Feed the Future Innovation Lab for Food Security Policy

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MICRONUTRIENT POLICY CHANGE IN SOUTH AFRICA: IMPLICATIONS FOR THE KALEIDOSCOPE MODEL FOR FOOD SECURITY POLICY CHANGE

By

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Executive Summary

This review of micronutrient policy processes in South Africa serves as a companion piece to two parallel studies in Malawi and Zambia. All three studies employ the Kaleidoscope Model of policy change to trace the causal forces leading to key micronutrient policy decisions in each of the three countries.

After outlining the overall micronutrient policy process in South Africa, the study focuses on policy decisions regarding vitamin A supplementation, fortification with iodine, iron and multinutrient fortificant, and the reduction of sodium in foods.

The analysis in this paper traces the evolution of policies in the pre- and post-apartheid periods through to the present time. In addition to a substantive review of published and grey literature on micronutrient status and policies in South Africa, the research team conducted semi-structured interviews with 15 policy stakeholders in South Africa between October 2015 and June 2016 using a standardised interview guide.

The data permitted the team to formally assess 16 Kaleidoscope hypotheses about factors that drive policy change at each of five key stages in the policy process: agenda setting, design, decision making, implementation and monitoring, and reform.

Policy change in terms of nutrition in South Africa is strongly determined by the elements in the first part of the Kaleidoscope Model. Due to the specific political context of South Africa over the past three decades, policy change in the country was strongly influenced by a confluence of powerful focusing events and advocates that gave voice, action and impetus to the translation of the political manifesto of the African National Congress (ANC). This was strongly influenced by prevailing human rights discourse and international commitments championed by the former president, Nelson Mandela, and supported by international agencies, particularly the United Nations International Children's Emergency Fund (UNICEF), that are active in advocating human rights. These events and advocates highlighted recognised and relevant public health problems, backed by a tradition of sound evidence generated in the identification, quantification and assessment of the impact of previous efforts to resolve the problem. While recognition and evidence of the severity of most of the nutrition policies investigated in this study existed before 1994, the post-1994 political imperatives and inclusive democracy provided the opportunity for the adoption of population-wide public interventions. Propitious timing played a very significant role in agenda setting, as well as the design, adoption and implementation of the policies under investigation in this study.

Policy making, review and reform in South Africa is structured, inclusive and consultative. The Constitution is the guiding framework and informs the values, beliefs and ideas of various nutrition policies. In particular, the country's international commitments and the strong influence of President Mandela put children's unconditional rights, including those relating to nutrition, at the heart of the nutrition policy agenda, and motivate the roll-out of universal nutrition programmes in the Department of Health and more targeted complementary approaches across other sectors of government. In many cases, the country leads nutrition-related policy change, which leads to addressing non-communicable diseases (NCDs), policy drafting and the reduction of salt in food.

Intervention design has been strongly influenced by evidence-based commissions of enquiries, national surveys and careful research. While cost-benefit considerations are part of the policy change process and have, for example, informed the choice of a vehicle for fortification, only policy options that government deems fundable (through public or mandatory public partnership and compliance) are considered in policy discussions. This element essentially forms a strong part of agenda setting in many of the micronutrient policy processes. Similarly, budgetary constraints and institutional capacity rarely constrain micronutrient policy in South Africa. However, institutional capacity is a key constraint to the implementation of policy decisions, as well as the monitoring and evaluation of implementation.

Apart from specific commercial interests in the fortification debate on specific vehicles (sugar vs maize and wheat) and the specific form of a nutrient (such as iron or folate) in the fortificant mix, not many examples of opposing forces were found in this case study. Generally, the private and public sector work together in finding workable solutions to public health issues, and cooperate in the design, consultation and implementation of the solutions.

Although iodine deficiency is no longer a significant public health problem in South Africa due to the compulsory iodisation of food-grade salt, other initiatives and micronutrient policies have not delivered the intended reductions in persistent and recognised population-wide nutritional deficiencies.

The case study shows that South Africa has been responsive to recognised nutrition policy issues and implemented numerous micronutrient policies after 1994. The outcomes of most of the interventions have been suboptimal. This may reflect inadequate programme design, but implementation is also constrained by institutional capacity and enforcement. While nutrition is a national priority, a lack of policy cohesion and coordination in the broader food security domain leads to duplication, uncoordinated efforts and inadequate progress towards national and international development targets.

List of acronyms and abbreviations

AED	Academy for Educational Development
ANC	African National Congress
ARC	Agricultural Research Council
ARV	Anti-retroviral
AU	African Union
BASICS	Basic Support for Institutionalising Child Survival
BMA	Medical Association of South Africa
BMI	Body Mass Index
CAADP	Comprehensive African Agriculture Development Programme
CANSA	Cancer Association of South Africa
CCNFSDU	Codex Committee on Nutrition and Foods for Special Dietary Uses
CDC	United States Centers for Disease Control and Prevention
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
CGIAR	Consultative Group on International Agricultural Research
CODESA	Convention for a Democratic South Africa
CRC	Convention on the Rights of the Child
CRDP	Comprehensive Rural Development Programme
CSIR	Council for Scientific and Industrial Research
DA	Democratic Alliance
DAFF	Department of Agriculture, Forestry and Fisheries
DALYS	Disability-Adjusted Life Year
DBE	Department of Basic Education
DBSA	Development Bank of South Africa
DFID	Department for International Development
DHIS	District Health Information System
DoA	Department of Agriculture
DoH	Department of Health

DPME	Department of Performance Monitoring and Evaluation
DRDLR	Department of Rural Development and Land Reform
DSD	Department of Social Development
DST	Department of Science and Technology
DSW	Department of Social Welfare
DWCPD	Department for Women, Children and People with Disabilities
EDL	Essential Drug List
EDTA	Ethylenediaminetetraacetic acid
EPI	Expanded Programme of Immunisations
FSP	Food Security Policy
GAIN	Global Alliance for Improved Nutrition
GEAR	Growth, Employment and Redistribution
GWMES	Government-wide Monitoring and Evaluation System
HSRC	Human Science Research Council
ICESCR	International Covenant on Economic, Social and Cultural Rights
ICN	International Conference on Nutrition
IDA	Iron Deficiency Anaemia
IDD	Iodine Deficiency Disorder
IFPRI	International Food Policy Research Institute
IFSS	Integrated Food Security Strategy
IMCI	Integrated Management of Childhood Illnesses
INP	Integrated Nutrition Programme
INS	Integrated Nutrition Strategy
IPC	International Potato Centre
IVACG	International Vitamin A Consultancy Group
MCC	Medical Control Council
MDG	Millennium Development Goals
MDG	Millennium Development Goals
MEC	Members of the Executive Council

MIP	Municipal Infrastructure Programme
MOST	USAID Micronutrient Programme
MRC	Medical Research Council
MTSF	Medium-term Strategic Framework
NaFeEDTA	Ferric sodium ethylenediaminetetraacetate
NCD	Non-communicable disease
NCOP	National Council of Provinces
NDP	National Development Plan
NFA	National Fortification Alliance
NFCS	National Food Consumption Survey
NFCS-FB- 1	National Food Consumption Survey Fortification Baseline
NFFTG	National Food Fortification Task Group
NGO	Non-governmental organisations
NHANES	National Health and Nutrition Examination Survey
NHS	National Health Service
NHSC	National Health Services Commission
NID	National Immunisation Days
NNRI	National Nutrition Research Institute
NNSDP	National Nutrition and Social Development Programme
NPAC	National Programme of Action for Children
NRF	National Research Foundation
NSDA	Negotiated Service Delivery Agreement
NSNP	National School Nutrition Program
NT	National Treasury
NTP	National Therapeutic Programme
OAU	Organisation of African Unity
OFSP	Orange-fleshed sweet potatoes
PDoH	Provincial Department of Health
PMTCT	Prevention-of-Mother-to-Child-Transmission

RDA	Recommended Dietary Allowance
RDP	Rural Development Programme
SABS	South Africa Bureau of Standards
SADC	Southern African Development Community
SADCC	Southern African Development Co-ordination Conference
SADHS	South African Demographic and Health Survey
SAGL	South African Grain Laboratory
SAHRC	South African Human Rights Commission
SAIMR	South African Institute for Medical Research
SANHANES	South African National Health and Nutrition Examination Survey
SAVACG	South African Vitamin A Consultative Group
SDG	Sustainable Development Goals
SPRO-CAS	Study Project on Christianity in Apartheid South Africa
Stats SA	Statistics South Africa
TBVC	Transkei, Bophuthatswana, Venda and Ciskei
the dti	The Department of Trade and Industry
UN	United Nations
UNDP	United Nations Development Programme
UNICEF	United Nations International Children's Emergency Fund
UP	University of Pretoria
USAID	United States Agency for International Development
VAT	Value-added tax
WCS	World Child Summit
WHA	World Health Assembly
WHO	World Health Organisation

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1. Introduction

The development community's current emphasis on demonstrating policy change through interventions requires a better understanding of national policy-making processes. Consequently, the Kaleidoscope Model for food security policy (Resnick et al., 2015) was developed as an applied framework to analyse the drivers of change in the food security arena. As part of the Feed the Future Innovation Laboratory for Food Security Policy (FSP), the model specifically emphasises policy change in agriculture and nutrition. The model uses insight from various operational hypotheses used by the international donor community and draws on academic scholarship from public administration and political science in its development. The framework is flexible enough to encompass a broad range of policy issues across a diverse set of countries to inform a variety of ongoing policy initiatives related to promoting food security in developing countries. For instance, it can help to understand why countries facing similar agricultural and nutrition challenges choose different policy options to address these challenges. Likewise, it can assist in pinpointing whether bottlenecks to the implementation of improved policies are attributed solely to low human and institutional capacity or may instead reflect a lack of political will.

The initial case studies testing the model focused on agriculture and nutrition policy. The first generation of the Comprehensive African Agriculture Development Programme (CAADP) investment plans focused on implementing comprehensive agriculture and food security programmes to accelerate progress towards achieving the Millennium Development Goals (MDG). The current review of the first-generation CAADP investment plans and subsequent design of the second-generation iterations will focus on delivering on the Malabo declarations[1] with regard to agriculture and nutrition. The interpretation of what food security meant in the first-generation CAADP investment plans was varied and not consistent across countries. Additional challenges will include integrating nutrition more clearly into the plans in a comprehensive manner that achieves the intent of the Malabo Declaration, namely the use of agriculture-led growth as a main strategy to achieve both food security and nutrition.

The Kaleidoscope Model provides a convenient lens to reflect on policy and implementation processes as a means of identifying and recommending improvements in the process and speeding up policy reform. This paper is one of a set of case studies that compare policy-making process in Malawi, South Africa and Zambia conducted under the FSP Innovation Lab[2] (in order to understand what drives policy change).

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[1] The Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods (2014) commits to agriculture-led growth as a main strategy to achieve food and nutrition security and end hunger in Africa by 2025. The Malabo Declaration on Nutrition Security for Inclusive Economic Growth and Sustainable Development in Africa (2014) commits to ending hunger by 2025 and reducing stunting to 10% and underweight to 5% by 2025.

[2] The FSP partner institutions include Michigan State University (MSU), the International Food Policy Research Institute (IFPRI) and the University of Pretoria (UP).

The objective of the case studies was to develop an understanding of what drives policy change. To achieve the aim of the broader study, the South African case study undertook the following two broad activities, which are in line with the broader framework:

- It aimed to develop a map of the institutions involved in the nutrition policy process in South Africa. This entailed identifying key actors and players in the nutrition policy process, their organisational objectives and the role they play in the policy process. It involved understanding stakeholder interaction towards achieving nutrition goals in South Africa. Furthermore, studying the dynamic nature and conduct of the organisations helped to explore their relative importance over time and how such changes influenced nutritional policy.

- It also aimed to provide an assessment of the various factors that contribute to South Africa's micronutrient policy development. Policies were examined related to three major micronutrients that are considered to be the most pressing nutritional deficiencies related to child development, namely vitamin A, iron and iodine. Sodium reduction was also considered as a means of addressing challenges related to non-communicable diseases (NCDs).

2. International human rights and nutrition policy

Marchione (1996) explains that, from the early 1980s, human rights specialists and nutritionists began developing a human rights approach to understanding the causes of hunger and its solutions. Following the end of the Cold War (1989), countries have ratified the two covenants contained in the United Nations (UN) Bill of Human Rights, namely the UN Convention on the Rights of the Child (1989) and the UN International Covenant on Economic, Social and Cultural Rights (1976). At the United Nations World Food Conference in 1974, the Universal Declaration on the Eradication of Hunger and Malnutrition was approved. It indicates the right of all people to be free from hunger and malnutrition. All members of the UN pledge to respect these universal human rights and fundamental freedoms under Articles 55 and 56 of the UN Charter. Marchione (1996) explains that the right to food, as articulated in the Universal Declaration of Human Rights, is general and less binding than the ratification of the two covenants. Once ratified, they require specific government actions.

Marchione (1996) asserts that fragmentation and integration have shaped opportunities and constraints to the implementation of the right to food and freedom from hunger after the Cold War. He claims that fragmentation and conflict along ethnic, national and separatist lines have undermined the duties of the state as the custodian of food security and nutrition. Pinstrup-Andersen (1993) recognises that democratic governance creates opportunities where civil society can advocate for food security and nutrition policies that serve the right to food.

By the end of 1994, 10 international conventions associated with the right to food and nutrition had been signed (Marchione, 1999, p 55). Nutrition and children's rights were also a theme of the International Conference on Nutrition in 1992, the World Bank's Conference on Overcoming World Hunger in 1993 and the World Social Summit of the United Nations Development Programme (UNDP) in 1994.

While South African policy makers were largely isolated from these international meetings under the era of economic sanctions, these international conventions have shaped South African

micronutrient policy change in powerful ways. First, many of its struggle heroes were engaged in these international events while in exile during the fight for a post-apartheid South Africa. Second, as the country re-entered the international scene through its commitment to democracy, many of these international events shaped the formation of post-apartheid policies through the significant engagement of international and domestic advocates of these charters and conventions.

South Africa's re-entry into the international domain following isolation during the years of sanction due to apartheid exposed newly appointed leaders and decision makers to international debates, conventions and treaties related to nutrition. These were quickly translated into national policy by the new leaders in cases where they were relevant to the South African context and national data could justify the need for such a policy.

3. A new Constitution – a window of opportunity for policy change

Marchione (1999, p 55) states that "overcoming malnutrition is enabled in an ideological context where basic economic and social needs and civil and political participation are recognised responsibilities of the state". The South African policy-making process has changed radically since 1994. Following the transition to a post-apartheid democracy, the African National Congress (ANC) set out clear policy directions for the country. These have informed the policy direction since 1994. While policy change in agriculture has been exceptionally slow and no legislative changes relating to the agricultural sector took place between 1996 and 2012 (Hendriks and Olivier, 2015), a considerable number of strategies have been drafted, and policy and legislative changes occurred in the health sector. Many of these relate to nutrition. This context provides a unique opportunity to study policy change and test the Kaleidoscope Model.

Integration of the former four provinces and the governments of multiple independent homelands into South Africa in 1994 led to a significantly different landscape with huge disparities. For the first time, policies needed to apply to the entire population. Policy change with regard to nutrition in South Africa shows a very deliberate and structured approach, guided and informed by overarching national priorities and a newly established policy-making institutional architecture. Due to the lack of a single population-wide data set on many nutrition issues, the government had to establish baselines for assessing the severity and scope of these problems. Many policy changes have been informed by national survey data such as the South African Vitamin A Consultative Group (SAVACG) Study conducted in 1994 and the National Food Consumption Surveys conducted in 2005 and 2008.

The transition to a democratic post-apartheid South Africa was strongly influenced by the human rights agenda. This advocacy was strongly supported by international agencies, especially the United Nations International Children's Emergency Fund (UNICEF). The foundational ideology for the Constitution was set out in the Freedom Charter that was adopted at the Congress of the People in Kliptown, Johannesburg, on 26 June 1955 (ANC, 1955). The Freedom Charter was the statement of core principles of the South African Congress Alliance, which consisted of the ANC and its allies, the South African Indian Congress, the South African Congress of Democrats and the Coloured People's Congress. As early as 1987, the late Oliver Tambo stated the following during the Children, Repression and the Law in Apartheid South Africa Conference held in Zimbabwe:

We cannot be true liberators unless the liberation we will achieve guarantees all children the rights to life, health, happiness and free development, respecting the individuality, inclinations and

capabilities of each child. Our liberation would be untrue to itself if it did not, among its first tasks, attend to the welfare of the millions of children whose lives have been stunted and turned into a terrible misery by the violence of the apartheid system. (Tambo, 1987).

The Constitution of the Republic of South Africa (the Constitution), the Convention on the Rights of the Child (CRC) and the African Charter on the Rights and Welfare of the Child (the latter two adopted by South Africa in 1995 and 2000 respectively) shaped policies and programmes significantly. The right to freedom from hunger and the rights of children are clearly articulated in the Constitution. The Constitution refers to the right to food and nutrition in the following three instances:

- Everyone has the right to have access to sufficient food (subject to the progressive realisation by the state within its available resources) (s 27(1)(b)).
- Every child has the right to basic nutrition (without any limitation on the state's obligation) (s 28(1)(c)).
- Everyone who is detained, including a sentenced prisoner, has the right to adequate nutrition (without any limitation on the state's obligation) (s 35(2) (e)).

