostly to supplement basic nutritional requirements. Food-security provision is guaranteed through the production of adequate food, but it is imperative to note that food access is still a challenge for the country, with 11.8 per cent of households susceptible to hunger and 6.1 per cent experiencing inadequate food access in 2016.[50]

Towards an overall analysis of BRICS food trade

Intra-BRICS cooperation has been gaining momentum in agriculture food trade. While BRICS countries have acted on improving their food trade balances, South Africa has found itself at a disadvantage as its food trade balance is negative with all the BRICS member states. It was revealed that South Africa has not fully utilised protectionist agreements and trade remedies, such as anti-dumping actions, duty countervailing measures and safeguard actions. China and India are seen as major violators, which is to the disadvantage of South Africa, which faces dumping incidences as a consequence. South Africa can adopt the Brazilian protectionist approach towards its agriculture sector in order to improve food security. Brazilian tariffs are high on agricultural commodities in comparison to the BRICS. The country has increased usage of countervailing duties to protect the local agricultural sector. Food trade is directly proportional to the production capacity of the country. Countries with a positive food trade balance are backed by sound food policies. The next section discusses food policies implemented in BRICS, as a basis for increasing food production and food security.

BRICS food policies

Food policies are principles of action designed by governments to influence the operation of the food and agriculture processes. The decisions include production, processing, marketing, and consumption: advocating social security nets; regulatory standards; and nutritional qualification.[51]

Food policies are formulated with three main objectives: to protect poor citizens; develop sustainable food markets; and promote increased food production, which translates into increased income.[52]

The threat of food insecurity to development has led governments to formulate policies to improve the situation. Common policies are viewed as a panacea to trading and development as can be noted by the formation of different blocs such as the European Union (EU), Commonwealth, African Union (AU), SADC and Economic Community of Western African States (ECOWAS). The objective of these blocs is to address imbalances in development with the aim of combating poverty. With poverty dominating Sustainable Development Goals (SDGS), BRICS countries passed a resolution of achieving zero hunger by 2030.

Food security concerns demand collective efforts from the government and the citizens. This section provides a summary of particular policies/strategies which BRICS governments formulated to inhibit food insecurity. The purpose of reviewing these policies is to explore the extent to which the BRICS are driving towards ensuring consistent food security and the lessons that can be drawn for South Africa.

Brazil

The Brazilian food security policy framework is an established structure underpinned by the Food and Nutritional Security policy and the zero hunger strategy. These components combine numerous concepts of the national food security policy. The target is mostly rural areas, with a focus on food availability and access in adequate quantities and quality. The quality component entails nutrition

and health. The food policy framework rests on structural changes and short-term actions and multi-sectoral interventions of different state institutions.[53]

The Brazilian food security policy is guided by The Constitution of the Federative Republic of Brazil, 1988. Article seven of the constitution stipulates the minimum wage and basic rights of citizens. It states that every child should be guaranteed access to food. Article 27 of the constitution guarantees the right to health, education and food for every child. These reforms were meant to improve food security for the people and provide a path to zero hunger. In 2003, a constitutional amendment to article 6 of the constitution included food access as a social right. The government put the eradication of hunger at the top of its political agenda.[54] This was the beginning of a zero hunger strategy, which paved the way for the National Food and Nutrition Security policy (NFNS). The NFNS policy encouraged participation of civil society organisations at all levels of food governance titled multi-sectoral interventions.[55] The zero hunger strategy and the NFNS interventions were successful in tackling social exclusion and poverty.[56]

In addition, numerous policies were formulated to add depth to the food security agenda. The NFNS provides for the Organic Law on Food and Nutrition Security (LOSAN), which mandates the need to supply nutritional food to citizens. The Constitutional Amendment 64 of 2010 stipulated the right to food as an obligation of the state and reinforced the need for the implementation of programmes and action to meet this obligation.[57] The Guaranteed Price Policy aims to improve agriculture output through price stability. Farmers were cushioned against probable market shocks.[58] In summary, the food policy initiatives are enshrined towards the zero hunger principle, which comprises poverty eradication while maintaining nutritional security.

