

We are IntechOpen, the world's leading publisher of Open Access books Built by scientists, for scientists

4,800

Open access books available

122,000

International authors and editors

135M

Downloads

Our authors are among the

154

Countries delivered to

TOP 1%

most cited scientists

12.2%

Contributors from top 500 universities



WEB OF SCIENCE™

Selection of our books indexed in the Book Citation Index
in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?
Contact book.department@intechopen.com

Numbers displayed above are based on latest data collected.

For more information visit www.intechopen.com



Nutrition-Sensitive Agricultural Development for Food Security in Africa: A Case Study of South Africa

Hester Carina Schönfeldt, Nicolette Hall and
Beulah Pretorius

Additional information is available at the end of the chapter

<http://dx.doi.org/10.5772/67110>

Abstract

The paradox of persistent under-nutrition and food insecurity; as well as the increasing the incidence of over nutrition is particularly observed in middle –income countries experiencing rapid westernisation such as South Africa (SA). Values of household Food insecurity remains high, whereas overweight and obesity are increasing at a rapid rate. Agriculture and the food system play a key role in nutrition, health and food security. It provides for the primary sources of energy along with essential nutrients, while simultaneously being a source of income, creating jobs and earning foreign exchange. This case study presents the current nutrition sensitivity of the South-African agriculture and food systems (including governmental prioritization) and highlights the importance of this for future development towards improved food and nutrition Security and nutritional status. Since 2013, discussions on a single, comprehensive, food security and nutrition policy and implementation plan for South Africa have been in process with the aim to coordinate the improvement of both food security and all forms of malnutrition. Yet, the case study findings indicate an unfortunate lack of understanding about nutrient density and dietary diversity and the role which this could play in combating non-communicable diseases in addition to food insecurity and hunger.

Keywords: South Africa, food security, policies, programmes, Africa, nutrition sensitivity

1. Introduction

The relationship between the causes and consequences of malnutrition is complex [1]. Poverty and high food prices reduce consumer purchasing power and can leave the nutritionally vulnerable even more powerless when it comes to acquiring healthy foods. On the other hand, nutrition plays a fundamental role in the sustainable development of human capital [2]. Malnutrition adversely affects both mental and physical development and significantly reduces the productivity and economic potential of an individual [3].

Agriculture and the food systems play a key role in linking nutrition, health and food security. It provides for the primary sources of energy and essential nutrients, while simultaneously being a source of income, creating jobs and earning foreign exchange. Agricultural development is fundamental for sustaining the lives of the world's population, yet agricultural activities often face many challenges due to population growth, urbanization and climate change, which threaten the availability of water, land and other natural resources.

The importance of agriculture to health has been increasingly recognised, but the link between agriculture, nutrition and health policies and programmes is still weak in most countries, with serious implications for the effectiveness and efficiency of the efforts to improve overall health and nutrition outcomes. Although the agriculture and health sectors are all aiming at alignment and improved well-being, agricultural interventions and actions frequently undermine health and nutrition [4]. For instance, the failure of agriculture to provide access to nutritious foods and support high-quality food choices contributes to micronutrient deficiencies and 'hidden hunger', which are a persistent health concern in many countries. Monotonous diets which mainly include inexpensive, energy-dense, nutrient-poor (staple) foods could further aggravate the emerging epidemic of obesity and chronic diseases.

South Africa (SA) has an abundant supply of natural resources, well-developed financial and service sectors and modern infrastructure. The country is considered nationally food secure as agricultural production is high and at the national level, there is enough food available for the whole population [5]. SA is in a nutrition transition in which under-nutrition (including stunting and micro-nutrient deficiencies) continue to co-exist with a rising incidence of overweight and obesity and the associated consequences such as hypertension, cardiovascular disease and diabetes. Within the context of the HIV and AIDS pandemic and food insecurity, the high prevalence of under-nutrition, micro-nutrient deficiencies and over-nutrition presents a complex series of challenges.

Using findings from a South African case study, as commissioned by the United Nations Standing Committee on Nutrition (UNSCN), this chapter provides an overview of the nutrition sensitivity of agricultural development.

2. The concept of food and nutrition security

Food security is said to exist when all people in a society at all times have enough food for an active, healthy life. Food security as an umbrella term includes the availability of food that

is nutritious and safe and an assured ability to procure and acquire food of good quality in a socially acceptable way. Measuring food security continues to exist as a challenge due to the multidimensional nature thereof. As a result, there is no standardised methodology to measure or monitor food security [6].