In accordance with the principle of progressive realisation, the State has to take reasonable legislative and other steps within its available resources to realise the right to food. The State has both a negative duty not to impair existing access to food, as well as a positive duty to promote and fulfil the right to food by adopting relevant measures. The measures undertaken by the State state are subject to the reasonableness test in order to ascertain whether the State within its available resources, is achieving the progressive realisation of the right to food.

The post-apartheid Constitution was strongly informed by international developments, agreements and conventions. These same obligations and trends informed the frameworks for enacting the constitutional values through the drafting of policy, regulations and legislation.

4. International obligations and the prioritisation of children's rights in South Africa as enablers for nutrition policy

In the early 1990s, a period of negotiation to shape a future non-racial South Africa began. This period was characterised by a commitment to negotiation and consultation to design the policies required for equity, reconciliation and broad-based economic growth (McLachlan and Levinson, 1999). This created a context for discussion and debate on a number of development-related topics by public interest groups including non-government organisations (NGOs), community organisations, academics and public servants (McLachlan and Levinson, 1999). Nutrition was one of these topics.

When the World Summit on Children took place in 1990, South Africa was deeply immersed in the liberation movement. In the same year, UNICEF, along with more than 200 non-governmental organisations (NGOs), met in Botswana to discuss the deteriorating conditions for women and children in South Africa. The National Children's Rights Committee, an umbrella organisation advocating for the rights of children, resulted from this meeting. In December 1993, South Africa signed the 1990 Declaration and Plan of Action of the World Summit for Children. Among the 20 goals to meet by 2020, the following related to child nutrition:

- Halve the 1990 level of severe and moderate malnutrition among children under the age of five years
- Reduce low birth weight (2.5 kg or less) by 10%
- Reduce iron deficiency anaemia in women by one-third of the 1990 levels
- Virtually eliminate iodine deficiency disorders
- Virtually eliminate vitamin A deficiency and its consequences, including blindness

The first International Conference on Nutrition (ICN) was held in Rome in 1992. During this conference, countries committed to the World Declaration on Nutrition and Plan of Action for Nutrition. The Declaration highlights the prevention of specific micronutrient deficiencies including vitamin A deficiency, iron deficiency and/or anaemia and iodine deficiency. The ICN targeted women and children as beneficiaries of micronutrient programmes (FAO, 1992).

In 1992, the University of the Western Cape's Community Law Centre hosted the International Conference on the Rights of Children in South Africa, where children themselves were consulted on numerous issues. This conference resulted in the drafting of the Children's Charter of South Africa. The charter also played a crucial role in the Convention for a Democratic South Africa (CODESA) negotiations, calling for political parties to give priority to the rights of children in shaping a democratic South Africa (Abrahams and Matthews, 2011).

A severe drought in 1992 also helped to get the topic of nutrition onto the negotiation table in South Africa. A Nutrition Task Force was established under the auspices of the National Consultative Forum on Drought. The Task Force was mandated to initiate public discussion and debate on national nutrition programmes more broadly than simply focusing on the drought. The focus of the Task Force discussions was the controversial National Nutrition and Social Development Programme (NNSDP). This programme was established by the National Party administration to address poverty and protect needy individuals likely to be adversely affected by the introduction of proposed value-added tax on basic foods (McLachlan and Levinson, 1999). The NNSDP was initiated and launched in 1991. The primary aim and short-term goal of the NNSDP was to address the nutritional needs of poor communities and households through the involvement of local communities, NGOs and government institutions by means of feeding schemes and the distribution of food and other commodities. The long-term focus was to help empower communities to become self-reliant and independent through development efforts.

By 1993, the National Committee on the Rights of Children and UNICEF launched a report entitled Children and women in South Africa: a situation analysis[3]. It explored themes such as education, health, nutrition, violence and abuse, and analysed how these related to children and women. The report noted that there were major constraints in the official national statistics for the black population segment, particularly those residing in the "independent homelands". The report findings were considered at a conference hosted by the National Committee on the Rights of Children and UNICEF in Thembisa. The conference was entitled "The state of the African child: an agenda for action". The outcome of the conference was the adoption of the Thembisa Declaration, which identified nine main areas of action, including the establishment of a National Forum for Children and the development of a National Programme of Action for Children (NPAC) (Abrahams and Matthews, 2011).

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[3] Subsequent reports were published in 2001 and 2009
http://www.thepresidency.gov.za/docs/pcsa/gdch/situation-analysis.pdf

In December 1993, the country's President, FW de Klerk, and former President, Nelson Mandela, jointly signed the 1990 Declaration and Plan of Action of the World Summit for Children and the CRC. In February 1994, the National Committee on the Rights of Children hosted a conference to discuss the operational and technical aspects of a NPAC using the CRC as guidance. The conference led to the establishment of a NPAC Task Force, with a mandate to prepare a NPAC outline for presentation to the new democratic government in April 1994. In June 1995, President Mandela announced that South Africa had officially ratified the CRC – the first international instrument to be ratified by the new democratic government (Abrahams and Matthews, 2011).

President Mandela established an Interministerial Cabinet Committee on the Rights of the Child. The steering committee included the then newly formed South African Human Rights Commission (SAHRC) and UNICEF, with the primary task to develop and implement the NPAC Framework (Abrahams and Matthews, 2011). The Framework was approved in 1996. In 1996, the NPAC included nutrition as the first of seven policy priorities. The main goal of nutrition was the reduction of iron deficiency anaemia in women by one-third of the 1990 levels, virtually eliminating iodine deficiency disorders by 1995 and virtually eliminating vitamin A deficiency and its consequences (Hendriks and Olivier, 2015).

After 1994, the ruling party set about establishing the strategic and policy frameworks to achieve the Constitution's aspirations. This included addressing food security and nutrition. The Reconstruction and Development Programme committed the government to addressing poverty, and recognised the importance of addressing hunger and malnutrition. One of the lead projects was the Primary School Nutrition Programme, commonly referred to as the Mandela Sandwich. It was only supposed to run for a short period of two years. McLachlan and Levinson (1999, p 232) state that "although the South African nutrition community was divided in the choice of programme, it readily acknowledged the symbolic significance of a high-profile nutrition programme announced personally by President Mandela".

Responsibility for food security was assigned to the Department for Agriculture, Forestry and Fisheries (DAFF), and nutrition education, food gardens and school meals were the mandate of Department of Basic Education as part of its National School Nutrition Programme (NSNP). A high-level committee recognised nutrition as a key element of health care at all levels in the transition period after apartheid. The Department of Health (DoH) was assigned to play a key role in developing and implementing nutrition programmes and services, such as interventions related to micronutrient supplementation and fortification.

In August 1994, the Minister of Health appointed a Nutrition Committee to develop a nutrition strategy for the country (Marachione, 2013). As a result, a Directorate: Nutrition was established in the DoH with a mandate to restructure the fragmented programmes into an integrated programme. This led to the development of the Integrated Nutrition Programme.

The DoH was initially also tasked with coordinating children's rights until this responsibility was moved to The Presidency in 1998, in keeping with President Mandela's promise to place children at the highest level of government priority.

The African Charter on the Rights and Welfare of the Child was adopted by South Africa in 2000. In 2000, South Africa also committed to the MDG, which included specific targets for reducing child mortality and maternal mortality. In 2009, government established the Department for Women, Children and People with Disabilities (DWCPD), dissolving the Office on Child Rights in The Presidency. Subsequently, a call was made to review the NPAC in line with the mandate of

the new department. In 2013, Cabinet approved the revised NPAC 2012–2017, which sought to bring together existing international and national priorities for the survival, protection, development and participation of children in South Africa into one coherent framework. After the 2014 general elections, the DWCPD was disbanded and the children's portfolio shifted to the Department of Social Development (DSD) (Abrahams and Matthews, 2011).

In 2013, the DoH developed a Roadmap for Nutrition in South Africa 2013–2017. The development of the Roadmap for Nutrition was triggered by research published in the *Lancet Nutrition Series* of 2008 and draws on recommendations from the Integrated Nutrition Programme and the Landscape Analysis. The Roadmap for Nutrition is based on the 1991 National Food Consumption Survey. The five-year roadmap aims to raise the status of nutrition in the health sector in a bid to improve maternal and child health in South Africa (DoH, 2013a). A monitoring and evaluation system for reporting on the MDG was established through Department of Planning, Monitoring and Evaluation (DPME) for annual reporting on progress towards goals.

The relationship between overweight, obesity and NCDs is well established, and forms the basis for the recommendations of the World Health Organisation (WHO) for the prevention of chronic diseases (WHO, 2011a). In 2011, there was extensive global focus on NCDs, culminating in the UN General Assembly high-level meeting of heads of state and governments, and the adoption of the Political Declaration on the Prevention and Control of NCDs. Perhaps most importantly, the UN declared that NCDs were not only a health, but also a development concern that requires a whole-of-government and whole-of-society approach.

Leading up to this high-level meeting, the South African Minister and Deputy Minister of Health hosted a national summit that was attended by government, NGOs, professional organisations and academics. The summit adopted a Declaration and set 10 targets to be reached by 2020 (DoH, 2013b). The targets were informed by a plethora of international documents and commitments, including the following:

- The Resolutions of the World Health Assembly (WHA) 53.17 (May 2000) on the Prevention and Control of NCDs
- WHA 61.14 (May 2008) on the Prevention and Control of NCDs: implementation of the Global Strategy
- The report of the WHO Commission on the Social Determinants of Health (2008)
- The Ouagadougou Declaration on Primary Health Care and Health Systems in Africa: achieving better health for Africa in the new millennium (2008)
- The Libreville Declaration on Health and Environment in Africa (2008)
- The Nairobi Call to Action (2009)
- The Mauritius Call for Action (2009)
- The 2008–2013 Action Plan for the Global Strategy for the Prevention and Control of NCDs, Global Strategy on Diet, Physical Activity and Health (2004).

In 2014, the Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods (AU, 2014) was signed by African Union member states. In order to keep nutrition high on the African development agenda, a second Declaration on Nutrition Security for Inclusive Economic Growth and Sustainable Development in Africa was signed. The Declaration includes commitments to ending child stunting (bringing down child stunting to 10% and underweight to 5% by 2025). This declaration also committed governments to position this goal as a high-level objective in national development plans and strategies and to

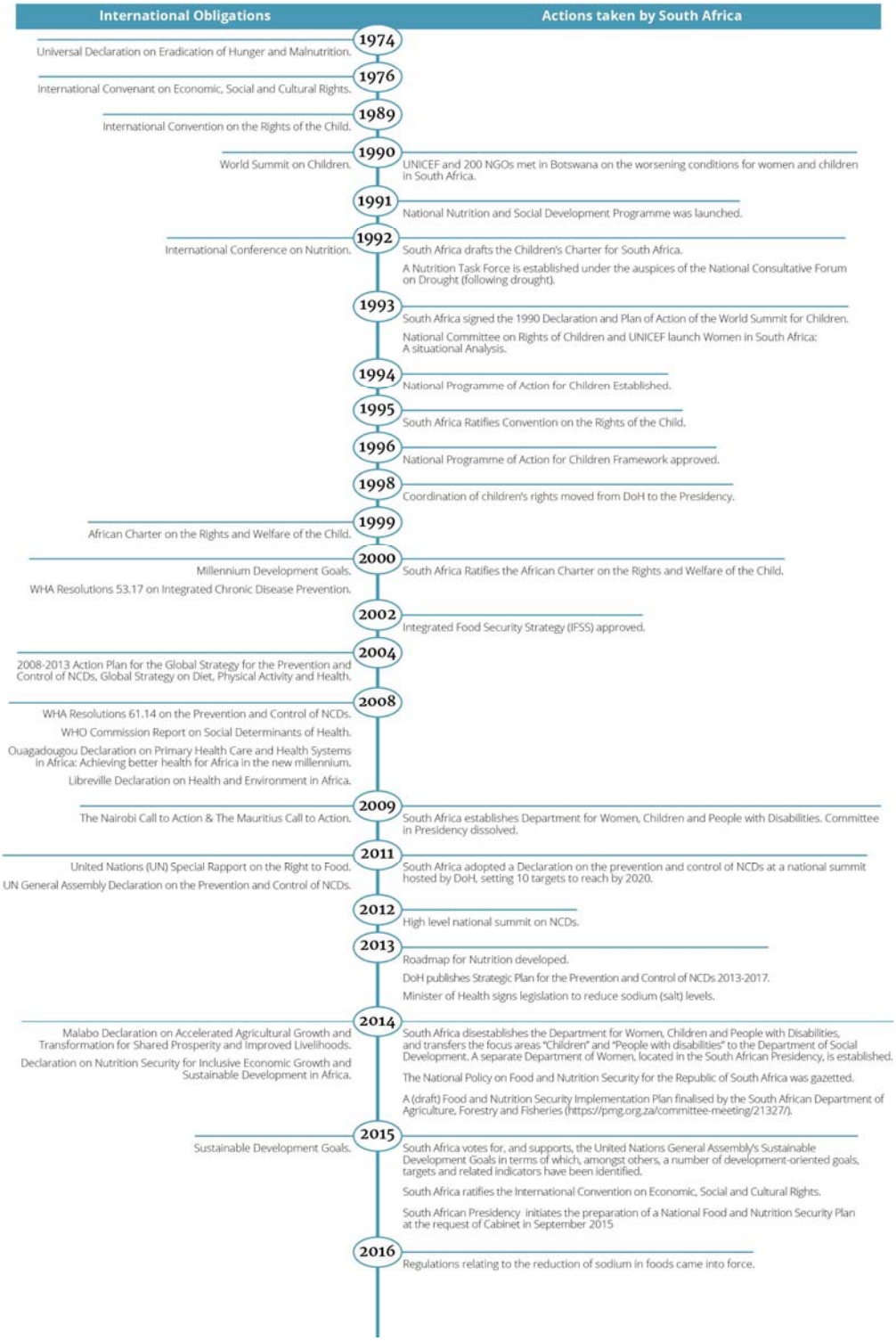
establish long-term targets that give all children equal chance for success by eliminating the additional barriers imposed by undernutrition (Hendriks and Olivier, 2015). President Mandela's commitment to children is still visible through the signing of these agreements.

Currently, the Portfolio Committee on Women, Children, Youth and Persons with Disabilities and the Select Committee on Women, Children and Persons with Disabilities are the lead committees that oversee children's matters in Parliament. The Ministry of Women, Children and Persons with Disabilities has a branch that deals with children's rights. In addition, the SAHRC, the Commission for Gender Equality, the Commission for the Promotion and Protection of the Rights of Cultural, Religious and Linguistic Communities and the National Youth Development Agency all play vital roles in this regard, although these institutions serve a far wider mandate than children's rights (Abrahams and Matthews, 2011).

International obligations and the change in government presented a window of opportunity for nutrition. Many of the conventions and agreements were centred on children's rights. As such, much of the nutrition focus, as can be seen from the actions taken by South Africa, was a consequence of South Africa's international commitments and obligations.

Table 1: Summarised chronology of South African obligations and actions

Summary chronology of obligations and actions taken by South Africa



4.1. The effect of international obligations when South Africa was not a member of international organisations

For a number of years South Africa was not a member of UN, African and regional organisations due to sanctions imposed against the country. This had implications regarding the country's obligations and responsibilities with regard to conventions, treaties and protocols, and raises questions as to whether it is obliged to comply with the commitments contained in all such (or specific) resolutions, declarations and decisions upon joining or re-joining such bodies.

On 30 October 1974, a draft resolution was submitted by Kenya, Mauritania and Cameroon (and subsequently co-sponsored by Iraq), to the UN Security Council recommending that the UN General Assembly expel South Africa from the UN on account of its policy of apartheid, its refusal to withdraw from Namibia and its provision of support to the Smith regime in Southern Rhodesia. However, the resolution was rejected[4]. On 12 November 1974, a vote of 91 (with 22 against and 19 abstentions) led to a ruling by the then President of the General Assembly that the official delegation from South Africa should no longer be allowed to participate in the General Assembly[5]. Subsequently, various types of sanctions were instituted against South Africa by the Security Council and South Africa "was barred from officially participating in almost all UN-related bodies"[6]. On 23 June 1994 (after the election of South Africa's first democratic government on 27 April 1994), South Africa was allowed to participate fully in all UN activities[7].

Likewise, South Africa only became a member of the African Union on 23 May 1994[8]. The Organisation of African Unity (OAU) in Addis Ababa in Ethiopia by 32 African on 25 May 1963 The OAU was disbanded on 9 July 2002 and it was replaced by the African Union (AU). The AU Constitutive Act was signed on 8 September 2000 and the South African Parliament ratified it on 27 February 2001.[9]

Similarly, South Africa joined the SADC on 30 August 1994. The Southern African Development Coordination Conference (SADCC) was established in Lusaka on 1 April 1980. Upon the signing of the Windhoek Declaration on 17 August 1992, the SADCC was replaced by the Southern African Development Community (SADC)[10].