Russia

The Russian food policy is characterised by nationalism and politics, rather than the traditional food access policy-oriented approach. The traditional food access approach is still practised in policy formulation, but to a lesser extent.[59] In the state-oriented food policy strategy, importance is placed on food imports and tariff standards. As such, food policy consists of three food security aims, namely increased domestic production through government support, food security from domestic actors, and an increase in food exports.[60]

The Russian Constitution stipulates the need for the coordination of public and private players to improve food security.[61] The constitution stipulates that agriculture sector investments lead to food security improvement. Stakeholders are expected to participate in agricultural activities to improve food security. The Russian Federation has issued incentives to private sector investment in agriculture. This resulted in an increase of its output and thereby improved food security. The Russian model of food security is a combination of state-supported domestic production and restricted market access.[62] In addition, the country aims to reduce the import of food and increase food production, while subsidising production and unveiling credit for the purchase of farm implements. It is envisaged that Russia will be self-sufficient to provide its citizenry with basic food by 2020.

Russia's Food Security Doctrine emphasises food security and international cooperation as measures to maintain strategic stability. The doctrine provides for research into agriculture, integrating it with world research and development. This has increased agricultural productivity and

led to contributions to various international development support programmes and funds.[63] The food security programmes improved bilateral trade and increased Russia's multilateral contribution to global food security in Central Asia and East European countries, but not in the BRICS.[64] In addition the strategy was developed to prevent diseases, achieve a higher quality of life, and ensure adequate nutrition to improve the living conditions of the public.[65]

The food security policy also aimed at improving farming methods by reducing cost of production and replacing sophisticated and expensive technology with cheaper methods of farming. However, this contributes to unfair food market competition, thereby putting bona fide farmers at a disadvantage. Allowing farmers to adopt cheaper methods of farming will expose human beings to agricultural contamination, which affects human health through infectious diseases.[66] This would amount to high medical treatment costs, including additional costs associated with the provision of specialised medical care. There is a need for the government to establish food quality compliance to prevent infection. The purpose of the food policy of the Russian Federation is to ensure access to quality food for all.

India

India formulated alternative policies to improve the country's food position. Guided by the Constitution of the Republic of India, the Ministry of Agriculture formulated policies such as the National Agriculture Policy of 2000, which aimed to increase agricultural output by four per cent annually. In 2007, the National Policy for Farmers was formulated to stimulate public participation in agricultural activities and promote gender equality, empowering women to participate in agricultural activities. More than five policies were formulated, resulting in increased agricultural output. The policies resulted in agricultural output increasing by 3.5 per cent annually from 2010 to 2013.[67] Between 2014 and 2017, however, agricultural output fell by 1.7 per cent.[68]

A significant aspect of India's pursuit of food security is the National Food Security Act (NFSA) which came into effect in 2013. The act aimed to ensure 'food and nutrition security' by ensuring access to an adequate quantity of quality food at affordable prices, enabling people 'to live with dignity'.[69] The act stipulates the right to food. Article 42 of the Indian constitution recognises the duty of the state to 'raise the level of nutrition in order to raise the standard of living and improve public healthcare'. Key programmes to improve nutrition in India under the act include: Integrated Child Development Services (ICDS); Mid-Day Meal Scheme (MDMS); and the National Rural Employment Guarantee Programme.

The Mahatma Ghandi National Rural Employment Guarantee Act aims to provide 100 days of work and wages to rural households whose members are willing to assist in manual labour. It should be noted that India's food and agricultural policy is aimed at, amongst others, encouraging farmers to produce food through price-based instruments on agricultural production.[70] The National Food Security Policy (NFSP) of 2018 intends to provide food to 75 per cent of India's rural population and 50 per cent of its urban population with the goal of achieving zero hunger and providing nutrition to all households.[71] The NFSP has two goals, namely improving food access to all households and supporting farmers. The government is committed to adhere to WTO fundamentals concerning 'food security and the welfare of its subsistence farmers and poor'.[72] The

government is promoting self-sufficiency methods in food production and this has led to increased food production.