Main measures for food security are related to income versus food basket expenditure, agriculture production, consumption and household expenditure. Often, investigating the adequacy of daily energy intake or access is considered the best direct measure of food security. However, it has been globally recognised that the provision of energy, without the adequate intake of critical macro- and micro-nutrients such as protein or vitamins and minerals, may increase weight but not length, promoting adipose tissue gain resulting in overweight and obesity [7]. The combined term “*food and nutrition security*” has been used more frequently to emphasise the need for considering complete dietary requirements (nutrients) in addition to dietary energy, when food security strategies are discussed.

3. The status of food and nutrition security in South Africa (case study)

South Africa (SA) is considered food secure at the national level, producing or importing enough dietary energy for the whole population (more than 3000 kcal/capita/day) [5]. The same cannot be said about households, especially those in rural areas. The majority of households live in poverty with a limited variety of foods (mainly staples) available at home [8]. Although no national survey has been conducted to assess all the dimensions of food insecurity in South Africa, some surveys have included components of food insecurity.

A review of published studies indicates that food insecurity threatens 50–80% of South-African households, whereas the incidence of obesity is increasing to levels affecting more than half of South-African adults. These statistics indicate the co-existence between obesity and food insecurity, possibly even for the same individual.

In addition, SA is one of only 12 countries in the world in which mortality rates for children younger than 5 years have increased since 1990 [6]. Despite the relatively high per capita income, rates of childhood stunting in South Africa (although a middle-income country) are similar to low-income countries in the region [7]. While some indicators show improvement, several conditions seem to have worsened over the past decade [6]. High incidence of stunting observed in children indicate a chronic deficiency in essential nutrients during the growing years, yet 25% of adolescents and 56% of the adult population were recorded as overweight or obese in 2013, indicating excessive intakes of energy with nearly 30% of all deaths attributed to non-communicable diseases [6].

When populations modernize as a result of socio-economic development, urbanization and acculturation as is observed in SA, it is characterized by changes in dietary patterns and nutrient intakes that increase the risk of the diet-related non-communicable diseases [9]. Non-communicable diseases have emerged in Sub-Saharan Africa at a faster rate and at a lower economic level than in industrialized countries before the battle against under-nutrition could be won. Adverse changes in dietary patterns include increased consumption of foods from animal origin rich

in total and saturated fat, decreased intakes of legumes and vegetables and increased intakes of energy-dense, micro-nutrient-poor snack foods, convenience foods (often high in sodium), vegetable oils and sweetened carbonated beverages as well as added sugar, fats and oils during the preparation of food [10]. Although increases in fruit and meat consumption have been observed, the increased intake has not been sufficient to meet all micro-nutrient needs [9].

The average household income of the poor in South Africa equips many households to procure mainly low-cost staple foods like maize-meal porridge, with limited added variety. The five most commonly consumed foods include maize-meal porridge, bread, sugar and tea supplemented with small amounts of milk [8]. Although this ability to procure enough food to maintain satiety of all family members might categorise them as being food secure, the nutritional limitations of such monotonous diets might have severe implications in terms of health, long-term development and quality of life.

3.1. Understanding the South African agriculture and food system

3.1.1. Food availability

South Africa has an area coverage of nearly 122 million hectares. The area utilised for agriculture amounts to nearly 80%, distributed between permanent pastures for extensive grazing of animals (69%), arable land (10%) and permanent crops (0.34%). Of the arable land available, only 22% is high-potential arable land, with the availability of water presenting the greatest constraint to the farming sector. The agricultural sector is also characterised by inequalities among different types of farmers, in particular between large commercial farmers and small subsistence farmers in the communal areas.

The food balance sheet for South Africa [5], indicates that the country produces enough food for local consumption for a wide selection of commodities, including maize, sorghum, other cereals, millet, potatoes, sweet potatoes, sugar, pulses (excluding peas and beans), soya beans, sunflower oil, groundnuts, vegetables, fruits, bovine meat, animal fats, eggs, milk and fish. The sectors with the highest contributions to the gross value of agricultural production are (from highest) poultry, maize, cattle, deciduous and other fruit, milk, vegetables, eggs, citrus fruit, sugar cane and potatoes. The major agricultural export products (based on 2011/2012 export values) are citrus fruit, wine, maize and grapes [11].

The commodities in short supply to support recommended consumption (thus relying on imports) are reported by the FAO food balance sheets to include wheat, barley, oats, rice, rye, sweeteners, honey, beans, peas, tree nuts, vegetable oils, rape and mustard seed, soya bean oil, cottonseed, groundnut oil, poultry meat, pig meat, mutton and goat meat, butter, ghee, crustaceans, freshwater fish, molluscs, tea, coffee, cocoa beans, pimento, pepper and spices [5]. The major agricultural import products according to the national statistics include rice, wheat, poultry, palm oil and undenatured ethyl alcohol [11].