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[4] http://www.un.org/en/sc/repertoire/72-74/Chapter%208/72-74_08-14-Relationship%20between%20the%20United%20Nations%20and%20South%20Africa.pdf)

[5] http://www.nationsencyclopedia.com/United-Nations/Membership-SUSPENSION-AND-EXPULSION.html

[6] http://www.dfa.gov.za/foreign/Multilateral/inter/un.htm

[7] http://www.nationsencyclopedia.com/United-Nations/Membership-SUSPENSION-AND-EXPULSION.html.

[8] http://www.dfa.gov.za/foreign/Multilateral/africa/oau.htm

[9] http://www.dfa.gov.za/foreign/Multilateral/africa/oau.htm

[10] http://www.dfa.gov.za/foreign/Multilateral/africa/sadc.htm

5. The policy-making process in South Africa

A typical characteristic of democracies is the following distinction between the three arms or branches of government (also referred to as the *trias politica)*:

i. The Legislature is composed of representatives that are (mostly) elected by the adult population. These representatives are members of political parties. The Legislature is responsible for the enactment of legislation and oversight in respect of the Executive.
ii. The Executive consists of the Head of State (in South Africa referred to as the President and usually the leader of the majority political party) and ministers appointed by the Head of State. Each minister is responsible for at least one government department, which consists of public servants. Each government department has specific powers, functions and duties that are determined by the Constitution and other legislation.
iii. The Judiciary is responsible for all judicial matters. This arm of government is autonomous and is not accountable to the Legislature and/or the Executive. Furthermore, the Executive is obliged to ensure the full implementation of all final decisions of the courts. A distinction is made between criminal matters (where a person or persons are prosecuted, and if found guilty, convicted for crimes allegedly committed) and civil matters (where the disputes between individuals, legal entities and between the state and individuals and/or legal entities are considered and resolved).

The Judiciary is usually organised in the following manner:

- The highest court is sometimes referred to as the Constitutional Court (responsible for the final resolution of all disputes involving constitutional matters) or Supreme Court of Appeal (responsible for the final resolution of all disputes whether constitutional or otherwise).
- A number of high courts are usually located in the capital and often also in regional capitals. The high courts are responsible for hearing criminal and civil appeals from the lower courts, as well as adjudicating matters that fall outside the limited criminal and civil jurisdiction of the lower courts.
- Specialised high courts deal with tax, labour, intellectual property, maritime and other highly technical matters.
- Lower courts have limited criminal and civil jurisdiction, and are presided over by magistrates. The magistrates' courts are courts of first instance. In a number of countries (such as certain countries in Africa), provision is also made for traditional (or customary) courts that deal with customary law matters between members of traditional communities and small claim courts that deal with small civil claims between individuals.

Another typical characteristic of most democracies is the existence of different tiers (sometimes referred to as spheres) of government, such as national, regional and local government. In South Africa, a distinction is made between the following three spheres of government, which are distinctive, interdependent and interrelated:

i. The national sphere of government consists of the National Executive. It is referred to as the Cabinet (comprising the President, as chairperson, and ministers), and is supported by a number of national government departments. With regard to the legislative function, Parliament consists of the elected National Assembly and the National Council of

Provinces (NCOP), which consists of representatives from the provincial legislatures. Parliament is responsible for the legislative function and the supervision of the National Executive.

ii. The provincial sphere of government consists of the Provincial Executive. The Provincial Executive comprises the provincial Premier, as chairperson, and Members of the Executive Council (MECs), and is supported by a number of provincial government departments. The Provincial Legislature, which consists of elected representatives, is responsible for the legislative function and the supervision of the Provincial Executive.

iii. The local sphere of government consists of municipalities. Each municipality has an elected Municipal Council, which consists of elected councillors. The elected Municipal Council has executive and legislative powers, functions and duties. Municipal mayors form the head of the Municipal Executive, while the Municipal Speaker is in charge of the Municipal Council meetings. With regard to the carrying out of its executive powers and duties, and the performance of its executive functions, the Municipal Council is supported by the Municipal Administration, which is headed by the Municipal Manager. In the case of larger cities, the Municipal Manager is referred to as the City Manager.

The South African government functions through national, provincial and local government departments. The Medium-term Strategic Framework (MTSF) serves as The Presidency's electoral mandate for a specific cycle in power (five years). This statement of intent identifies South Africa's development challenges and it incorporates the National Conference Resolutions. To date, there have been three sets of conference resolutions (see Annex B for Conference Resolutions). The MTSF outlines the medium-term strategy (five years) for improvements in the lives of South Africans. The document is meant to guide planning and resource allocation. National and provincial departments then need to develop their own strategic plans and budgets while considering the medium-term imperatives reported in this document. Based on the MTSF, a set of national outcomes are developed. These outcomes reflect the desired development impacts that government seeks to achieve, given the policy priorities. Each outcome should be clearly articulated in terms of measurable outputs and key activities to achieve these outputs. Following this, the President signs Negotiated Service Delivery Agreements (NSDA) with all Cabinet ministers, in which they are requested to establish and participate in implementation forums for each of the outcomes. The NSDA is thus a charter that reflects the commitment of key sectoral and intersectoral partners linked to the delivery of identified outputs as they relate to a particular sector of government. As an example, the Minister of Health has agreed to coordinate the outcome: A long and healthy life for all South Africans. The DoH will subsequently formulate its strategic plans, policies and programmes around this outcome.

Annual plans and budgets are negotiated with Parliament and National Treasury respectively. Each department submits a request for funding that proposes funding estimates and activitiy prioritisation. Parliament then approves the proposed activities and National Treasury approves the budget.

Every year, each department must submit an annual performance plan. An evaluation report must be submitted to national government on a quarterly basis. An annual report is also submitted to National Treasury, which reports on successes or failures during the year.

It is the responsibility of government's executive branch (Cabinet), which is made up of the President, the Deputy President and ministers, to develop new policies and laws. Parliament

approves policies and passes new laws to give legal effect to the policies. However, this is a long process during which the proposed policy or regulation needs to be debated and negotiated with various stakeholders, such as opposition parties, the public and NGOs. The typical process includes the following:

Phase 1: The government makes a political decision to formulate new policy. Such a decision is often part of the majority party's political platform. Sometimes it is a result of the failures, gaps or shortcomings of current policy and regulatory framework and its implementation, and sometimes it is on account of (new) international, continental (African) and/or regional (Southern African Development Community (SADC)) binding obligations.

Phase 2: A status quo report provides an overview of the current policy, regulatory and implementation framework with its failures, gaps and/or shortcomings. Once this report has been completed, it is discussed internally in the government department that was responsible for its drafting. Sometimes, key stakeholders are also consulted to obtain their inputs and comments. Relevant internal and external inputs and comments are then incorporated. In the normal course of events, a status quo report is not made available to the public at large. An executive summary is provided to the minister (or, in the case of a province, the provincial MEC) concerned.

Phase 3: The new policy framework is the new proposed (higher order) framework with values, principles, objectives, expected outcomes, an overview of proposed regulatory, as well as institutional and implementation frameworks, etc.

Phase 4: The new (or amended) regulatory (statutory or legal) framework gives effect to the new policy framework. Following the finalisation of the status quo report (Phase 2), a team of various departmental experts (consisting of officials in the policy section and a number of technical experts) is mandated to commence with the production of a draft policy document. In some instances, external service providers may also be contracted to assist in the drafting process, while the overall supervision and guidance is provided by a departmental project team.

The drafting process usually starts with an inception meeting. This serves to define the specific scope and time frame of the policy drafting process, allocate responsibilities and key deliverables, as well as identify and avail all relevant background documentation (such as policy decision information and the status quo report).

Policy frameworks can take on a number of forms, however not all these forms are compulsory. The complete sequence of possible policy frameworks consists of the following documents:

- **Discussion Document:** This subphase is not compulsory. A Discussion Document represents the provisional non-binding perspective of the department concerned. It usually comprises a problem statement, brief background, the identification of options (with mention of their advantages and disadvantages) and questions for discussion. The Discussion Document is published for general comment, and a consultation process with stakeholders (including the public sector, the private sector, academics, civil society, NGOs and other entities) by means of workshops throughout South Africa is implemented. The written and other comments received are categorised by topic and considered for possible incorporation into the policy document that is to be drafted.

- **Green Paper:** This subphase is not compulsory. A Green Paper represents the perspective of the department concerned. It usually comprises a problem statement, brief background,

the discussion of policy options, the identification of the preferred option, governance and management issues, intergovernmental relations, financial and administrative matters, and implementation modalities. The Green Paper is published for general comment, and a consultation process with stakeholders (including other government departments, other entities within the public sector, the private sector, academics, civil society, NGOs and other entities) is implemented by means of workshops throughout South Africa. The written and other comments received are categorised by topic and considered for possible incorporation into the Draft White Paper that is to be generated.

- **Draft White Paper:** This subphase is compulsory. A Draft White Paper represents the perspective of government as a whole (the department concerned and other government departments). It is usually a comprehensive document with a prescribed table of contents (see discussion below). During the formulation of a Draft White Paper, closed consultative meetings with key stakeholders in the public and private sector are held to obtain their views and inputs in respect of various versions of the yet-to-be-finalised Draft White Paper. Those inputs are considered by the departments concerned, and if found to be relevant, are incorporated into the next version(s) of the Draft White Paper. Once completed, it is submitted to the Head of Department (Director-General) and the Ministry, accompanied by a memorandum to the Minister, for their consideration and approval. Once approved, the Draft White Paper is submitted to the Cabinet process for consideration and approval of publication for general comment. The Cabinet process consists of consideration by the following members:
    a) The relevant cluster of directors-general (which may require amendments to the Draft White Paper)
    b) The relevant cluster of ministers (which may require amendments to the Draft White Paper)
    c) Cabinet (which may require amendments to the Draft White Paper, before it may be published for general comment)

  Such publication takes place in the *Government Gazette* (in the case of a Draft White Paper at national level) or the *Provincial Gazette* (in the case of a Draft White Paper at provincial level). The minimum period for comments and inputs is 30 days. This is often accompanied by consultative meetings with the public sector, the private sector, academics, civil society, NGOs and other entities. Comments and inputs received are then considered by the department concerned, and if found to be relevant, incorporated into the (final) White Paper.

- **(Final) White Paper:** As indicated above, the relevant department incorporates comments and inputs into the Draft White Paper, resulting in its evolvement into the (Final) White Paper. Once completed, it is submitted to the Head of Department (Director-General) and the Ministry for their consideration and approval. It is also accompanied by a memorandum to the Minister. Once approved, the (Final) White Paper is submitted to the Cabinet process for consideration and final approval as a policy document of government. The Cabinet process consists of consideration by the following members:
    a) The relevant cluster of directors-general (which may require amendments to the (Final) White Paper)

b) The relevant cluster of ministers (which may require amendments to the (Final) White Paper)
c) Cabinet (which may require amendments to the (Final) White Paper)

Once approved, the (Final) White Paper may be published as the final policy of government. Such publication takes place in the *Government Gazette* (in the case of the (Final) White Paper at national level) or the *Provincial Gazette* (in the case of a (Final) White Paper at provincial level).

After the policy document has been approved by Cabinet and is published in the *Government Gazette*, the next phase (Phase 5) is initiated. This comprises the drafting and enactment of amendment legislation, or, if required, new legislation (both principal and subordinate). Policy as such (even when approved by Cabinet) is not legally enforceable and cannot form the basis for the exercise of powers, the performance of functions and the carrying out of duties by government entities. The core elements of the policy (as approved by Cabinet) need to be translated into legislation, which has to be enacted by the Legislature (Parliament, in the case of national government departments, or Provincial Legislature, in the case of provincial government departments). Funding for the implementation of a policy and related programmes and projects can only be made available by the Legislature concerned once the required legislation has been enacted.

Phase 5: This phase consists of the new implementation framework that sets out the timelines, transitional measures, change management processes, structures, systems, programmes (with detailed projects), resource allocation, execution, as well as monitoring and evaluation of the implementation of the new policy and regulatory framework.

Once the new policy has been approved by Cabinet, and the commencement date of the new (or amendment) Act has been published in the *Government Gazette*, various administrative processes to enable the full implementation of the Act (and the underlying policy) need to be put in place.

Monitoring and evaluation, reporting and, if appropriate, intervention – which is the last part of the internally sequenced activities in Phase 5 – often result in the reconsideration, amendment or replacement of the existing policy, regulatory framework and/or implementation framework. In such an event, a new policy loop is initiated.

6. Coordination of nutrition programmes in South Africa

Nutrition is recognised in South Africa as a key vehicle for achieving international and national development targets. Most priority national programmes in South Africa aim to improve food security and nutrition, but most food security policies and initiatives have focused on agricultural production or social protection[11] (Hendriks et al., 2016). Recent policy turns have led to a more integrated and comprehensive approach to food security and nutrition policy making and programming, and significant reforms are underway to assess, align and transform various policies

[11] Social protection is a menu of policy instruments that addresses poverty and vulnerability through social insurance linked to livelihood promotion that improves incomes and efforts at social inclusion.

to improve the impact on national priorities of reducing poverty, unemployment and inequality, as well as food security and nutrition.

Most nutrition programmes in South Africa focus on overcoming undernutrition and, to a lesser extent, micronutrient deficiencies. After the 1994 transition to a democratic government, many changes in nutrition policy came about, but implementation is weak and coverage for some micronutrients is low. Recent policy changes relate to some progressive policies on addressing NCDs. For example, the 2016 Budget Address introduced a "sugar tax" from April 2017. Even in the absence of a nutrition policy after 1994, there are well-designed guidelines and policy guidelines on specific nutritional interventions.

Despite having had an Integrated Food Security and Nutrition Plan since 2002, food security and nutrition programmes remain uncoordinated. The multiplicity of guidelines and lack of coordination may, however, inadvertently place high levels of pressure on provinces, which results in a lack of focus. Consequently, the implementation of varied and numerous nutrition activities, which are ill defined and uncoordinated, may be unsustainable and not cost-effective (DoH and UNICEF, 2010).

In contrast, there was entrenched fragmentation of health care prior to 1994, with each province and homeland having its own health department. The *bantustans* (and their government departments) acted separately from each other as quasi-independent powers that were controlled by the Administration in Pretoria. By the end of the apartheid era, there were 14 separate health departments in South Africa, including one from structures reporting to each of the three parliaments. Health services were focused on the hospital sector, and primary-level services were underdeveloped. Health services in the *bantustans* were systematically underfunded (Coovadia et al., 2009).

A country assessment on readiness to accelerate nutrition was conducted in 2010. The analysis reported three main findings. First, it was found that there might be a need for regular meetings with various partners and stakeholders who might contribute to improving the nutritional status of South Africans. Second, there is a need to provide strategic direction on departmental priorities to various stakeholders. Third, coherent and consistent messaging to communities was identified as a challenge (DoH and UNICEF, 2010).

Table 2 summarises the various food security and nutrition stakeholders, their legal mandates, their commitments and their specific roles and responsibilities in relation to food security and nutrition. Figure 1 illustrates the institutional architecture for nutrition-related policies in South Africa.