Population growth poses a major challenge in India. It has led the country to supplement domestic food supply with imports. These imports create competition with rural farmers, especially through Chinese imports produced by subsidised farmers.[73] However, the advantage of imports is that they increase 'access to sufficient, safe and nutritious foods'. In pursuit of ensuring food security, the government supports farmers to make sure they make a profit and keep prices low for consumers. The government also offers food subsidies, price support and price stabilisation programmes.[74] Nonetheless, these programmes have failed to address food security of poor households in India.[75]

It is important to note that subsidies tend to overturn the benefits of increasing food prices. High food prices increase wages for India's poorest.[76] This can be viewed as effective in reducing rural poverty, but can lead to inflation if prices continue to increase in the long-term.[77] This also has implications for international trade. For example, lowering trade barriers for agricultural products, albeit costly, can effectively improve food security. It is important to note that sound food trade is able to improve Indian food security at a lower cost than food stockpiling. This opens new economic opportunities for the country, which enables it to address economic development needs.[78] The stockpiling programme has an influence on trade and production because it is determined by the prices farmers are paid.

China

The Constitution of the Federation of China considers agriculture as the major contributor towards development.[79] The Chinese government is concerned with food security and has developed various frameworks to improve the situation. China's Annual Agricultural Policy outlines strategies such as public partnership, income redistribution and food relief, which the government is using to improve food security. The government issues subsidies to farmers to invest in agricultural output, develop high-benefit animal husbandry of scale, and guarantee price stability.[80] China utilises input subsidies and market price support to enhance food production, improve food availability, and direct income transfers to address food access.[81] China's initiatives to achieve food security reduce export supply and increase domestic production. This is done through taxes and licenses on food export and tariff reduction on food imports.[82]

The food security of China has been strained, given that the country's population of more than a billion persons means that it feeds about 20 per cent of the world population. Due to the increase in demand for food both domestically and internationally, the government shifted its focus to 'global food security', and this prompted the need to support Africa.[83] The Chinese food policy emphasises agricultural innovation to increase output by subsidising technology for farmers. The aim is to protect the peasant sector to ensure rural stability by emphasising the extraordinary success of peasant agriculture, particularly under the Household Responsibility System.[84] To ensure sustainability the government is investing in new technologically-advanced agricultural equipment.[85]

In 1999, the country witnessed transformation in food security policy through articulation of a 'going out' policy, whereby Chinese business enterprises and technology sharing is promoted across the globe to improve food output by engaging different strategies.[86] This led to China-Africa

diplomatic engagements with strong diplomatic and business ties. This is promoted through the Forum on China-Africa Cooperation (FOCAC). The state-owned enterprises (SoEs) are encouraged to adopt the 'going out' policy to invest in other countries to improve output.[87]

South Africa

The Constitution of the Republic of South Africa, 1996, section 27(1), stipulates that water and food are human rights for its citizenry. Section 28(1) also clarifies the rights of detainees or prisoners to access nutritious food. The South African Government is obligated to ensure that these rights are realised. The Integrated Food Security Strategy, 2002, was a government initiative to improve food security and imbalances in the country at the time. Child support grants, school feeding schemes, disability grants, and free health care services for children were introduced but faced challenges specifically with regard to harmonisation and coordination of multiple sectors within the country. Food security is multi-sectoral in nature and various players from multiple sectors need to improve the position of food security. The National Policy on Food and Nutrition Security, the Household Food and Nutrition Security Strategy and the *Fetsa Tlala* Production Initiative were formulated to address food insecurity.[88] The introduction of the abovementioned policies is indicative of the South African Government's intention and commitment to achieving food security.[89] The Department of Agriculture, Forestry and Fisheries (DAFF) and the Department of Social Development (DSD) were assigned to lead the implementation of the policy. The National Policy on Food and Nutrition Security demands the participation of civil society, NGOs, community, academics and researchers to improve food security. The policies share the perceptions of the voluntary theory, which argues that all stakeholders work collectively to improve food security.

Towards a single framework for analysis

The South African food policy environment matches that of BRICS. The government has made equal efforts to address all the critical components of food security. The rural food security support, such as the department of education basic feeding scheme, compares to Brazil. Moreover, credit lines in rural agriculture compare to China and Brazil, which are renowned for good agriculture systems. The major challenge lies in implementation. Nevertheless, sound food security policies pave the way for implementation of sustainable food security strategies. Food strategies are courses of action centred on food production, provision and access, and sustainable health and food culture.[90] The next section discusses the strategies that can be adopted by South Africa towards zero hunger, drawing from the BRICS nations.