3.1.2. Food affordability

Despite significant development in the past 15 years, SA remains a country with a complex combination of developed and developing regions, in terms of its people, economy and

infrastructure. The country has a consistently unequal economy where two-thirds of the populations live under third world conditions, with the rest living under first world conditions [12]. According to the Development Indicators Mid-term Review issued by the Presidency in 2006, 43.2% of the country's population lived in poverty. In 2004, 7.6% of the population was recorded to be living below the US\$1 per day, indicating extreme poverty [13].

With high-unemployment rates, the reality is that one salary often carries an entire household. The poorest South Africans (30%) spend 31% of their total expenditure on food according to the latest Statistics South African Income and Expenditure Survey [14] and this population group is also the most vulnerable to food price increases.

With food price inflation being a global phenomenon, the price of staple foods has continued to increase over the past 2 years at a relatively high rate. Yet, although the Food and Agricultural Organisation (FAO) indicates that world food prices declined by 18.5% in 2015, Statistics South Africa (StatsSA) measured a 5% increase in the cost of its benchmark food basket during 2015. The South African Reserve Bank (SARB) announced that food price inflation is expected to rise to 11% by the end of 2016. The rural poor is also more severely affected. In 2013, rural consumers paid \$0.37 more than their urban counterparts for the same food basket consisting of rice (2 kg), maize meal (5 kg), full cream-long life milk (1000 ml), sunflower oil (750 ml) and a loaf of white bread (700 g) [15].

3.1.3. Food access

Food retailing in South Africa is characterised by two distinct sectors: the formal food retail sector and the informal sector. The shop formats within the formal food retail sector include hypermarkets, supermarkets, superettes, convenience stores, urban counter stores, urban self-serve stores, rural counter stores and rural self-serve stores. It is estimated that the formal food retail sector accounts for at least 60% of food retailing in South Africa.

The informal food retail sector includes informal markets, small retail stands, hawkers (street vendors), food vendors and spaza shops (informal stores found in rural areas and informal settlements in SA). These informal retailers play a significant role in the food security of the most vulnerable population groups in South Africa [16].

In terms of own production, a recent study on food security among poor households in the Limpopo province of South Africa found that in terms of food production, 57 and 50% of households were involved in crop production and livestock production, respectively. The most popular crops were maize, mangoes, papaya, spinach, tomatoes, oranges, bananas and guavas. The most prominent livestock production activities focused on poultry, cattle and goats [17].

Although South Africa has the ability to meet national food requirements, large-scale inequality and poverty means that many households do not enjoy food security or adequate access to nutritious and safe food. Apart from poverty increasing vulnerability to hunger and food insecurity, many households do not have sufficient access to diverse or nutrient-dense foods that will allow adequate nutrition. At the national level, South Africa is considered to be a food-secure nation, yet stunting and micro-nutrient deficiencies continue to co-exist with a

rising incidence of overweight and obesity and the associated consequences such as hypertension, cardiovascular disease and diabetes [18]. This high prevalence of under-nutrition, micro-nutrient deficiencies and over-nutrition within a complex agriculture and food system presents a series of challenges which has significant implications for policies and programmes.

4. Methodology

To conduct the case study, a South-African country team was formed representing academics and professionals working in nutrition, food security and the agricultural policy environment. Members of the country team were selected based on their level of involvement in nutrition and agricultural activities and frameworks within South Africa.

As a point of departure, a literature review was conducted on the nutrition situation in South Africa to serve as the background to contextualize the case study. A review of previous nutrition surveys and data was conducted simultaneously with the collection of primary data in the field. Nutrition information was sourced from the previous nutrition-related national surveys that have been conducted in South Africa since 1994 namely, the review of the South African Vitamin A Survey (SAVACG) and the National Food Consumption Survey (1999 and 2005). The main nutrition policies at the time were also reviewed and summarised in comparison with the findings of the Landscape Analyses Report performed for the World Health Organization (WHO) in 2010 [19]. The information was discussed and insights were obtained through stakeholder interviews with members from the Directorate of Nutrition of the National Department of Health.

Secondly, to get a thorough understanding of the South African policy environment, 29 key stakeholders were interviewed. Interviews at the national level involved mainly senior staff (Directors and managers) at key government ministries and agencies, departmental heads of academic and training institutions and national programme officers.

In addition, a questionnaire was distributed extensively throughout the country to stakeholders as well as through professional associations, e.g. the South African Association for Food Science and Technology (SAAFOST) and Nutrition Society of South Africa (NSSA)). The questionnaire was developed and adapted based on a scientific article from Haddad [20] and a report from the Leverhulme Centre for Integrative Research on Agriculture and Health [21]. The questionnaire was adopted to be applicable to the South African situation.