Table 2: Institutional roles and responsibilities for micronutrient policies in South Africa

Institution	Legal mandates related to food security	Commitments	Specific roles and responsibilities in relation to food security and nutrition
Government			
Office of the President and Cabinet	Section 7(2) of the Constitution of the Republic of South Africa, 1996: "The state must respect, protect, promote and fulfil the rights in the Bill of Rights" Section 85(1) of the Constitution: "The Executive Authority of the Republic is vested in the President"	Providing national oversight in the implementation of policy, legislation and programmes	Coordinating all government programmes Monitoring and evaluation of all government programmes
Department of Agriculture, Forestry and Fisheries	The legislative mandate of DAFF is derived from section 27(1)(b) of the Constitution of the Republic of South Africa, 1996 Agriculture Laws Extension Act No. 87 of 1996 Agricultural Laws Rationalisation Act No. 72 of 1998 Agricultural Pests Act No. 36 of 1983 Agricultural Produce Agents Act No. 12 of 1992 Agricultural Product Standards Act No.119 of 1990) Agricultural Research Act No. 86 of 1990 Animal Diseases Act No. 35 of 1984 Animal Identification Act No. 6 of 2002Animal Improvement Act No. 62 of 1998 Animal Protection Act No. 71 of 1962	Ensuring a more producer-friendly (and consumer-friendly) market structure Accelerating implementation of the Charters and the Small-scale Fisheries Policy Promoting local food economies Investing in agro-logistics Promoting import substitution and export expansion through concerted value chain or commodity strategies Reducing dependence on industrial and imported inputs Increasing the productive use of fallow land Strengthening research and development outcomes (DAFF, 2014b)	Promoting and supporting diversified household food production (DAFF, 2014a)

	Conservation of Agricultural Resources Act No. 43 of 1983 Fencing Act No. 31 of 1963 Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act No. 36 of 1947 Genetically Modified Organisms Act No. 15 of 1997 Liquor Products Act No. 60 of 1989 Marine Living Resources Act No. 18 of 1998 Marketing of Agricultural Products Act No. 47 of 1996 Meat Safety Act No. 40 of 2000 National Forests Act No.84 of 1998 National Veld and Forest Fire Act No. 101 of 1998 Onderstepoort Biological Products Incorporation Act No. 19 of 1999 Performing Animals Protection Act No. 24 of 1935 Perishable Products Export Control Act No. 9 of 1983 Plant Breeders' Rights Act No. 15 of 1976 Plant Improvement Act 53 No. of 1976 Societies for the Prevention of Cruelty to Animals Act No.169 of 1993 Subdivision of Agricultural Land Act No. 70 of 1970Veterinary and Paraveterinary Professions Act No. 19 of 1992		
Department of Basic Education	Section 29 of the Constitution of South Africa, 1996	Responsible for school health and nutrition	School feeding

	National Education Policy Act No. 27 of 1996 South African Schools Act No. 84 of 1996		School gardens
Department of Health	Sections 9 and 27 of the Constitution of the Republic of South Africa, 1996 National Health Act No. 61 of 2003 Foodstuffs, Cosmetics and Disinfectant Act No. 54 of 1972 Hazardous Substances Act No. 15 of 1973National Policy for Health Act No. 116 of 1990 Children's Act No. 38 of 2005	Contributing to the increased life expectancy of the entire population by improving the quality, coverage and intensity of specific nutrition interventions that support a reduction in mortality rates, especially maternal, neonatal, infant and child mortality Promoting the optimal growth of children and preventing overweight and obesity later in life by focusing on optimal infant and young child nutrition Contributing to the prevention, control and treatment of HIV and tuberculosis through targeted nutritional care and support strategies Contributing to the effective functioning of the health sector by reducing the demand for curative services and improving recovery rates from diseases, thus freeing up resources for preventative and promotive services Empowering families and communities to make informed nutrition-related decisions through advocacy regarding household food security, multisectoral collaboration and effective nutrition education (DoH, 2013a)	Implementing vitamin A supplementation and de-worming by community health workers Supplementing iron and folic acid to pregnant women during pregnancy and after birth Providing nutrition supplements to undernourished individuals and links to other support systems Monitoring pre-mix for flour fortification
Economic Development Department	Bill of Rights provisions relating to equality (section 9 of the Constitution of the Republic of South Africa, 1996), human dignity (section 10), freedom of occupation, trade and profession (section 22) Chapter 3 of the Constitution dealing with intergovernmental relations Industrial Development Corporation Act No. 22 of 1940 Competition Act No. 89 of 1998	Facilitating and promoting economic development	The Department is responsible for the Competition Commission and the International Trade Administration Commission

	International Trade Administration Act No. 71 of 2002 Infrastructure Development Act No. 23 of 2014		
Department of Rural Development and Land Reform (DRDLR)	Section 25 of the Constitution of the Republic of South Africa, 1996 Deeds Registries Act No. 47 of 1937 State Land Disposal Act No. 48 of 1961 Land Reform: Provision of Land and Assistance Act No. 126 of 1993 Restitution of Land Rights Act No. 22 of 1994 Land Reform (Labour Tenants) Act No. 3 of 1996 Communal Property Associations Act No. 28 of 1996 Extension of Security of Tenure Act No. 62 of 1997 Spatial Planning and Land Use Management Act No. 16 2013 Valuer-General Act No. 17 of 2014	Claiming responsibility for the three land reform programmes: restitution, redistribution and tenure reform Acting as the primary functionary for rural development, as well as co-coordinating role for rural development initiatives undertaken by other government departments Establishing food gardens in Comprehensive Rural Development Programme (CRDP) wards by 2014 Establishing agri-parks in all district municipalities by 2018 Acquiring and allocating strategically located land Providing support to black farmers, rural communities and land reform beneficiaries	The Department is responsible for all matters relating to rural development (both as primary line functionary and coordinating entity) and land reform
Department of Social Development	Sections 27 and 28 of the Constitution of the Republic of South Africa, 1996 Non-profit Organisations Act No. 71 of 1997 Older Persons Act No. 13 of 2006 Children's Act No. 38 of 2005 Social Assistance Act No. 13 of 2004	Implementing overall policy and national framework legislation relating to social welfare population development	Early childhood development centres Food banks Nutrition drop-in centres Luncheon clubs
Ministry of Water and Sanitation	Section 27 of the Constitution of the Republic of South Africa, 1996 National Water Act No. 36 of 1998 Water Services Act No. 108 of 1997	Applying the policy and legal framework relating to water and sanitation	Ensuring the provision of water and sanitation that would promote food security

	Water Research Act No. 34 of 1971		
Statistics South Africa	Statistics Act No. 6 of 1999	Providing the state with information about the economic, demographic, social and environmental situation in the country	Providing regular updates on the status of food security and tradition in South Africa
Department of Planning, Monitoring and Evaluation	Section 85(2)(b)-(c) of the Constitution of the Republic of Africa, 1996	Facilitating the development of plans for the cross-cutting priorities or outcomes of government and monitoring and evaluating the implementation of these plans (delivery agreements) Monitoring the performance of individual national and provincial government departments and municipalities Monitoring frontline service delivery Managing the Presidential Hotline Carrying out evaluations in partnership with other departments Promoting good monitoring and evaluation practices in government Providing support to delivery institutions to address blockages in delivery	Determining the indicators for food security and nutrition Customising the Government-wide Monitoring and Evaluation System (GWMES) to food security and nutrition Taking the ultimate responsibility for the monitoring and evaluation of government programmes relating to food security and nutrition
South African Human Rights Commission	Section 184 (read with Chapter 2 (Bill of Rights)) and of the Constitution of the Republic of South Africa Act, 1996 South African Human Rights Commission Act No. 40 of 2013 Promotion of Access to Information Act No. 2 of 2000 Promotion of Administrative Justice Act No. 3 of 2000 Promotion of Equality and Prevention of Unfair Discrimination Act No. 4 of 2000	Section 184 of the Constitution: Promoting respect for human rights and the culture of human rights Promoting the protection, development and attainment of human rights Monitoring and assessing the observance of human rights in the Republic	Monitoring and making recommendations in respect of human rights, including socio-economic rights such as the right to sufficient food (section 27(1)(b))
Department of Cooperative Governance	Chapters 3, 6 and 7 of the Constitution of the Republic of South Africa, 1996 Organised Local Government Act No. 52 of 1997	Developing appropriate policies and legislation to promote integration in government's development programmes and service delivery	Coordinating all government activities relating to the provision of support to provinces and municipalities

	Local Government: Municipal Demarcation Act No. 27 of 1998 Local Government: Municipal Structures Act No. 117 of 1998 Local Government: Municipal Systems Act No. 32 of 2000 Local Government: Municipal Finance Management Act No. 56 of 2003 Local Government: Municipal Property Rights Act No. 6 of 2004 Remuneration of Public Office-bearers Act No. 20 of 1998 Fire Brigade Services Act No. 99 of 1997 Disaster Management Act No. 57 of 2002 Intergovernmental Relations Framework Act No. 13 of 2005	Providing strategic interventions, support and partnerships to facilitate policy implementation in the provinces and local government Creating enabling mechanisms for communities to participate in governance	Exercising oversight on the intergovernmental relations framework Monitoring the compliance by provinces and municipalities of their constitutional and statutory duties Promoting natural disaster management initiatives
Department of Traditional Affairs	Chapter 12 of the Constitution of the Republic of South Africa, 1996 Traditional Leadership and Governance Framework Act No. 41 of 2003 National House of Traditional Leaders Act No. 22 of 2009	Coordinating the recognition of traditional communities and their leadership structures	Coordinating all matters relating to the well-being of traditional communities and their leadership structures
South Africa Social Security Agency	Social Assistance Act No. 13 of 2004 South African Social Security Agency Act No. 9 of 2004	Administering quality customer-centric social security services to eligible and potential beneficiaries	Identifying beneficiaries who are entitled to social grants to ensure the regular and timeous payment of social grants to registered beneficiaries
Department of Science and Technology	Human Science Research Council Act No. 17 of 2008 National Advisory Council on Innovation Act No. 55 of 1997 National Research Foundation Act No. 23 of 1998 Scientific Research Council Act No. 46 of 1998 Technology Innovation Act No. 26 of 2008	Taking responsibility for policy formulation and the legal framework relating to science and technology	Supporting research that would assist in the promotion of food security and nutrition
Department of Small Business Development	Close Corporations Act No. 69 of 1984 National Small Enterprise Act No. 182 of 1996 Cooperatives Act No. 14 of 2005	Responsible for the promotion of, and the provision of assistance to, small businesses	Supporting small businesses through capacitation, and providing assistance to

			access to funding and marketing opportunities
Department of Trade and Industry (the dti)	Broad-Based Black Economic Empowerment Act No. 53 of 2003 Companies Act No. 71 of 2008 Consumer Protection Act No. 68 of 2008 Export Credit and Foreign Investment Insurance Act No. 78 of 1957 Liquor Act No. 59 of 2003 Measurement Units and Measurement Standards Act No. 18 of 2006 National Building Regulations and Building Standards Act No. 103 of 1977 National Credit Act No. 34 of 2005 National Empowerment Fund Act No. 105 1998 Special Economic Stones Act No. 16 of 2014 Sugar Act No. 9 of 1978	Responsible for the overall policies and legislation that relate to trade and industry (including, among others, the export and import of various types of food)	Ensuring that the necessary health and nutrition requirements relating to the import of non-South African food and export of South African food are complied with
South African Bureau of Standards	Standards Act No. 5 of 2008		Conducting random testing for fortification compliance

Various provincial government departments	In terms of the Constitution of the Republic of South Africa of 1996, provinces are responsible for the implementation of the following: (a) National framework policies and national framework legislation in the case of concurrent functional domains (such as social development, trade and industry, health, agriculture etc.) (b) Provincial policies and provincial legislation in respect of the above concurrent functional domains (c) Provincial policies and provincial legislation in respect of exclusive provincial functional domains (such as abattoirs, liquor licenses and veterinary services, excluding the regulation of the profession) (d) Intergovernmental Relations Framework Act No. 13 of 2005	Ensuring the implementation of national concurrent framework policies and legislation, as well as concurrent and exclusive provincial policies and legislation	In respect of health matters: Defining nutrition services, (including norms and standards) to be delivered at each of the following levels: Community Primary health care District hospitals Planning and implementing outreach services in order to reach hard-to-reach populations with core nutrition and health interventions, including vitamin A
Municipal	Chapter 7 of the Constitution of the Republic of Africa, 1996 Organised Local Government Act No. 52 of 1997 Local Government: Municipal Demarcation Act No. 27 of 1998 Local Government: Municipal Structures Act No. 117 of 1998 Local Government: Municipal Systems Act No. 32 of 2000 Local Government: Municipal Finance Management Act No. 56 of 2003	In terms of the Constitution of the Republic of Africa, 1996, the object of local government includes the provision of basic services and the the promotion of social and economic development (section 152). In addition, local government must do the following: (a) Structure and manage its administration budgeting and planning processes to give priority to the basic needs of the community, and to promote the social and economic development of the community (b) Participate in national and provincial development programmes (section 153)	Providing basic services (including potable water) Promoting social and economic development Focusing its budget, administration and planning processes on the provision of basic services and the promotion of social economic development of the local community concerned Participating in national and provincial development programmes (such as

	Local Government: Municipal Property Rights Act No. 6 of 2004 Remuneration of Public Office-bearers Act No. 20 of 1998 Fire Brigade Services Act No. 99 of 1997 Disaster Management Act No. 57 of 2002 Intergovernmental Relations Framework Act No. 13 of 2005		programmes dealing with food security and nutrition)
Other stakeholders			
Development partners			Ensuring that the nutrition components of key nutritional interventions are well defined, and that guidelines, norms and standards are widely available and used in programmes
South African Chamber of Baking	Article 4 *bis* of the Companies Act, 1926 (Act No. 46 of 1926) (this Act was replaced by the Companies Act No.71 of 2008)	Promoting the common interests of members carrying on business in the baking industry Providing quality bakery products at affordable prices to ensure the long-term growth and prosperity of the industry and its stakeholders Encouraging its members by lawful means to abide by a Code of Conduct for Good Business Practice setting out the standards of business practice to protect consumer interests	Ensuring the provision of marketing of bread that complies with strict criteria

Although The Presidency gazetted the Food and Nutrition Security Policy for the Republic of South Africa in August 2014, previously the coordination of nutritional interventions in South Africa were almost exclusively managed by the DoH. The DoH's Directorate: Nutrition mandates the policies, and monitors and evaluates issues relating to nutrition. The Directorate promotes a set of key result areas, including disease-specific nutrition support and counselling, micronutrient malnutrition control (including micronutrient supplementation), nutrition promotion education and advocacy, household food security, infant and young child feeding, and food services management. The targeted beneficiaries include vulnerable communities, mothers, children and the chronically ill. Each district in South Africa translates these activities into unique actions through the district health system.

The district health system covers all levels of preventative and primary health care, as well as district hospital services. All districts are expected to develop a district health plan that includes nutrition interventions. However, districts are only expected to report on one nutrition indicator to provincial governments. This covers vitamin A supplementation for children of 12 to 59 months. Within this system, each district reports to their provincial government. Provincially, nutrition managers have a responsibility to provide guidance to districts on the implementation of key nutrition interventions, and to monitor the implementation of these interventions.

The organisation of nutrition services at the district level also differs from one province to the next. Only KwaZulu-Natal has dedicated nutrition coordinators, whereas other provinces have coordinators that are jointly responsible for nutrition and other programmes, such as maternal, child and women's health. The 2010 Landscape Analysis found that it becomes very difficult for these coordinators to pay attention to nutrition-related interventions due to heavy workloads (DoH and UNICEF, 2010). The demand from other programmes makes it difficult for them to provide adequate support and guidance to the facilities and other implementers of nutrition-related interventions.

The development of a focused nutrition agenda within the district health system is constrained by the perception of many district managers that nutrition programmes relate only to the provision of food parcels or food gardens. These interventions fall within the priorities of DAFF, DSD and the Department of Basic Education (DBE) (refer to Table 1). Very little progress has been made to ensure the availability and equitable distribution of nutrition workers who have skills to work closely with communities in the district health system (DoH and UNICEF, 2010).

The DoH's Directorate: Food Control is responsible for ensuring the safety of food in South Africa. One of its functions includes developing and publicising food-related legislation and technical guidelines. All South African food law is underpinned by the Food, Cosmetics and Disinfectants Act No. 54 of 1972, which was last updated March 2009. Fortification-related policies and regulations fall within this legislation. The Directorate also coordinates routine and food monitoring programmes.

In most instances, government is mandated to engage the private sector in consultations when necessary, because it is a legislative requirement to involve various stakeholders in developing regulations. However, engagements with the food industry are not formalised and take place on an ad hoc basis, potentially risking the exclusion of certain key actors.