Strategies on zero hunger: A South African perspective

A food strategy is a synergy of integrated goals, actions and approaches implemented to secure food security. Sustainable food strategies help in the improvement of the local food system. This is necessary through the coordination of all key stakeholders in the food industry. The state, being the key stakeholder, has a mandate to oversee the key food strategies brought to bear on food security in South Africa.

The key priority on food security strategies is to foster food access. State-supported grants are a necessary strategy for food access. Brazil and China are in the forefront of utilising this strategy. National social security grants are aligned against the cost of living. South Africa should match this strategy, as its social security grants are inadequate as a food security strategy. Funding of informal employment activities and creation of employment can limit the fiscal burden from funding social security grants. The food access strategy draws from the entitlement approach, which suggests that increasing employment opportunities through pro-poor measures would enhance human capacity and ensure entitlement due to affordability.

Crop diversification is mostly practised in Brazil, India and China. The strategy contributes to the nutrient component of agricultural output, and guarantees food output during periods of climatic variations. The postmodernism theory advocates that food security requires regular, if not sustainable research and development to draw on innovative ideas and approaches. South Africa's agricultural output is derived from large-scale commercial farming as well as smallholder farming, to a lesser extent. The latter has been affected by numerous challenges, notwithstanding the implementation of proper diversification standards. Adopting lessons from China, with its successes of smallholder diversification standards, could guarantee food security in this sector.

Similarly, South Africa could learn from Russia about food relief schemes. Russia had plans to introduce food coupons for low-income groups in 2018. The initiative is meant to support domestic agricultural producers.[91] Similarly, the government of India has a midday meal strategic programme administered by ISKCON Food Relief Foundation (IFRF). The aim of this project is to liberate children from the vicious cycle of malnourishment and illiteracy. The programme is similar to South Africa's Department of Education basic nutrition scheme and the Brazil government's basic education food relief programme. The Brazilian scheme is outstanding as it provides positive lessons through community engagement in the municipal agrarian food chain systems.[92]

In addition, contract farming has been a success for people-oriented governments. Brazil, China and India are masters of such initiatives. Farmers in these countries are guaranteed a high price per produce if contracted.[93] The government provides farming input and purchases agricultural yield from farmers, thus guaranteeing employment and food security. Brazil has been successful in contracting local farmers as suppliers of basic education and feeding programmes in schools. The strategy could be adopted in South Africa, which has a similar rural school feeding scheme. The income-based approach assumes that food insecurity is caused by inadequate income. The theory proposes income generating strategies that governments can adopt to improve food security. Contract farming is one of these strategies.

Finally, South Africa can adopt the public-private partnership (PPP) strategy as practiced in Brazil, China and Russia. In the PPP, stakeholders are invited to participate in food security initiatives as a way of ensuring food access to every citizen.[94] Through PPPs, investment in agriculture and mechanisation, as well as food access, is enhanced in these three countries.

It is necessary for South African farmers to adopt the integrated approach towards improving agricultural output. In the approach, various food security strategies should be maintained. Key amongst these is balanced growth; human and institutional capital development; local and global coordination; financial intervention; and agricultural mechanisation.

The aforementioned food strategies are utilised in BRICS countries but it is worrisome to note that South Africa has the capacity but lacks the execution techniques necessary to practice these initiatives.

Conclusion

Food security remains a major concern for most third-world countries. This article raised questions about the sustainability of South Africa's food security strategies as well as the lessons it can draw from its membership of BRICS. To address the question, the article explained BRICS' main food security models/approaches, food security policies/strategies, trade policy, as well as South Africa-BRICS food trade.

Drawing from the BRICS countries (minus South Africa), the main conclusion is that for the success of food security and schemes in South Africa, there is a need for the country to invest in agricultural research and development; increase agricultural support; invest in human development; and engage in PPPs. South Africa's failure is linked to the lack of governance in the agri-food sector; low support for food relief schemes; inadequate mechanisms to encourage crop diversification; and misaligned food trade policy with BRICS. Apart from addressing the challenges above, South Africa has to promote the following:

- Contract farming;
- Agricultural support to smallholder farmers; and
- Increased social grants to match the cost of living.

However, in general there is need for reforms in food security policy and intra-BRICS trade policy amongst BRICS countries in order to achieve food security embedded on four pillars: food access, availability, utilisation and stability.

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