Once the policy environment within which programmes are rolled out was well understood, key programmes and policies were identified which do/could impact on the nutrition sensitivity of agriculture and food systems. A desktop review was done to isolate relevant programmes. This was done by means of reviewing the current strategic plans of all the national departments in South Africa, identifying any frameworks and programmes containing the words 'nutrition', 'food security' or 'health' or 'agriculture'. The programmes excluded medical based interventions and programmes such as supplementation programmes by the Department of Health and medicinal programmes such as the Farmer-to-Pharma programme by the Department of Science and Technology.

Once the list of programmes was compiled, confirmation that the list was complete was obtained from stakeholders in South Africa through the distribution of the list to them for comments and approval, as well as presentation of the report to the National Department of Agriculture, Forestry and Fisheries (DAFF).

To review the nutrition sensitivity of the programmes included in the list, a template was developed to evaluate the nutrition sensitivity of each of the interventions, adopted from the UNSCN guideline provided [22] (**Table 2**).

5. Findings

The national government of South Africa functions through three spheres, i.e. national, provincial and local governmental departments. At the national level, the Bill of Rights in the Constitution of the Republic of South Africa (Act 108 of 1996) states that: *Everyone has the right to have access to sufficient food and water and the state must take reasonable legislative and other measures, within its available resources, to achieve the progressive realisation of each right* (Section 27); and *Every child has the right to basic nutrition, shelter, basic health care services and social services* (Section 28) [13]. This Constitution is considered the supreme law of the land and cannot be superseded by any other governmental action.

The Medium-Term Strategic Framework (MTSF) of South Africa is an electoral mandate and a statement of intent identifying the development challenges facing South Africa. It guides planning and resource allocation during a 5-year cycle. National and provincial departments need to develop their own strategic plans and budgets taking the medium-term imperatives reported in this document into account. In the 2014–2019 MTSF of the current ruling party, their objectives are:

- Radical economic transformation, rapid economic growth and job creation.
- Rural development, land and agrarian reform and food security.
- Ensuring access to adequate human settlements and quality basic services.
- Improving the quality of and expanding access to education and training.
- Ensuring quality health care and social security for all citizens.
- Fighting corruption and crime.
- Contributing to a better Africa and a better world.
- Social cohesion and nation building.

Based on the MTSF, a set of 14 national outcomes were developed (**Table 1**). These outcomes reflect the desired development impacts the Government seeks to achieve. Each outcome is articulated in terms of measurable outputs and key activities to achieve the outputs. The President of South Africa then proceeds to sign Negotiated Service Delivery Agreements with all Cabinet Ministers, in which they are requested to establish and participate in

Outcome	Department responsible for coordination
1. Improved quality of basic education	Department of basic education
2. A long and healthy life for all South Africans	Department of health
3. All people in South Africa are and feel safe	Department of defence
4. Decent employment through inclusive economic growth, coordinated by the	Department of trade and industry
5. A skilled and capable workforce to support an inclusive growth path	Department of higher education
6. An efficient, competitive and responsive economic infrastructure network	Department of rural development and land reform
7. Vibrant, equitable and sustainable rural communities with food security for all	Department of rural development and land reform
8. Sustainable human settlements and improved quality of household life	Department of human settlements
9. A responsive, accountable, effective and efficient local government system	Department of cooperative governance
10. Environmental assets and natural resources that are well protected and continually enhanced	Department of environmental affairs
11. Create a better South Africa and contribute to a better and safer Africa and World	Department of telecommunications and postal services
12. An efficient, effective and development oriented public service and an empowered, fair and inclusive citizenship	Department of public service and administration
13. A comprehensive, responsive and sustainable social protection system	Department of social development
14. A diverse, socially cohesive society with a common national identity	Department of arts and culture

Table 1. The 14 key outcomes of the 2014–2019 Medium-Term Strategic Framework.

Implementation Forums for each of the outcomes, prioritise funds and develop the related policies and programmes accordingly.

An organogram summarizing relevant food and agricultural policies, programmes and frameworks and the responsible national levels of power are presented in **Figure 1**.

In 2011, the National Planning Commission (NPC) released a diagnostics report setting out the achievements and shortcoming of SA since 1994. It identified a failure to implement policies and an absence of broad partnerships as the main reasons for slow progress and set out nine primary challenges: (1) too few people work, (2) the quality of school education of black people is poor, (3) infrastructure is poorly located, inadequate and under-maintained, (4) spatial divides hobble inclusive development, (5) the economy is unsustainably resource-intensive, (6) the public health system cannot meet demand or sustain quality, (7) public services are uneven and often of poor quality, (8) corruption levels are high and (9) South Africa remains a divided society.