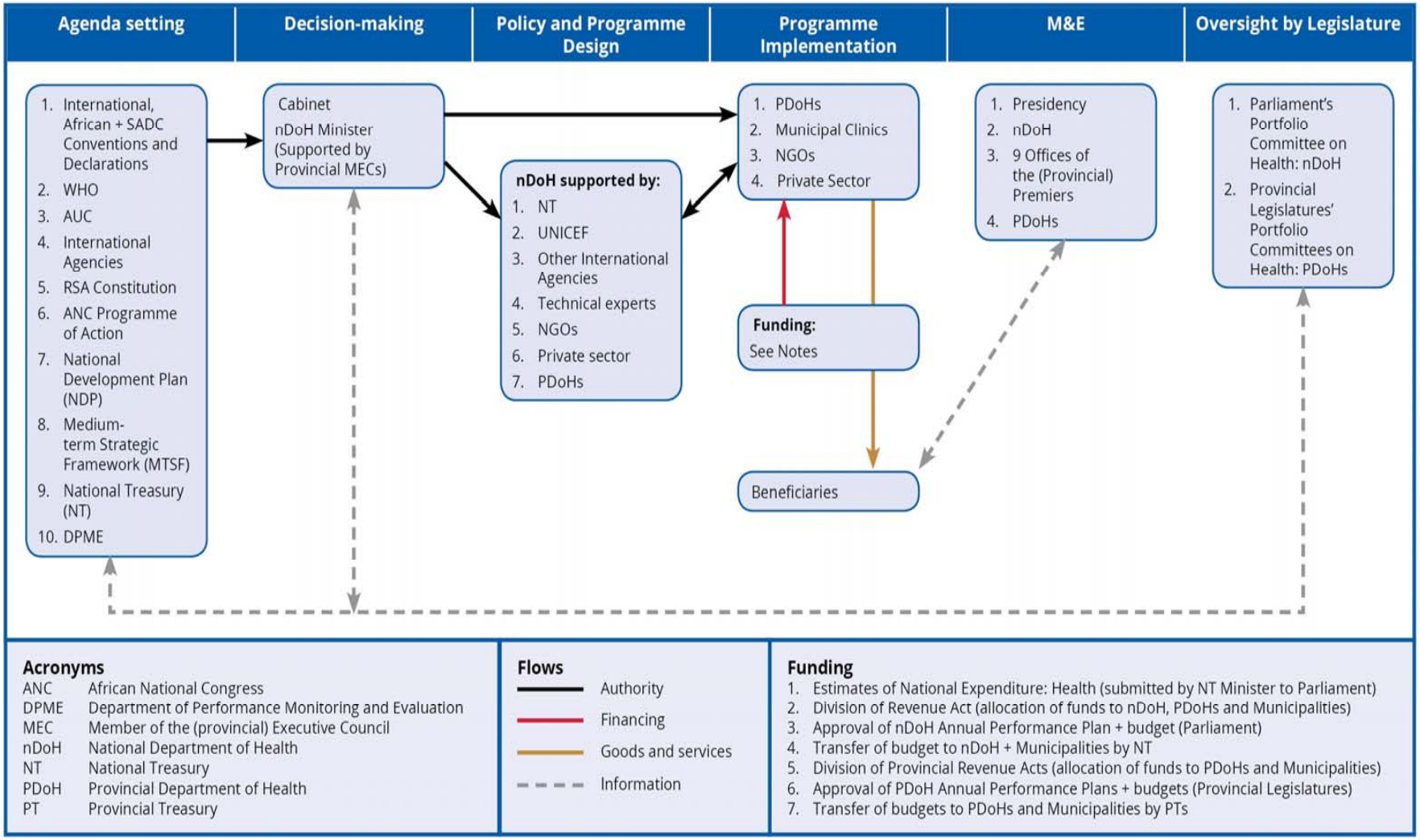

Figure 1: Institutional architecture of nutrition policy-making, implementation, monitoring and evaluation practices, and oversight in South Africa

7. Historical prioritisation of nutrition in South Africa's policy

Coovadia et al. (2009, p 817) sum up the current context of South Africa's health system as follows: "The roots of a dysfunctional health system and the collision of the epidemics of communicable and NCDs in South Africa can be found in policies from periods of the country's history, from colonial subjugation, apartheid dispossession, to the post-apartheid period. Racial and gender discrimination, the migrant labour system, the destruction of family life, vast income inequalities, and extreme violence have all formed part of South Africa's troubled past, and all have inexorably affected health and health services." The same factors have affected nutrition policy and nutritional outcomes in South Africa. Initially established as a refreshment station for the Dutch East India Company in 1572 to mitigate malnutrition (especially rickets) among the Company's crews, South Africa's history is interwoven with concerns over hunger and malnutrition, albeit for very different reasons during distinct periods."

Our review of nutrition policy through South Africa's history led us to various repositories of information in very distinct disciplines. Because interest in nutrition interventions today is strongly shaped by scientific enquiry and medical advancements, the current context of nutrition policy is divided between food security and nutrition. While the country has a (albeit weak) food security and nutrition policy (passed in 2013 and published in 2014), there is still no coordination of activities that seek to deliver on food security in general. Nutrition programmes related to micronutrient interventions (including supplementation and fortification) fall under the DoH. This area is protectively dominated by dieticians, nutritionists and doctors (many paediatricians). Food security is DAFF's responsibility. School feeding programmes are the responsibility of the DBE and the Department of Social Welfare (DSW) is responsible for early childhood development. No one takes responsibility for coordination to realise the rights that underwrite the national transversal policy framework and there is no legislation to deliver on the Constitution with regard to the rights to food and health for all and the unconditional right to basic nutrition for children.

The same malady is reflected throughout South Africa's history. Historians have meticulously documented the production and consumption of various groups in South Africa over time. None of these authors' work is reflected in the formal reports of malnutrition presented by medical practitioners in the past, and dieticians and nutritionists in the current circles of influence. The work of the veterans is referenced in the literature of anti-apartheid activists and political science. The various angles of poverty and food insecurity only come together in national commissions of enquiry reports through contributing specialists in different domains. A striking gap exists in bringing the various technical disciplines together with the human rights lawyers who are responsible for drafting legislation and supporting the realisation of the various human rights the country ascribes to.

Often, the terms "hunger" and "malnutrition" are muddled in the literature, which confuse the issues and further alienate parallel paths. Digby (2012) and Fincham (1985) reflect on the struggles of multidisciplinary teams in this area. They highlight the need for professionals from different disciplines to share information. Nevertheless, regardless of the academic orientation of the various authors and teams that document the situation or prepare official reports on the status quo, the interpretation of the findings is strongly influenced by the political persuasion of the people involved. Wylie (1989, p 11) commented that nutritional data often reveals more about the researchers and their social context than it reveals about the hungry people themselves. The policy

change cycle only begins when this persuasion leads to recommendations that align with the prevailing political ideas.

The most illustrative example of this is the wartime report of the Gluckman Commission. Digby (2012, p 188), which states: "Although its progressive recommendations have attracted the attention of historians, the three and a half million words of evidence to the National Health Services Commission (NHSC) have largely languished in obscurity… It also supplied fascinating insights into attitudes, prejudices and preconceptions in a racially segregated society." Digby (2012, p 188) also claims that "this groundbreaking commission" proposed "transformative, reforming conclusions" of the health care system, which were all rejected. The primary reasons for rejecting the proposal were issued in a Government Statement of Policy in September 1944 (Union of South Africa, 1944). This stated that the government would fill gaps in the provision of health care and develop a system of preventative health care centres for the sick poor rather than opt for the comprehensive services of the whole population. This was reiterated by former Prime Minister, Jan Smuts, in October 1944 at a conference with provincial executive committees where he stated: "However logical the scheme may be, it cannot, in present circumstances, be regarded as more than an ideal… Its adoption as a whole would necessitate far-reaching changes, for which the country is not ready."

Webster (1986, p 451) reports: "It is dangerous to generalise about early Southern African societies from the scanty evidence available, but there appears to be consensus on certain key issues. Most important is the general acceptance by observers that the indigenous population was adequately fed and of outstanding physique. Food shortages and hunger only occurred in times of ecological disaster, for example, a prolonged drought, or a livestock epidemic (such as the rinderpest epidemic of 1896)." Changes in production due to household labour shortages, the introduction of schooling for children, migrant labour (for men before the 1940s and then also for women in the 1940s), land appropriations, reduced carrying capacity of the land and changes in production led to a loss of agricultural diversity, as well as diminishing dietary diversity. Sales of agricultural crops to traders and migrant income became important for purchasing food from trading stores. Fox and Black (in Webster, 1986) report that by 1936, maize was a dominant monocrop in the Transkei. "The transition of the independent black population of Southern Africa from a condition, if not of plenty, then at least self-sufficiency, to one of underdevelopment, poverty, overcrowded reserves and townships has been long and painful, brought about by a multitude of interlocking causes" (Webster, 1986, p 452).

As early as the 1940s, protein-energy malnutrition and diets lacking in fat, calcium and iron were reported among rural populations. Wyley (1989) reports a proliferation of nutrition studies in the 1930s. Researchers urged government to address nutrition, as it was a priority economic problem and not only a matter of health and financial issues. Child nutrition was a concern for the Union in that it threatened the future supply (of black and poor white) labour. Although infant mortality rates were high, starvation was not prevalent except for periods of severe drought. It was known as early as the 1940s that nutrient deficiencies were rife. The cure however, was seen in terms of economic benefits (Wylie, 1989, p 187).

The report of the Gluckman Commission (1942–1944) reflected the "growing fashion for preventative medicine, for blaming disease on malnutrition and poor hygienic conditions" (Freund, 2012, p 183). Educating the (ignorant) public rather than resorting to expensive interventions was central to this thrust as an idea that is clear throughout South Africa's policy history until 1994 (Freund, 2012). "Nutrition was a special bone of contention and was given

utmost importance. While it was understood that malnutrition was linked to compulsory work regimes and generally to poverty, and it was understood by some at least that probably most established local diets evolved over time could resolve this problem in better economic circumstances, the emphasis often lay in paternalistic admonishment and teaching of the ignorant" (Freund, 2012). The Gluckman Commission (NHSC in Freund, 2012), judiciously put it this way: "We agree entirely with the view of the Medical Association of South Africa (BMA) that unless there are vast improvements in the nutrition, housing and health education of the people, the mere provision of more 'doctoring' will not lead to any real improvement in the public health."

These sentiments were reiterated up until the Carnegie Commission's second report. Malnutrition was the result of poverty, ignorance and disease. Martiniy (1967, p 1222) states that the unique problem in South Africa was that the majority of malnutrition cases were found among wage-earning families as a result of "poverty and ignorance". Income, whether in cash or kind, became the single-most important determinant of nutritional status (Fincham, 1985. The cures were therefore in getting more food to people or increasing incomes (through social grants) to make food more accessible. The challenge faced by successive governments lay in the dilemma of whether to support and encourage a self-sufficient peasantry or respond to the expanding white farming community that demanded land and labour, and later the mining industry, with their demands for cheap black labour (Webster, 1986). As black families became more dependent on trading and migrant income, the solutions narrowed to policy instruments that supported the latter. One such example was the Wheat Board's price control policies that stabilised local wheat prices from 1937 onwards. Between 1937 and 1991, the bread subsidy and price controls kept the price of bread artificially low. Even when wheat prices rose in the 1980s, bread remained cheaper than in most other countries. Moll (1984) calculates that the bread subsidy amounted to 3.5% of the national budget between 1947 and 1960.

While this supported and protected white farmers, the bread subsidy provided a food subsidy to everyone in South Africa. The system was in fact a win-win for farmers and consumers, especially for migrant labourers in overcrowded cities where fuel and time to prepare food was limited. The bread subsidy played a key role in shaping the 1948 elections that followed post-war food rationing (especially of white bread). The era of liberalisation in the 1990s meant that the subsidy had to be dropped, ending a convenient method of food subsidy transfers to the population. Ijsselmuiden (in Fincham, 1985) reported that many homelands did not have nutrition policies, food supplementation schemes or nutrition rehabilitation units for the therapeutic care of severe malnutrition. Children diagnosed with clinical cases of malnutrition were referred to local hospitals where treatment was inadequate. Wylie (1989) reports that the recording and reporting of kwashiorkor stopped in around 1970. By the 1980s, malnutrition was no longer a notifiable disease (Fincham, 1985). Three reasons were attributed to the delisting of kwashiorkor as a notifiable disease. The first was that it was too time-consuming to collect this data. The second was that figures were too inaccurate, and the third was that sufficient data had already been collected to provide a general idea of the status of kwashiorkor in the country (Baldwin-Ragaven, De Gruchy and London, 1999)

Even today, the average household income of the poor in South Africa is only sufficient for purchasing low-cost staple foods, such as maize meal porridge, with limited added variety (Schönfeldt, Hall and Bester, 2013). The nutrition limitations of such monotonous diets might have severe implications in terms of health, development and quality of life. Apart from the micronutrient deficiencies prioritised within national policies and subsequent programmes, the global spotlight on the rise in NCDs and their link to mortality rates, equally so in South Africa,

has seen interventions to combat NCDs being increasingly prioritised. In a country where micronutrient deficiencies continue to persist, obesity and the consequent incidence of NCDs is increasing at an alarming rate.

8. Resource mobilisation

Government funds nutrition supplementation interventions, but the private sector carries fortification costs, which are passed on to consumers. Health programmes are funded through equitable share, conditional grants and donors. There has been an increase in the nutrition budget since 2004, owing to the integration of nutrition interventions with HIV-related programmes. However, budgets are often deemed inadequate (DoH and UNICEF, 2010). A number of development partners, such as UNICEF, the WHO, the Global Alliance for Improved Nutrition (GAIN) and Academy for Educational Development (AED), and the private sector also contribute funding towards various nutrition programmes. Fortification of maize and wheat flour is funded through the food value chains.

9. Nutrition in South Africa prior to 1994

One of the strengths of the South African health and nutrition context is the tradition of evidence-based decision making in the apartheid and post-apartheid systems. While population-wide monitoring and surveillance of nutrition was not conducted in South Africa prior to 1994, essential undernutrition data was collected through health statistics and commissioned investigations. The findings of these surveys have been considered in deciding on the appropriate vehicle for addressing hunger and malnutrition in South Africa.

Webster (1986) provides a historical overview of the pre-colonial period up to the 1930s. He states that evidence of the state of food security in the country is sketchy for this period, except for a historical accounts recorded by travellers, missionaries and, for earlier times, victims of shipwrecks.

In 1932, the Carnegie Commission published the results of a study entitled The Poor White Problem in South Africa: report of the Carnegie Commission (1932). The report included the economic, psychological, educational, health and sociological aspects of the poor white population. The report recommended support from social institutions to maintain white superiority and segregation, which would help poor whites, prevent race mixing and maintain racial purity and economic power (Grosskopf, Wilcocks, Malherbe, Murray and Albertyn, 1932).

In the 1930s and 1940s, numerous commissions investigated health among homeland populations. This included the following:

- The Bantu Nutrition Survey (1939 to 1942)
- Fox and Black's Preliminary Survey (1941)
- Radloff and Osborn (Malnutrition in South Africa, Johannesburg, 1939)
- A survey commissioned by the Chamber of Mines on the decreasing health and physique of labour recruits from the Transkei and Ciskei
- A state-commissioned study by the Gluckman Commission in 1944 to investigate the health conditions of South Africans
- Kark and Le Riche's somatometrical and clinical study of bantu schoolchildren (1944 published in *Manpower*)

- A study by Quin in the 1950s (arising from a concern over his own workers on the Zebedelia estates) (Webster, 1986; Wylie, 1989)

Webster (1986) reports that in the 1930s, the infant mortality rate in the Transkei was 25 per 1 000 live births, but as high as 60 in some areas. The rate was 62 per 1 000 for the white population. The critical shortage of protein in the Transkei led to nutritional oedema (kwashiorkor) being common among small children. Fox and Black (in Webster, 1986) reported that the diets lacked fat, calcium and iron.

The Dutch Reformed Church initiated an investigation into the living conditions of poor white communities, especially in the small mining towns and overcrowded cities. The findings of the investigation of the "poor white problem" in the 1930s were published as the first Carnegie Report in 1932. At the time, poor whites constituted 300 000 of a population of two million people of European decent in what was the Union of South Africa (a consolidation of the two former Dutch and two former British colonies). The collected data showed high mortality rates among children, which were largely attributed to poor sanitation and living conditions and overcrowding (Wiesner, 1933). A nutritional assessment of schoolchildren in the former province of Transvaal, showed that "poverty and ignorance lead to lack of food and to wrong diet, weakening the resistance to disease and reducing productivity, which makes the poverty more acute". While some families were not consuming enough food, diets were monotonous and lacked variety, especially with regard to vegetables. The intake of proteins, fats, and vitamins, particularly vitamin C, was insufficient. According to the two medical doctors who conducted the nutritional assessment (Murray and Cluver in Wiesner, 1933), diets contained too much starch, usually in the form of maize and sometimes potatoes. The report concluded that the "chief causes of the inadequacies in the diet can be attributed to ignorance concerning the choice and proper preparation of food, and to poverty and unfavourable natural conditions". It was reported that droughts and other plagues in the semi-arid Karoo often resulted in food shortages as the low rainfall in this region makes it difficult to grow vegetables, even under normal conditions.

The state-commissioned NHSC (known as the Gluckman Commission) produced a report in 1994 on the health system in South Africa. This was one of a number of progressive enquiries and committees commissioned by the Smuts administration (1939–1948) (Digby, 2012). Digby (2012) classifies this as an expert commission, as it was conducted by a team of experts without defined ideological motivation and government manipulation. Extensive consultations were held across the country with over a thousand people, producing a manuscript of over 12 000 pages. The visits included a site visit at Umtata (Mtatha) to hear about the system of clinics set up in 1940 with finance from the Chamber of Mines (Umtata Rural Health Unit in Digby, 2012).

Digby (2012, p 188) states: "Although its progressive recommendations have attracted the attention of historians, the three and a half million words of evidence to the NHSC have largely languished in obscurity. This extensive and diverse testimony gave an unrivalled picture of the state of health care institutions and personnel. It also supplied fascinating insights into attitudes, prejudices and preconceptions in a racially segregated society". Digby (2012, p 188) claims "this groundbreaking commission" proposed "transformative, reforming conclusions" and states: "Whether there were 'lions in the way' of these reforms was also part of a heated encounter between the first influential witness and the commissioners".

The Gluckman Commission proposed a fairly radical reform of the entire health system, which recommended a fully tax-funded National Health Service (NHS) to more adequately meet the needs of all South Africans (Gluckman, 1944). The proposal included 400 community health

centres, which were the forerunners of community-based primary health care (Coovadia et al., 2009, Freund, 2012).

Limited studies presented national nutrition data. However, ad-hoc studies offered some insights into malnutrition in South Africa. A few studies investigated micronutrient deficiencies. From the 1950s, although studies and findings were limited and sporadic, reports of nutrition status were published through the Institute of Race Relations that seem to date back to the 1950s and through anti-apartheid agencies that reported on the nutrition of populations in the homelands. Some of these reports included reports by the Study Project on Christianity in Apartheid South Africa (SPRO-CAS) entitled "Some implications of inequality" (Ried, 1971). From the section reporting on nutrition (Ried, 1971), this report shows that between 1966 and 1985, emphasis on malnutrition focused on kwashiorkor and marasmus, often referred to as protein-calorie malnutrition. Nutrition surveillance focused on the collection of age-for-weight data and infant mortality rates. Data was often racially disaggregated owing to the vastly varied contexts in which South Africans lived.

In 1970, it was estimated that there were 50 626 deaths among black children, with 6 005 of these deaths being caused by malnutrition, specifically protein-caloric malnutrition (Hansen, 1984). Evidence from independent studies revealed that 50% of these black children died before their fifth birthday It was estimated that the infant mortality rate was 43 per 1 000 live births among the black population. Some of the common diseases in the period 1966 to 1970 were kwashiorkor, marasmus, pellagra, vitamin A deficiency, scurvy and rickets. Protein-energy malnutrition and pellagra were the more prominent deficiencies and were considered to be the most common. In 1966, when protein-calorie malnutrition was still notifiable, the National Research Institute of the Council for Scientific and Industrial Research (CSIR) reported the incidence of kwashiorkor and marasmus at 36 000 and 29 000 respectively. Malnutrition was linked to limited income to purchase adequate food. Although the exact incidence of protein-calorie malnutrition was unknown, there was evidence of prevalence among the "non-white" population (Ried, 1971).

In 1966, the reported incidence of pellagra was 26 000 per year. It was found that between 80 and 100% of children in "bantu" schools suffered from pellagra and between 10 and 20% of Indian and coloured children had undiagnosed vitamin A deficiency (Du Plessis, de Lange and Viviers, 1969). Vitamin A deficiency was found in children who exhibited signs of undernutrition, kwashiorkor or marasmus.

Rickets and scurvy were less common diseases, with 400 cases of scurvy being reported in two months by 200 doctors in 1969. In terms of vitamin C deficiency, one study revealed that 38% of rural and 41% of urban males showed deficiencies (Ried, 1971).

In 1975, it was estimated that between 15 700 and 27 000 children under five died each year because of malnutrition. Between 1980 and 1981, underweight among white, coloured, Asian and black children was 5, 30, 31 and 25% respectively. The national average reflected that 23% of children under the age of14 were underweight for their age (Hansen, 1984).

Record surpluses in the late 1970s led to a turning point in ideas around food security in South Africa (DoA, 1992). It was realised that the food and nutrition problem lies in its distribution and consumption. It was agreed that a multisectoral approach was required, that food and nutrition planning should form part of the country's overall development strategy and that it should be included in the national policies. As early as the 1992 Report on the Committee for the

Development of a Food and Nutrition Strategy for Southern Africa[12] (DoA, 1992), protein-energy malnutrition was recognised as the primary cause of malnutrition. However, it was acknowledged that a second group of diseases and conditions related to diets high in fat and animal protein associated with a Western lifestyle had particular public health and economic implications for South Africa and the Transkei, Bophuthatswana, Venda and Ciskei (TVBC) and self-governing states.

A severe drought in the early 1980s led to the prioritisation of the provision of affordable food, sufficient in volume and variety to meet the energy, protein and other nutritional requirements of the population (DoA, 1992). In 1985, the second Carnegie Report was released. Commissioned in 1982 and published in 1984, this study was much broader and less conventional in scope than its 1932 predecessor. Actively pursuing the "understanding and participation of those communities that have to endure poverty", this study was as compassionate as it was comprehensive. The research team consulted almost 300 academics, political and social activists and humanities specialists, and brought together black, coloured, English-speaking and Afrikaans-speaking discussion groups. The team established a model for multiracial inquiry and cooperation. The report suggested that the neonatal mortality rate had declined, but that postneonatal mortality related to several infections and diseases was an ongoing concern, exacerbated by poor nutrition. Obesity was also highlighted as a problem, especially among women. This was attributed to diets high in carbohydrate and low in protein (Fincham, 1985).

A review of nutrition surveillance literature for the period 1975 to 1996 was commissioned by the South African Health Systems Trust (launched in 1993 to commission, fund and conduct policy-relevant health systems research on behalf of the South African government and international donors) in 1997. The 1997 report indicated that most studies prior to the democratisation of South Africa had been conducted on children between 6 and 12 years of age, with some study populations being slightly older (Vorster, Oosthuizen, Jerling, Veldman and Burger, 1997). The data in the review was collected from 1975 to 1996 and included 34 374 children who were weighed and measured. For this analysis, the children were divided into 111 subgroups based on age, gender, ethnicity and geographic area. The data include 20 000 children aged 6 to 9 years who were measured in the 1980 National Survey (Kotzé, Van der Merwe, Mostert, Ryenders, Barnard and Snyman, 1982). Without this group, the anthropometry of only 14 374 primary school children was studied over a period of 20 years.

Following a severe drought in the 1980s, significant quantities of maize and other food products were imported at great cost. As a result of this drought, various committees were established to investigate elements of national food supply. This included the Ministerial Protein Advisory Council to investigate, advise on and coordinate matters relating to the total demand and supply of protein. Various President's Council committees reported concerns regarding the country's natural resources and projected demographic trends. In 1984, the Department of Health and Welfare expressed concern about a possible shortage of locally produced food. In response, the Committee for the Development of a Food and Nutrition Strategy for Southern Africa was appointed by the ministers of Health and Population Development, and of Agriculture. The findings of this report, as well as the findings and recommendations from the Calitz Committee on Poverty, led to the implementation of the NNSDP.

[12] In this report, Southern Africa referred to the Transkei, Bophuthatswana, Venda and Ciskei (TBVC) countries and self-governing states (Gazankulu, KaNgwane, KwaZulu, KwaNdebele, Lebowa and QwaQwa).

The findings and recommendations of the Committee for the Development of a Food and Nutrition Strategy for Southern Africa is a landmark for food security and nutrition policy in South Africa. The investigation and report came at a time of political change and transition into the democratic South Africa. It was strongly influenced by international awareness of the multidimensional nature of food security. The investigation and report led to a substantial restructuring of government departments to coordinate line functions and facilitate the implementation of the interventions recommended. The Committee recommended that a Food and Nutrition Strategy be developed for the country. The establishment of a central unit for an independent, multisectoral food and nutrition planning was also recommended.

In 1991, the NNSDP was implemented as part of the Equity through Growth and Stability budget that was tabled in Parliament on 20 March 1991. It included a wide range of programmes that aimed to bring together various key players in the community to address the food needs of the poor. The programme was weak because the majority of the projects (over 8 000) focused on the distribution of food parcels, as opposed to addressing the underlying issues. A review of the programme recommended that a national nutrition surveillance system was needed (McLachlan, 1994).

10. Nutrition in South Africa after 1994

In 1993, the Nutrition Task Force called for a phased restructuring of the NNSDP. This led to the first population-wide assessment of the vitamin A status of South Africans in 1994. The team comprised approximately 26 members who undertook a national health survey and documented the health status of children aged 6 to 72 months (n = 11 430). This study determined that 33.3% of children were marginally vitamin A deficient with a serum retinol level of less than 20μg/dℓ. The highest rates of deficiency were recorded among children between three and four years of age (SAVACG, 1996).

The SAVACG was formed in 1993 under the auspices of the International Vitamin A Consultancy Group (IVACG), with the initial aim of assessing the anthropometric, vitamin A and iron status of South African children to assist in decision making with respect to the development of comprehensive, preventative and intervention programmes. Following discussions with the DoH and UNICEF, the mandate of the SAVACG was extended to include the assessment of immunisation coverage and visible goitre.

The results of this review indicate that, on a national level, 20 to 25% of preschool children and at least 20% of primary school children were stunted, with wide ranges varying from 3 to 64% in urban black preschool children to 0 to 12% in white primary school children. The dietary and nutrient intake data supported the anthropometric and biochemical observations. In addition, the low intakes of several micronutrients (calcium, iron, magnesium, zinc, riboflavin, vitamins A, B6 and C, as well as folate) were of concern (Vorster et al., 1997).

In December 1997, the South African government submitted the initial country report to the UN Committee on the Rights of the Child and included the findings of the SAVACG survey. Based on recommendations made by the SAVACG following extensive consultation with local and international experts, the Directorate: Nutrition in the DoH issued a tender for a survey of the food consumption patterns of children between one and nine years of age, with special emphasis on children living in low income areas. Nine universities that taught nutrition or dietetics in the country formed a consortium to conduct the National Food Consumption Survey (NFCS).

In 1999, the results of the NFCS were published. The study found that "the nutritional status of younger children (12 to 71 months of age) had not improved, but did not appear to have deteriorated either" (Labadarios, Steyn, Maunder, MacIntyre, Swart, Gericke and Nesamvuni, 1999, p 7). No blood tests were performed during the course of the 1999 NFCS. Thus, this claim is based on wasting and stunting rates. The diets of children were confined to a narrow range of foods of low micronutrient density. Dietary intake was particularly inadequate in rural areas. On average, intakes of energy, calcium, iron, zinc, selenium, vitamins A, D, C and E, riboflavin, niacin, vitamin B6 and folic acid were below two-thirds of the recommended dietary allowance (RDA) for these nutrients (Labadarios et al., 2008)

Stunting was the most common nutritional disorder at that time, affecting nearly one in five children (Labadarios et al., 1999). Stunting is indicative of chronic long-term dietary inadequacy and socio-economic deprivation, and is often used as a measure of nutritional status in children (Vorster et al., 1997). In contrast, nearly 10% of South African children under nine years were recorded as overweight or obese, with 4% being obese (Labadarios et al., 2008).

The Medical Research Council (MRC) concluded a comparative risk assessment for South Africa on the underlying causes of premature mortality and morbidity experienced in 2000 (Norman, Bradshaw, Schneider, Pieterse and Groenewald, 2006). A summary of the contribution of 17 selected risk factors to percentages of total deaths and total disability-adjusted life years (DALYS) in 2000 is presented in Table 3. Eleven risk factors are directly or indirectly related to nutrition, with high blood pressure, excess body weight, high cholesterol and diabetes being in the top 10. Vitamin A deficiency and iron deficiency anaemia are 14th and 16th respectively.

In 2000, a South African delegation presented the End-decade Review to the UN Committee on the Rights of the Child (Republic of South Africa, 2000). Statistics South Africa (Stats SA) conducted the End-decade Review process. UNICEF provided technical support for the process. A ChildInfo database was installed at Stats SA to monitor child-related indicators. The main sources of data were the South Africa Demographic and Health Survey of 1998, the NFCS (1999), Stats SA's October Household Surveys (1995), Stats SA's Census Data (1996), the Central Statistical Survey (1997), the National HIV Sero-Prevalence Survey of Women Attending Public Antenatal Clinics in South Africa (1999), the Education for All Report (2000) and a number of other departmental reports.

It was stated in the 2000 final country report that "child nutrition is high on the list of government priorities". The report commented that one in three children had a vitamin A deficiency (based on SAVACG 1995 data) and that vitamin A status can effectively be improved by the routine provision of high-dose vitamin A supplements. The report indicated that a policy recommending the distribution of high-dose vitamin A capsules either at growth-monitoring visits or through the Expanded Programme of Immunisations be approved and implementation was ongoing. Progress on the elimination of iodine deficiency disorders was reported and regulations requiring the iodisation of food-grade salt were drafted.

The report raised concerns about the high incidence of child and maternal mortality, the high rates of malnutrition, vitamin A deficiency and stunting. The Committee recommended that the state reinforce its efforts to allocate appropriate resources and develop comprehensive policies and programmes to improve the health of children, particularly in rural areas. In this context, the Committee recommended that the state further facilitates a reduction in the incidence of maternal, child and infant mortality, as well as prevent and combat malnutrition. In addition, the Committee

encouraged pursuing avenues for cooperation and assistance for child health improvement with, inter alia, the WHO and UNICEF (UN, 2000).

Table 3: Contribution of selected risk factors to percentage of deaths and DALYS in South Africa in 2000 (521 000 deaths and 16.2 million DALYS)

Identified risk factor	Percentage of total deaths	Percentage of total DALYS
Unsafe sex/sexually transmitted infections (HIV/AIDS)	26.3%	31.5%
High blood pressure	9.0%	2.4%
Tobacco smoking	8.5%	4.0%
Alcohol harm	7.1%	7.0%
High Body Mass Index (BMI), excess body weight	7.0%	2.9%
Interpersonal violence (risk factor)	6.7%	8.4%
High cholesterol	4.6%	1.4%
Diabetes (risk factor)	4.3%	1.6%
Physical inactivity	3.3%	1.1%
Low fruit and vegetable intake	3.2%	1.1%
Unsafe water, sanitation and hygiene	2.6%	2.6%
Childhood and maternal underweight	2.3%	2.7%
Urban air pollution	0.9%	0.3%
Vitamin A deficiency	0.6%	0.7%
Indoor air pollution	0.5%	0.4%
Iron deficiency anaemia	0.4%	1.1%
Lead exposure	0.3%	0.4%

One of the recommendations of the 1999 NFCS was that a programme of food fortification with a view to addressing micronutrient deficiencies in the country should be considered. In October 2003, mandatory fortification was legislated. It was gazetted that manufacturers of maize and bread flours in South Africa should fortify flour with iron, zinc, vitamin A, thiamine, riboflavin and vitamin B6. Science councils began testing stability, shelf life and acceptability.

In 2004, the DoH's Directorate: Nutrition issued another tender for a national survey. The aim of the survey was to establish baseline information on the consumer acceptance of fortified products, as well as establishing selected blood micronutrient values in children aged 1 to 9 years and in women of childbearing age. The same consortium (nine universities, as well as the MRC) was appointed to conduct the 2005 NFCS Fortification Baseline (NFCS-FB-1). A nationally representative sample with provincial representation was selected using Stats SA's Census 2001 information, and 2 712 households were sampled. The survey sample was derived by means of subsampling the South African Demographic and Health Survey (MRC) 2003 sample drawn by Stats SA.

According to the 2005 NFCS-FB-1, stunting remained by far the most common nutrition disorder, affecting almost one in five children (Labadarios et al., 2008). Two out of three children (63.9%) and one out of four women (27.2%) nationally had an inadequate vitamin A status. Vitamin A

deficiency in children appeared to have increased when compared with previous data, irrespective of the area of residence, age and province (Labadarios et al., 2008).

Almost one-third of women and children (28.9%) were anaemic based on haemoglobin concentration, with moderate and severe anaemia being relatively uncommon. At the national level, one in five women and one in seven children were iron deficient. The prevalence of an iron deficiency in children in the country appeared to have increased when compared with previous national data from the 1994 SAVACG study.

Consumption of foods rich in folic acid was adequate (Labadarios, et al., 2008). Nationally, 45.3% of children had inadequate zinc status (<65 μg /dℓ) and children of this age group (one to nine years of age) should be considered to be at risk of zinc deficiency. Zinc deficiency was more prevalent among the youngest children and those living in formal rural and urban areas (Labadarios et al., 2008).

Both at the national and provincial levels, an increase in the presence of iodised salt was seen in households from 1998. Based on the median urinary iodine of women and children, South Africa has achieved the virtual elimination of iodine deficiency disorders (IDDs) (Labadarios, et al., 2008). Although it is mandatory to iodise all commercial salt intended for human consumption, the complete elimination of IDD is not possible because non-iodised salt often enters the market. Rural and poor consumers often trade in non-iodised salt. Salt used for agriculture and animal feed (sold at a lower price in large quantities) is often traded in informal settlements. Salt sifted from salt pans in the Northern Cape is also traded informally.

The Landscape Analysis was developed as part of WHO-led inter-agency effort to strengthen efforts towards achieving the MDG, in particular MDG 1, 4 and 5 (WHO, 2010). The analysis was commissioned after the launch of the Lancet series on maternal and child undernutrition during January 2008. The Lancet series provided a unique advocacy opportunity to accelerate evidence-based action in nutrition. The Landscape Analysis, conducted by the DoH, WHO and UNICEF, included a readiness analysis to accelerate action in nutrition. It reviewed the gaps and constraints, and identified opportunities for integrating new and existing effective nutrition actions (DoH and UNICEF, 2010).

Lifestyle diseases (including diabetes, obesity and hypertension), malnutrition (related to poverty, unemployment, overweight and obesity, undernutrition and HIV) and stunting were identified as national health problems. Stunting was identified as the third presidential priority in terms of nutrition. Micronutrient deficiencies ranked fourth in terms of priority (DoH and UNICEF, 2010).

The WHO Country Health Profile for South Africa in 2002 reported a death rate of around 679 900 per year, 65% of which could be assigned to communicable diseases, 28% to NCDs and 7% to injuries. The 2003 SADHS found 56.2% of the adult population to be overweight or obese, with 23.3% of the female population being obese. The 2005 NFCS reported that nearly 5% of children aged 1 to 9 years and women were overweight. By 2009, the Country Health Profile Indicators of the WHO reported that obesity was observed in 23.2% of South African males and 42.8% of South African females, and that raised blood pressure was observed in 39.9% of men and 34.9% of women aged 25 years and over (WHO, 2010).