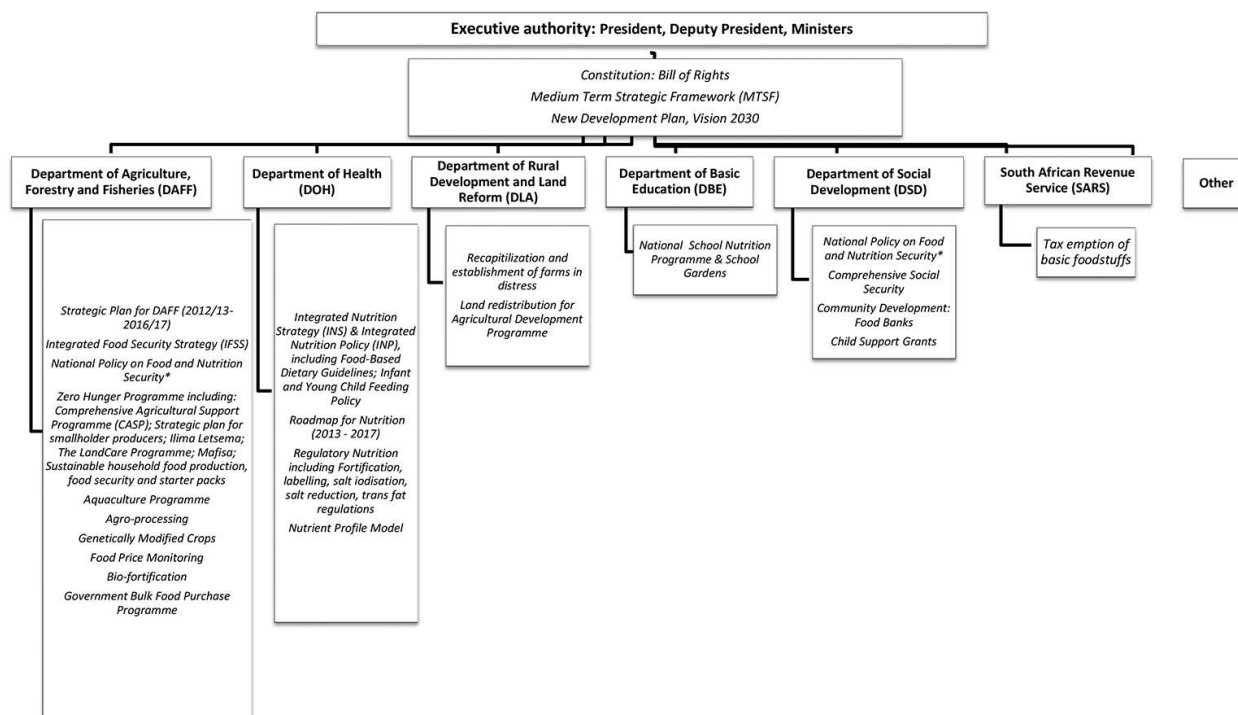


Figure 1. Organogram of the national levels of power responsible for the relevant food and agricultural policies, programmes and frameworks included in this case study.

The National Development Plan (Vision 2030) was released later in 2011 as a broad strategic framework that was set out by the NPC to guide the development of the new cycles of the presidential MTSF. It identified the key challenges South Africa as a country has to face but argues that the country can eliminate poverty and reduce inequality by 2030. It emphasises the importance of hard work, leadership and unity. It furthermore identifies infrastructure development, job creation, health, education, governance, inclusive planning and the fight against corruption as key focus areas and spells out specific projects for each.

In summary, the principal indicators of the NDP are to eliminate income poverty by 2030 (reduce the proportion of households with a monthly income below R419 per person in 2009 prices from 39% to zero) and reduce inequality (the Gini coefficient should fall from 0.69 to 0.06 by 2030). Apart from increased employment from 13 million in 2010 to 24 million in 2030, affordable access to quality health care and household food and nutrition security are listed as specific milestones required for enabling the achievement of these indicators.

The results of the findings related to the nutrition sensitivity of the various programmes and policies according to the Food and Agriculture Organization of the United Nations (FAO) guiding principles for linking agriculture and nutrition [22] are presented in **Table 2**.