Targets for MDG 4 include reducing the relative premature mortality (under 60 years of age) from NCDs by at least 25% by 2020, reducing the mean population intake of salt to less than 5 g per day by 2020, reducing the percentage of people who are obese and/or overweight by 10% by 2020 and reducing the prevalence of people with raised blood pressure by 20% by 2020. As part of the

requirements to reach these targets, the Strategic Plan for the Prevention and Control of NCDs (2013–2017) of the DoH recommends a comprehensive surveillance and monitoring system and minimum surveillance information to establish baselines and monitor progress with respect to the targets set in the South African Declaration on the Prevention and Control of NCDs (DoH, 2013b).

11. The current status of food security and nutrition in South Africa

In 2013, the first South African National Health and Nutrition Examination Survey (SANHANES) was conducted, similar to studies in the USA, China, Canada and countries in Europe where National Health and Nutrition Examination Surveys (NHANES) take place on a regular or annual basis. The SANHANES was funded by the DoH and the Department for International Development (DFID). The study partners included the MRC, Stats SA, The Presidency, the United States Agency for International Development (USAID), UNICEF and six universities based in South Africa.

The SANHANES-1 was established as a continuous population health survey in order to address the changing health needs in the country and provide a broader and more comprehensive platform to study the health status of the nation on a regular basis. The first baseline provided data to map the emerging epidemic of NCDs in South Africa, along with tracking other existing or emerging health priorities, including micronutrient deficiencies.

This study found that, by 2013, the prevalence of stunting was 26.5% in children aged one to three years and 11.9% in children aged four to six years (Shisana, Labadarios, Rehle, Simbayi, Zuma, Dhansay and SANHANES-1 Team, 2013). The youngest boys and girls (newborn to three years of age) had the highest prevalence of stunting (26.9 and 25.9% respectively), with the lowest prevalence recorded in the seven to nine years age group (10 and 8.7% respectively). Undernutrition in children younger than ten years of age has decreased since 2005, with the exception of stunting among the youngest age group (newborn to three years of age) (Shisana, et al., 2013).

The prevalence of anaemia and iron deficiency anaemia has decreased since 2005 (Table 1). For children under five years of age, the prevalence of anaemia was 10.7%, mild anaemia was 8.6% and moderate anaemia was 2.1%. There were no cases of severe anaemia. The prevalence of iron depletion was 8.1% and that of iron deficiency anaemia was 1.9%. Overall, the prevalence of anaemia in all participants older than 15 years of age was 17.5%. The prevalence of mild, moderate and severe anaemia was 11.6, 5.3 and 0.6% respectively, with an overall statistically significant sex difference (data not shown). Iron deficiency anaemia (IDA) was present in 9.7% of women of reproductive age in South Africa. Younger women had a higher prevalence of IDA (10.5% compared to 8.5%) and a lower prevalence of anaemia due to other causes (10.7% compared to 14.8%) than older women (Shisana, et al., 2013).

At the national level, the prevalence of vitamin A deficiency in children was 43.6% in 2012. Overall, South African females of reproductive age had a vitamin A deficiency prevalence of 13.3% (Shisana, et al., 2013). The improvements in the iron and vitamin A status in children may reflect the beneficial impact of the food fortification programme. Despite the implementation of the food fortification programme, 43.6% vitamin A deficiency in children still poses a major public health problem (Shisana, et al., 2013).

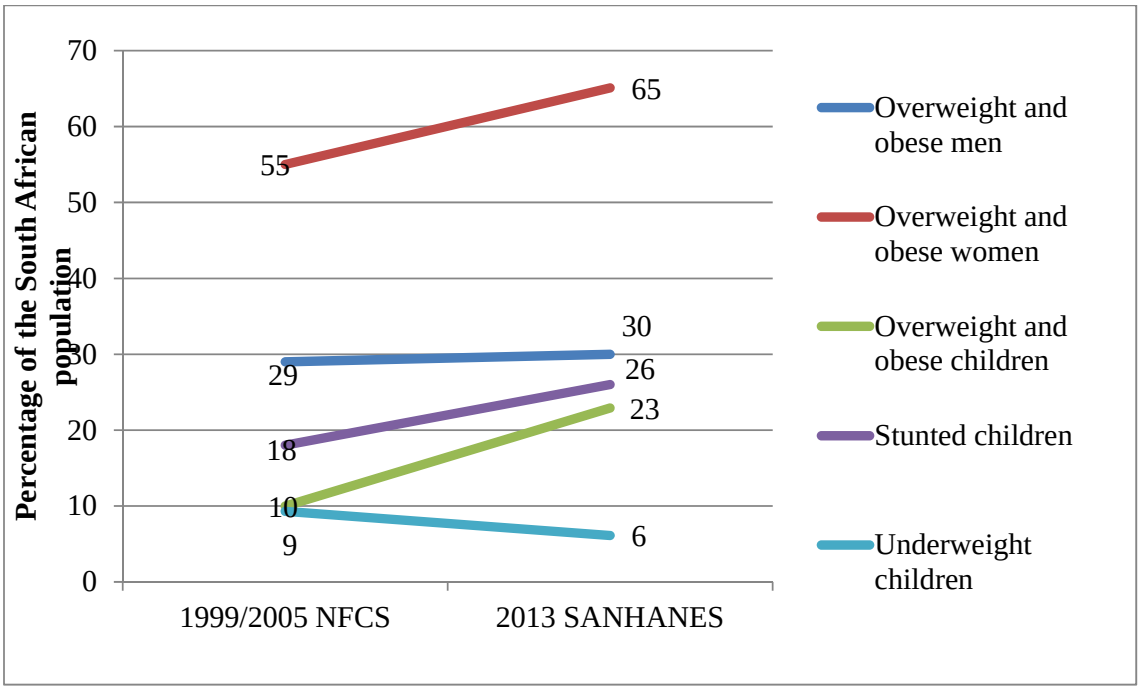

Figure 2: Summary of the over- and undernutrition situation in South Africa over time (Schönfeldt and Hall, 2016)

In addition to the data indicating persistent micronutrient deficiencies, the prevalence of overweight and obesity increased over time. Overweight and obesity was significantly higher in females than males (25 and 40.1% compared with 19.6 and 11.6% for females and males respectively). The prevalence of overweight and obesity was 16.5 and 7.1% for girls and 11.5 and 4.7% for boys. In 1998, the SADHS found that 29% of men and 55% of women were overweight and 9% of men and 29% of women were obese (MRC, 1998). By 2003, 56.2% of the total adult population was recorded as overweight or obese (MRC, 2003). By 2013, SANHANES found that 20% of men and 68% of women in South Africa had a waist circumference that places them at risk of metabolic complications. When compared to 2003 SADHS data (MRC, 2003), SANHANES-1 found that underweight decreased, while overweight and obesity increased; in particular, the incidence of obesity increased substantially in females from 27% in 2003 to 39.2% in 2012 (Shisana et al. 2013).

The 2000 risk assessment of the MRC reported that high blood pressure, diabetes and increased waist circumference were some of the highest-ranking risks for death in South Africa (Norman et al., 2006).

Furthermore, respondents in the SANHANES were most likely to report a family history of high blood pressure (30.9%), followed by high blood sugar (20.7%). Overall, one out five participants older than 45 years had hypertension (10.2%). High blood pressure is an important risk factor that contributes significantly to the burden of the cardiovascular diseases stroke and ischaemic heart disease (Ostchega, Dillon, Huges, Carroll and Yoon., 2007). With each 2 mmHg rise in systolic blood pressure, there is an associated 7% increase in risk of death from ischaemic heart disease and a 10% increased risk of death from stroke (National Clinical Guideline Centre (NICE), 2011). Raised blood pressure is the cause of over 10% of global deaths that are preventable if good control

of high blood pressure is achieved. High blood pressure is responsible for a high burden of disease in South Africa (including morbidity and mortality) (Phaswana-Mafuya, Peltzer, Chirnda, Musekiwa, Kose, Hoosain, Davids and Ramlagan, 2012, Shisana et al., 2013).

Table 4: Summary of national surveillance data that informs nutrition policies

Study year	1994	1998	2003	2005	2012
Reference	SAVACG, 1996	MRC, 1998	MRC, 2003	Labadarios, et al., 2008	Shisana, et al., 2013
Vitamin A deficiency in children (< 20 μg/dℓ)	33.3%			63.9%	43.6%
Vitamin A deficiency in women (< 20 μg/dℓ)				27.2%	13.3%
Iodine deficiency (urinary iodine < 100 μg/ℓ)		40.9%		19.2%	
Anaemia (haemoglobin < 11 g/dℓ)	21.4%			28.9%	10.7%
IDA (haemoglobin < 11 g/dℓ; ferratin <12μg)	5.0%			11.3%	1.9%
Hypertension in adults (blood pressure >140/90 mmHg)					10.2%
Overweight or obesity in adults (men and women) (BMI > 25)			56.2%		64%

Because of increasing evidence on the effects of NCDs, national policies to assist in the improvement of nutrition have included policies to restrict dietary intake of certain nutrients of concern. In particular, South Africa implemented a sodium reduction strategy in 2014.

A recent (2014) transversal diagnostic review of nutrition policies that affect children under five years of age was commissioned by the Office of the Presidency through the DPME (2015). This study covered programmes from the DoH, the DSD, and the DRDLR, and was supported by UNICEF. It was conducted in four provinces (Eastern Cape, KwaZulu-Natal, Free State and the Western Cape). The findings were compared to five countries where governments have recently made significant improvements to under-five nutrition (Brazil, Colombia, Mozambique, Malaysia and Malawi). It included 18 high-impact interventions. The review found that nutrition programmes have not been fully effective in reducing malnutrition because they focus primarily on providing food to the needy. Thus, the underlying causes of malnutrition are not addressed effectively. Compared to the five reference countries, South Africa does not have a single, coordinated strategy, policy or regulatory system to realise the right to food as set out in the Constitution to facilitate and ensure food security for all citizens (Hendriks and Olivier, 2015) In addition, there is no coordinating body above line ministries that can hold them accountable in

terms of their contribution to nutrition. The country is currently drafting a National Food Security and Nutrition Plan with a view to having the following:

- One national leadership and governance structure for food security and nutrition
- One comprehensive, integrated National Food Security and Nutrition Plan
- One budget for food security and nutrition
- One monitoring and evaluation framework
- One set of indicators
- One set of coherent food security and nutrition legislation

This review demonstrates the commitment of the government to the integration of programmes, especially those targeted at children.

At least one in ten South Africans is not able to acquire enough food to feed their families and one in five struggles for at least five days in a month to provide the necessary sustenance that is essential for daily functioning (Stats SA, 2015b). Diets are of poor nutritional quality and adult obesity and child underweight co-exist in many households (Symington, Gericke, Nel and Labadarios, 2016). The increasing incidence of overweight and obesity in the midst of persistent undernutrition and high levels of micronutrient deficiencies place a triple burden (poverty, inequality and unemployment) of constraint on society and the economy. Table 4 presents a summary of current food security and nutrition-related indicators, and indicates areas where the country is making progress on its international and national commitments related to nutrition, and areas where there is room for improvement.

Table 5: Summary of food security and nutrition statistics for South Africa

Source: Hendriks et al. (2016)

Indicator	Unit	Latest available status[a]	Data source
Households living in extreme poverty	%	21.7	Stats SA (2015a)
Households without enough income to purchase adequate food and non-food items	%	37[a]	Stats SA (2015b)
Gini coefficient	%	0.69	Stats SA (2015a)
Unemployment	%	25	Stats SA (2015a)
Childhood stunting < 60 months	%	26.4	Shisana et al. (2013)
Anaemia in women (16 to 35 years old)	%	23.1	Shisana et al. (2013)
Low birth weight in babies < 2.5 kg	%	13	DoH (2012)
Children < 9 years old overweight or obese	%	14	Shisana et al. (2013)
Exclusive breastfeeding in the first six months	%	7	Labadarios et al. (2011)
Childhood wasting (one to three years old)	%	2.2	Shisana et al. (2013)
Households living on less than the lower bound of poverty (R779 per month)	%	53.8[a]	Stats SA (2015a)
Households experiencing hunger	%	13.1	Stats SA (2015b)
Households experiencing severe inadequate access to food	%	5.9[a]	Stats SA (2015b)
Households experiencing inadequate access to food	%	16.6[a]	Stats SA (2015b)
Life expectancy	Years	62.2	Dorrington et al. (2014)
Maternal mortality ratio	Per 100 000 live births	174	DoH (2012)
Neonatal mortality rate	Per 1 000 live births	15	DoH (2012)
Infant mortality rate	Per 1 000 live births	27	DoH (2012)
Mortality rate of children under five years	Per 1 000 live births	41	DoH (2012)
Vitamin A supplementation of children < 60 months	% coverage rate	54	DoH (2012)
Obese women > 15 years old	%	24.8	Shisana et al. (2013)
Overweight women > 15 years old	%	39.2	Shisana et al. (2013)
NCD mortality rate in females	Per 100 000	98.1	WHO (2011a)
NCD mortality rate in males	Per 100 000	92.4	WHO (2011a)
Population receiving social grants	%	32[a]	DSD (2014)
Households with access to piped or tap water	%	86	Stats SA (2015a)
Households with access to sanitation	%	79.5	Stats SA (2015a)

[a] No targets and benchmarks exist for these indicators.

Legend:

Good progress based on available data from previous assessment

Slow progress based on available data from previous assessment

No progress or deteriorated based on available data from previous assessment

12. Nutrition interventions in apartheid South Africa

Micronutrient interventions were not part of South Africa's nutrition policy during the apartheid era, except in the case of diagnosed severe deficiencies where treatment was prescribed. Although the voluntary fortification of some margarines and maize meal took place, it was not monitored.

Government-sponsored programmes existed in South Africa during apartheid (1948–1994) and consisted of substantial subsidies for maize (both production and consumption subsidies), bread and butter (reported to have been R55.1 million in 1969). Skim milk powder was made available through a subsidy of one-third state and one-third local authorities in 144 areas, usually in larger towns and cities. Although this was legally available to black communities, their participation in these programmes was minimal. Welfare funds supported homes for the aged, blind and disabled. Otherwise, the main focus was on the provision of education and advisory services by teaching mothers about sound nutrition at health care centres, training health educators, and the provision of dietetics and home economics posts and nutrition advisory services by nutritional education authorities and the former marketing control boards (Ried, 1971). Hospitals (especially the mission hospitals that provided 40% of the country's hospital beds) treated malnutrition. Numerous charitable organisations provided supplementary school feeding and infant feeding schemes. These were mainly based on volunteer services and donations.

In April 1984, the Second Carnegie Inquiry into Poverty and Development in Southern Africa Conference was held in Cape Town. During this conference, a report entitled "Nutritional intervention: a Ciskei and Eastern Cape perspective" (Fincham and Thomas, 1984) made specific reference to malnutrition and certain nutrition interventions. Malnutrition was defined as "a condition that results intrinsically from energy deficits and inadequate protein intakes, and is considered most detrimental to infants and young children". The report concluded that "official policy should clearly state that malnutrition is an illness and the straightforward treatment is the increased intake of food". No reference was made to micronutrients or micronutrient interventions.

Until 1998, the marketing of most agricultural food products was regulated by statute, most under the marketing schemes introduced from 1931. Since World War II, a bread price subsidy was part of the Wheat Control Scheme of South Africa, until it was phased out in 1991.

Since the 1930s, the state used food policies to promote agriculture, ensure relatively constant prices and provide certain foods at a low cost for nutritional reasons. From 1939, wheat producers received a subsidy from the Wheat Board to counter the rise in the costs of production after the outbreak of the war. In 1940, due to a further rise in production costs, the state also matched the subsidy amount. Later, the subsidy scheme was adapted to promote the sale and consumption of brown bread over white bread for reasons related to nutrition. The state also introduced enriched bread aimed at lower-income black and white consumers in the 1950s. Enriched ingredients included groundnut meal, buttermilk and skimmed milk powder, and calcium carbonate in the form of a "pre-mix" that the Department of Health supplied to bakers. This enrichment was limited to brown and wholewheat bread. In April 1959, despite some studies indicating that "native" communities consumed more enriched bread, the Wheat Board succeeded in convincing the state that it had little impact, and "that enriched brown bread is mainly eaten by those income classes that can well afford a balanced diet". The fortified bread subsidy was abolished and the price of ordinary brown bread and the price of enriched bread became the same. Sales quickly

shifted and at the end of September 1959, the production of enriched bread was discontinued. In 1991, the bread subsidy as a whole was abolished (Moll, 1984).

During the 1960s, efforts were made to enrich other foods such as adding what Brock (1960) referred to as "protective foods" to a meat stew served with maize porridge and the addition of "soyabeans and other sources of protein and vitamins" to the brewing of *mahewu*, a non-alcoholic fermented maize gruel. Experimentation with the cultivation of high-lysine maize was also attempted in an effort to address the poor quality of protein in maize.