Already in the early 2000s, lack of coordination was recognised and in 2002, Cabinet approved the Integrated Food Security Strategy (IFSS) to streamline, harmonize and integrate the diverse food security programmes. The strategy was implemented through among others the Zero Hunger Programme and there have been achievements in many of the

Nutrition sensitivity of agriculture policies and programmes	Integrated food Security Strategy	Zero Hunger	Food Security and Nutrition Programme	Aquaculture	Agro-processing	Food Price Monitoring	TAX	Fortification	Integrated Nutrition Strategy & Programme	Roadmap to nutrition	Regulatory nutrition	Recapitalization & establishment of farms in distress	Land Redistribution for Agricultural Development Programme	National School Nutrition Programme	Comprehensive social security	Food banks	Grants
1. Have explicit nutrition objectives	Yes	Yes	Yes	Partial	Partial	No	Yes	Partial	Yes	Yes	Yes	Partial	Partial	Yes	Partial	Yes	Partial
2. Have explicit nutrition indicators/link with nutrition M&E system	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No
3. Have goals/ activities based in the local nutrition context	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No	Yes	No	Yes	No
4. Target the most vulnerable	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Partial	Yes	Yes	Yes	Yes	Yes	Yes
5. Empower women	No	No	Yes	No	No	No	No	No	No	Yes	No	No	No	No	No	No	No
6. Increase food production	Yes	Yes	Yes	Yes	No	No	No	Partial	Yes	Yes	No	Yes	Partial	Yes	No	No	No
6. One of nutrient-rich foods	No	No	Partial	Yes	No	No	No	Yes	Yes	Yes	No	No	No	Yes	No	No	No
7. Reduce post-harvest losses	No	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No	No	No	No	Partial	No
8. Promote diversification of agricultural products	Partial	Yes	No	Partial	No	No	Partial	Yes	Yes	Yes	No	No	No	Partial	No	No	No

Nutrition sensitivity of agriculture policies and programmes	Integrated food Security Strategy	Zero Hunger	Food Security and Nutrition Programme	Aquaculture	Agro-processing	Food Price Monitoring	TAX	Fortification	Integrated Nutrition Strategy & Programme	Roadmap to nutrition	Regulatory nutrition	Recapitalization & establishment of farms in distress	Land Redistribution for Agricultural Development Programme	National School Nutrition Programme	Comprehensive social security	Food banks	Grants
9. Presence of nutrition promotion/ education components	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	No	No	Yes	No	No	No
10. Improve processing of foods	No	No	Yes	No	Yes	No	No	No	No	No	Partial	No	No	No	No	No	No
10. One to retain nutritional value	No	No	No	No	Partial	No	No	No	No	No	Yes	No	No	No	No	No	No
11. Improve storage	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	Partial	No
11. One storage of nutrient-rich foods	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
12. Expand markets and market access of the most vulnerable	Yes	Yes	Yes	No	No	No	Partial	No	No	No	No	Partial	Partial	Yes	Partial	No	Partial
12. One of nutrient-rich foods	No	No	Yes	No	No	No	Partial	Partial	No	No	No	No	No	Yes	No	No	No
13. Collaborate with other sectors	Yes	Yes	Yes	Partial	Partial	Partial	Partial	Partial	Partial	No	Partial	Partial	Partial	Yes	Yes	Yes	Yes
14. Maintain/improve the natural resource base (sustainability approach)	Partial	Yes	Yes	Partial	No	No	No	No	No	No	No	No	No	Partial	No	No	No

Table 2. Summary of the nutrition sensitivity of relevant South African policies and programmes.

strategic priority areas [i.e. NSNP, INP, EPWP, Working for Water, CASP, Ilema/Letsema, Land Care etc.]. Today SA is able to attain national food sufficiency through a combination of own production and importation, but access to nutritious foods by all households is not yet guaranteed.

Within the context of food security and nutrition, South Africa still faces serious challenges, including inadequate safety nets and food emergency management systems, lack of knowledge and resources to make optimal food choices by citizens, in cases where land is available, it is not always optimally utilised for food production, limited access to processing facilities or markets for small-scale primary producers, climate change, undermining of ecosystems, lack of sustainability and no adequate, timely and relevant information on food security and food security programmes.

Although nutrition is frequently included within governments' policies, frameworks and programmes, it is mostly reported upon in terms of 'under-nourishment', focusing on vulnerable people rather than adopting a more integrated approach. Although reference is made to nutrition in many programmes, it is not always clear how they will contribute to better nutrition as expressed in these goals. There is, in particular, a lack of inclusion of (1) the promotion of diversifying agricultural production, (2) improved processing of foods to retain nutrient value and (3) improved storage of nutrient-rich foods (**Table 2**).

Apart from the health sector, there seems to be a knowledge gap on the role which essential nutrients (in addition to kilojoules/calories) play on the health status of the population. Furthermore, there is still a general lack of understanding of the economic and social burden which malnutrition plays in the country. There is consequently very little coordination across technical areas in relation to nutrition. A deeper understanding of the relevance of the inter-linkage between agriculture and nutrition for improved food and nutrition security is still an area that needs more attention.

6. Policy implications

A collective vision or 'game plan' to implement nutrition outcomes in agriculture is required and the NDP can be seen as creating the correct architecture. It provides a plan for the reduction of poverty and inequality, with increased employment, affordable access to quality health care and household food and nutrition security as milestones. It fed the development of the current MTSF and evidence of deeper political commitment towards nutrition within food security programming has become evident in the new Food Security and Nutrition Policy for South Africa which was gazetted in 2014.

The policy has an over-arching mandate, with the Presidency at the apex of the policy. Implementation will entrench public, private and civil society partnerships. An Inter-Ministerial Committee on Food Security is advised by a National Food Security Advisory Committee, comprised of recognised experts from organized agriculture, food security and consumer bodies, as well as climate change and environmental practitioners. Although ambitious, this has the potential to allow for more effective coordination among sectors for

nutrition outcomes. However, specific areas where this policy is still lacking include (1) promoting diversification of agricultural production, (2) improving processing to retain nutritional value of foods and (3) improvement of storage of nutrient-rich foods. These gaps along with stakeholder comments still indicate misunderstanding of the importance of nutrient density and dietary diversity.

In the past 24 months, the ministerial partners involved have engaged in order to plan and streamline the policy prior to gazetting the implementation plan. The associated stakeholder communication has resulted in a more informed group of policy influencers with the hope that the long-awaited implementation plan will include nutrition-sensitive considerations.

It is not yet clear what community level roll-out will include, but it is anticipated that individual departmental programmes will be developed to build clear evidence of the link between agriculture and nutrition. These programmes and projects need to sufficiently articulate how the evidence base and lessons learned from the projects will contribute to other interventions. Projects like these could be designed and studied as potential models for greater nutritional impact, i.e. how to make it work, the extent of impact etc., including those linked to:

- a. Improved agricultural growth and development (such as vitamin A-rich vegetable gardens), including rural and community household food production such as home gardens, agricultural commodity development, including animal husbandry/livestock, aquaculture/fisheries, dairy and cultivation and sustainable resource management.
- b. Increasing the production of nutritious foods, e.g. through agro-biodiversity contributing to dietary diversification or a mix of different crops (e.g. fruits and vegetables and livestock), focussing on traditional/indigenous/local foods, bio-fortification (crop breeding, e.g. orange-fleshed sweet potatoes, brown sorghum, yellow maize, cassava, rice, pearl millet, legumes and beans) and aquaculture technology development.
- c. Focus on value chains to make nutritious foods more available and specifically to vulnerable groups such as children and women, e.g. school-based nutrition programmes such as SEED, school feeding programmes such as the National School Nutrition Programme (NSNP), alternative marketing and retail channels such as Harvest for Hope providing more fruits and vegetables through an alternative food supply chain, food price monitoring such as the pre-determined food basket of the NAMC which serves as a database to demonstrate food price trends (could be more aligned with the FBDG), tax incentives and scaling up food fortification.
- d. Other entry points could include linking small-scale food production and nutrition education, strengthening initiatives that combine low external input farming and nutritional education, strengthening alternative marketing channels and local food economies and including different commodity chains in food price monitoring.

Advocacy is a critical element of any effort to raise the policy profile and social consensus for nutrition. Placing nutrition outcomes high on the agenda of agriculture and the food system requires strong leadership (champions for nutrition and food security) with a multi-dimensional

understanding. The government needs to also invest in scientific evidence such as conducting baseline surveys and, undertake formative research; develop community awareness; achieve behaviour change and conduct regular monitoring and evaluation, as well as document findings and lessons learned. Organisational arrangements allowing for shared resources, responsibility, accountability and decision-making with incentives for collaboration will have to be put in place.

With increased economic growth the South-African agricultural sector is becoming less of a provider of food for direct consumption, to more a supplier of raw ingredients to the food industry. The post-harvest value chain of the food system is thus also becoming more important. Policy action to incentivize, regulate and educate the food industry and to encourage consumers to make more nutritious choices is currently limited and needs to be further explored.

7. Conclusions

Although South Africa produces and imports enough energy per person per day, energy alone does not ensure nourished communities. High intakes of low cost, low nutrient, higher energy staple foods have inevitably contributed to the prevailing scenario of malnutrition. Malnutrition, in turn, negatively impacts on productivity and livelihoods.

While many poor South African households produce own fresh produce, the majority of food accessed and consumed is procured through the formal or informal food systems. The importance of the agriculture and food sectors should thus not be ignored when nutrition considerations for political commitment are made.

Although there has been a general lack in the nutrition sensitivity within policies and programmes and coordination within the government spheres, it seems as if an era of increased awareness is on the horizon with the prioritization of an overarching policy, governed by The Presidency that not only includes nutrition outcomes but lists nutrition within the policy title. The National Food Security and Nutrition Policy for South Africa was gazetted in 2014 and although it has its shortcomings in terms of nutrition sensitivity, it is a step in the right direction. Moving away from policies exclusively promoting a food system which primarily generates profit to one which generates adequate, affordable and nutritious foods, should be the future focus.

Author details

Hester Carina Schönfeldt*, Nicolette Hall and Beulah Pretorius

*Address all correspondence to: profhettie@gmail.com

Department of Animal and Wildlife Sciences, Institute of Food, Nutrition and Well-being, University of Pretoria, Pretoria, South Africa

References

- [1] Kimani-Murage, E. W. et al. The prevalence of stunting, overweight and obesity and metabolic disease risk in rural South African children. *BMC Public Health*, v. 10, pp. 158, 2010.
- [2] Vorster, H. H. The link between poverty and malnutrition: a South African perspective. *Health SA Gesondheid*, v. 15, n. 1, pp. 1–6, 2010.
- [3] Lanigan, J. Singhal, A. Early nutrition and long-term health: a practical approach. *Proceeding of the Nutrition Society*, v. 61, pp. 422–429, 2009.
- [4] Pinstrup-Andersen, P. Improving human nutrition through agricultural research: Overview and objectives. *Improving Human Nutrition Through Agriculture: The Role of International Agricultural*. United Nations University: Nutrition Bulletin. pp. 352–355, 2000.
- [5] FAOSTAT (2013). South Africa Country Overview. Available at: <http://faostat.fao.org/> Last accessed 25 June 2013.
- [6] Koch, J. The food security policy context in South Africa: Country study number 21. International Policy Centre for Inclusive Growth. Brazil. 2011.
- [7] UAUY, R., KAIN, J. The epidemiological transition: need to incorporate obesity prevention into nutrition programmes. *Public Health Nutrition*, v. 5, n. 1A, pp. 223–229, 2002.
- [8] NFCS, 1999. *The National Food Consumption Survey: children aged 1-9 years*, Pretoria: Department of Health.
- [9] Vorster, H. H., Kruger, A., Margetts, B. M. The nutrition transition in Africa: can it be steered into a more positive direction? *Nutrients*, v. 3, n. 4, pp. 429–441, 2011.
- [10] Mchiza, Z. J. et al. A Review of Dietary Survey's in the Adult South African Population from 2000 to 2005. *Nutrients*, v. 7, pp. 8227–8250, 2015.
- [11] Department of Agriculture, Forestry and Fisheries. Abstract of Agricultural Statistics. [S.l.]. 2012.
- [12] Nkonki, L. L., Chopra, M., Doherty, T. M. Explaining household socio-economic related child health inequalities using multiple methods in three diverse settings in South Africa. *International Journal of Equity in Health*, v. 10, pp. 13, 2011.
- [13] Steyn, N. P., Temple, N. Community based nutrition textbook for South Africa: a rights based approach. Cape Town: Medical Research Council & Food and Agriculture Organization of the United Nations, 2008.
- [14] STATSSA. Income and Expenditure Survey (IES) 2010/2011. Statistics South Africa. Pretoria. 2012.
- [15] National Agricultural Marketing Council. Food Price Monitor - Media Release. NAMC. Pretoria. 2013.

- [16] Battersby, J. Urban food insecurity in Cape Town, South Africa: an alternative approach to food access. *Development Southern Africa*, v. 28, n. 4, pp. 545–561, 2011.
- [17] D'haese, L. Food security in the Limpopo Province. *International Research Report*. [S.l.]. 2011.
- [18] Shisana, O. et al. South African National Health and Nutrition Examination Survey (SANHANES-1). Cape Town. 2013.
- [19] World Health Organization. *Country Assessment in South Africa*. [S.l.]. 2010.
- [20] Haddad, L. From nutrition plus to nutrition driven: how to realize the elusive potential of agriculture for nutrition? *Food and Nutrition Bulletin*, v. 34, n. 1, pp. 39–44, 2013.
- [21] Hawkes, C., Turner, R., Waage, J. *Current and Planned Research on Agriculture for Improved Nutrition: A Mapping and a Gap Analysis*. Report for the Department of International Development (DFID). Leverhulme Centre for Integrative Research on Agriculture and Health/University of Aberdeen/Center for Sustainable International Development. London. 2012.
- [22] Food and Agriculture Organization of the United Nations. *Synthesis of guiding principles on agricultural programming for nutrition*. FAO of the UN. Italy, Rome. 2013 (E-ISBN 978-92-5-107560-9).