The Valley Trust, Kupugani and Operation Hunger were some of the NGOs that played a significant role in malnutrition relief work between 1960 and 1990. The Valley Trust was involved in activities to improve both community income and nutrition through vegetable gardens and fishpond cultivation. Kupugani was established to promote nutrition through the provision of food and education. It provided enriched food and distributed fresh produce to over three million people. Operation Hunger began its work in 1981 and provided emergency feeding for up to 662 000 people in 1985 (Perlman, 1986). It was only after 1994 that its work was broadened from relief work to include development.

The next sections of this report cover the period from the transition to democracy and post-apartheid South Africa. The changes after 1994 are assessed against the Kaleidoscope Model in order to test the model and reflect on the unique context in the country as a new administration that set about establishing inclusive national policies against a progressive Constitution.

13. Drivers of policy change: formal test of the Kaleidoscope hypotheses

13.1. The Kaleidoscope Model

What triggers policy change in nutrition policy, agricultural policy or indeed any other policy arena? A wide array of researchers, donors and policy makers have explored this question in an effort to understand how to better shape policy processes and improve policy outcomes (USAID, 2013). Understanding policy change with regard to nutrition is a fairly new domain of research.

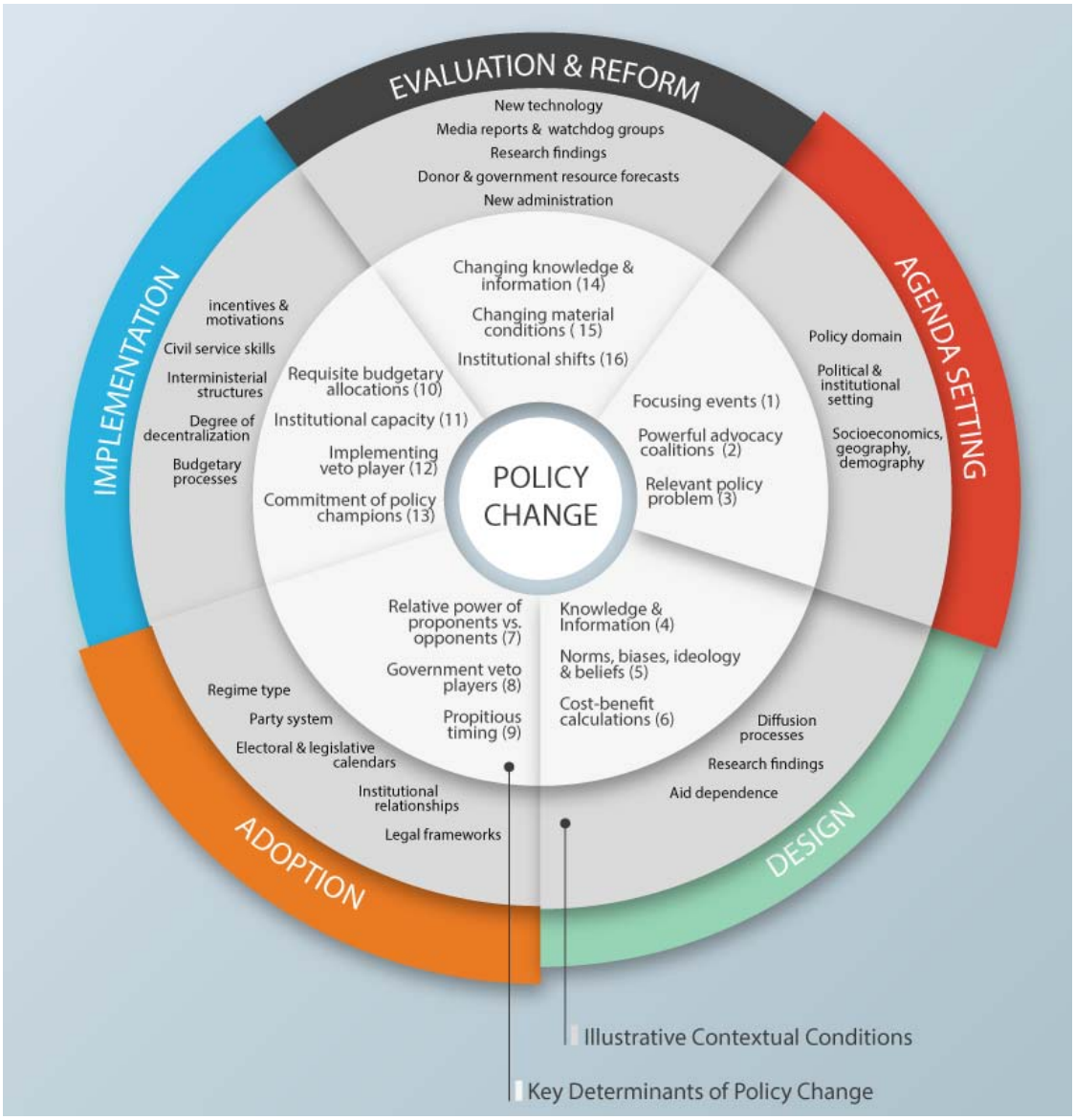

Figure 3: The Kaleidoscope Model for change for food security policy (Resnick et al. 2015)

Drawing on theoretical and empirical research in political science, public administration and political economy, the Kaleidoscope Model aims to identify key hypotheses about factors driving policy change (Resnick et al. 2014). At each of the five stages in the policy process, the model aims to identify key variables that define the necessary and sufficient conditions for policy change to

occur. Identified in the inner core of Figure 3, these variables serve as key hypotheses for empirical testing. The outer core of Figure 3 presents the contextual conditions in which these variables may be present. Table 6 shows the resulting 16 key hypotheses in tabular form to facilitate a summary in the empirical testing that follows.

Table 6: Kaleidoscope variables

Policy stages	Kaleidoscope hypotheses
Agenda setting	1. Focusing events 2. Powerful advocacy coalitions 3. Relevant policy problem
Design	4. Knowledge and information 5. Norms, biases, ideologies and beliefs 6. Cost-benefit calculations and risks
Adoption	7. Relative power of proponents vs opponents 8. Government veto players 9. Propitious timing
Implementation	10. Requisite budgetary allocations 11. Institutional capacity 12. Implementation veto players 13. Commitment of policy champion
Evaluation and reform	14. Changing information and beliefs 15. Changing material conditions 16. Institutional shifts

13.2. Data

Data used in testing the Kaleidoscope hypotheses was drawn from published documentation and semi-structured interviews with key stakeholders. The background documentation review included a wide range of grey literature, policy documents, personal accounts recorded by some of the respondents and published research. The collection of written and oral data was an iterative process, with initial information triggering new leads and demands for additional data and additional interviews with newly identified key informants.

Semi-structured interviews with key stakeholders provided critical insights into the policy process and interactions among the various stakeholders. The stakeholder mapping exercise and desk review led to a list of key informants. Key informants provided leads for further interviewing and to fill gaps in the study. Respondents' names have been withheld to maintain anonymity.

A semi-structured interview guide was developed with the intent of testing the operational hypotheses. The interview guide in Annexure A provided the template for conducting these interviews and a checklist for consistency. The semi-structured interview guide was adapted based on the expertise of the interviewee. For example, if the interviewee was more involved in compliance monitoring, certain questions were omitted and special attention was given to their expertise. Most interviews also included very specific questions about the micronutrient of interest to individual stakeholders and about specific key junctures in the policy process.

The research team conducted semi-structured interviews with 15 policy stakeholders in South Africa from November 2015 to February 2016. To help in accurately interpreting the broad range

of qualitative input received from key informants, multiple accounts of each major policy episode were elicited to cross-check and verify the various eye witness accounts.

13.3. Tools for hypothesis testing

Hypothesis testing using the Kaleidoscope Model revolves around three sets of analytical tools:

a) Policy chronology
b) Stakeholder mapping
    - Stakeholder inventory
    - Policy system schematic
    - Circle of influence
c) Hypothesis testing template

The policy chronology outlines the sequence of policy decisions and resulting implementing actions involved in the specific policy cycle under review. A skeleton policy chronology was developed prior to field interviews. The chronology tool application provided a broader understanding of the micronutrient context and the sequence of events. The chronology also provided an overview of existing micronutrient interventions, programmes and policies. The chronology served as a means of focusing stakeholder interviews, but evolved over time as the researcher's understanding of the specifics of the policy interactions deepened. Political and international events were considered alongside the chronologies. The chronologies were later classified according to nutrients to understand the logical progression of policy processes and identify changes in policy, as well as possible triggers for policy change.

The stakeholder mapping began with the identification of key interest groups involved in any specific policy formulation or implementation. It summarised the role, resources and position of individual stakeholders and their interaction with other stakeholders in the policy process. Two schematics (a flow diagram and the circle of influence) were used to visually portray how the various stakeholders interacted with each other in the policy process.

An extensive literature review was conducted, which was complemented with a stakeholder inventory exercise to determine the legal mandates of the various stakeholders, and their roles and responsibilities. The inventory was later revised to include an indication of the various stakeholders' level of policy influence, as well as their policy stance.

Hypothesis testing focused on assessing the presence and nature of the 16 specific Kaleidoscope hypotheses about factors driving policy change.

The hypothesis test will be sent to the stakeholders interviewed to verify the responses. A consultative workshop will be conducted to validate the model and finalise the results and conclusions of the study. The cross-country comparisons – to be undertaken in a second phase of analysis – will enable the research team to compare differences in conditions, institutions and outcomes for the same policies in different policy systems. These cross-country comparisons between Malawi, South Africa and Zambia offer prospects for testing hypotheses about international evidence and policy spillovers in multiple policy settings.

14. Drivers of policy change: a formal test of the Kaleidoscope hypotheses for micronutrients in South Africa after 1994

The following section provides a chronological policy summary of each of the micronutrient cases considered in this study. Thereafter, each micronutrient case is analysed using the Kaleidoscope Model. A policy chronology is presented for each case study. Stakeholder inventories, circles of influence and the Kaleidoscope tests for each of the micronutrients are available in annexures C, D and E.

14.1. Policy chronology

Current interventions in place to improve micronutrient status in South Africa include the supplementation of vitamin A (targeted at children) and iron (targeted at pregnant women), the iodisation of table salt, as well as mandatory staple food fortification with a multi-mix of micronutrients. The most recent micronutrient intervention includes the reduction of sodium in foods, and a national strategy to target NCDs, especially hypertension.

Although biofortification is supported by several government institutions, it is not mentioned in official policies in South Africa. The case of the biofortification of orange-fleshed sweet potatoes (OFSP) is included in the investigation, as it provides a unique perspective on an existing programme intervention for which no official policy has yet been developed.

Table 7 provides a policy chronology for iodine, vitamin A, iron and sodium. The chronology of changes in national policy is juxtaposed with international events, national events and policy events that coincided with micronutrient events. The table provides an indication of whether certain focusing events had an influence on changes in micronutrient programming.

Table 7: Chronology summary of all the selected micronutrient policies, programmes and events

	International events	National events	South African policy environment	Iodine	Vitamin A	Iron	Sodium
Pre-1970s		1927 – Endemic goitre reported in the Langkloof area of the Eastern Province		1948 – Establishment of the South African Goitre Research Committee at the University of Pretoria 1954 – Voluntary iodisation of salt (10 ppm to 20 ppm) became legal			
1970s			1972 – Foodstuffs, Cosmetics and Disinfectants Act No. 54 of 1972		1972 – High vitamin A OFSP included in Agricultural Research Council (ARC) Roodeplaat Research Programme		
1990s	1990 – UN World Summit for Children establish goal to eradicate IDD by 2000 1992 – International Conference on Nutrition. 1994 – UNICEF-WHO endorse universal salt iodisation	1994 – First democratic elections voting the ANC into power 1994 – SAVACG study found significant nutrient deficiencies 1997 – Multi-stakeholder National Food Fortification Task Force created 1999 – NFCS determined most commonly consumed foods to guide fortification	1994 – Resolutions of the 49th ANC National Conference 1995 – Integrated Nutrition Strategy and Integrated Nutrition Programme developed 1995 – National Therapeutic Programme (targeted supplementary feeding programme) focusing on maternal health to include iron and folic acid supplements	1995 – Mandatory salt fortification (40 ppm to 60 ppm)	1990s – Work on high vitamin A OFSP expanded at the ARC Roodeplaat 1990s – Vitamin A supplementation linked to national immunisation days for polio	1994 – SAVACG recommends high-dose iron sulphate syrup to 2- to 24-month-old children 1995 – National Therapeutic Programme to include iron and folic acid supplements during clinic visits 1998 – Iron and folic acid supplement recommendations published in the Standard Treatment Guide and Essential Drugs list for South Africa	

	International events	National events	South African policy environment	Iodine	Vitamin A	Iron	Sodium
			1997 – 50th National Conference: Resolutions (ANC resolutions available in Annexure B) 1997 – Vitamin A Supplementation Policy drafted (not published)				
2000s	2000 – MDG published 2002 – UN General Assembly on Children sets goal of IDD elimination by 2005 2003 – Lancet Nutrition Series 2006 – WHO Standard for Maternal and Neonatal Care and Guidelines for Iron and Folate Supplementation published 2008 – Lancet Nutrition Series	2005 – NFCS-FB-1 found limited improvements in vitamin A and iron deficiency in mothers and children	2002 – 51st National Conference 2007 – Polokwane Resolutions	2006 – Mandatory band widened to 35 ppm to 65 ppm	2000s – OFSP as a food-based strategy piloted in communities 2001 – Blanket vitamin A supplementation of pregnant women and children (< 5 years) implemented 2001 – OFSP integrated within the blanket vitamin A supplementation programme in the Eastern Cape 2003 – Routine vitamin A supplementation of children (6 to 59 months) and post-partum women at clinics 2003 – Vitamin A precursor included in mandatory fortification mix of maize meal and bread	2003 – Compulsory to administer iron and folic acid to pregnant women who attend antenatal clinics 2003 – Mandatory fortification of maize meal and bread flours, including ferric sodium ethylenediamine-tetraacetate (NaFeEDTA)	

	International events	National events	South African policy environment	Iodine	Vitamin A	Iron	Sodium
					flour 2008 – Campaign targeting children not reached by routine vitamin A supplementation 2009 – Launch of the national integrated Child Health Week intervention in eight of nine provinces, including vitamin A supplementation 2011 – Blanket vitamin A supplementation changed to exclude women		
2010s	WHO removes vitamin A supplementation for post-partum women from its Essential Drugs List 2012 – WHA global nutrition targets 2013–2020 Global Action Plan for the Prevention and Control of NCDs published 2015 – SDGs published 2015 – Codex Allimentarius Commission created Electronic Working Group on Biofortification	2013 –SANHANES still found persistent nutritional deficiencies in addition to increased incidence of obesity and NCDs 2015 – South African DoH co-leads Codex Biofortification Electronic Working Group	2012 – Manguang 53rd National Conference Resolutions 2012 – Vitamin A Supplementation Policy Guidelines published 2015 – Draft Comprehensive Food Security and Nutrition Policy		2010s – Current research programmes include enterprise development of OFSP to develop commodity for formal trade 2012 – Women were removed from the recommended list for vitamin A supplementation	2015 – Draft amendments to fortification regulations submitted to change from NaFeEDTA to ferrous fumarate with higher activity	Legislation for mandatory reduction of sodium in certain foods

14.2. Vitamin A supplementation

Agenda setting

During the period 1979 to 1994, South Africa signed several binding and non-binding agreements that obligated the country to act on and commit resources to addressing children's rights. South Africa integrated these commitments into its Constitution, including a specific unconditional right to good nutrition for children. The commitments demanded baseline data to identify critical deficiencies and implement relevant interventions.

The World Summit for Children in 1990 highlighted the importance of vitamin A supplementation for women and children. In response to the commitments made at the World Summit, the SAVACG study was conducted to determine if micronutrient deficiencies were a relevant problem in South Africa. This first assessment of the vitamin A status of South Africans found that one-third of children were marginally vitamin A deficient (with serum retinol levels of less than 20μg/dℓ). The SAVACG recommended the implementation of vitamin A supplementation. The findings of this study fed into the drafting of the NPAC in 1996. Nutrition was the first priority of this programme.

In 1997, as part of the Integrated Nutrition Programme (INP), a national vitamin A supplementation policy was drafted that recommended vitamin A supplementation to be administered at growth-monitoring or immunisation visits as a preventative strategy for children aged 6 to 24 months (Moodley and Jacobs, 2000). It also recommended vitamin A supplementation for children with measles, severe malnutrition and children hospitalised with diarrhoea (the latter already being standard practice in most hospitals) (Moodley and Jacobs, 2000). Inspired by international attention, vitamin A supplementation was implemented in South Africa in early 2000. However, the policy was not officially endorsed until 2012, when a Vitamin A Supplementation Policy Guideline for South Africa was published. The guidelines promote four strategies for improving vitamin A status: dietary diversification, food fortification, vitamin A supplementation of children and disease-targeted supplementation. Disease-targeted supplementation refers to the provision of vitamin A to patients who present with symptoms of vitamin A deficiency, malnutrition or patients who have measles.

Design

The USAID Micronutrient Programme (MOST) sought to inform the design, implementation and cost of vitamin A supplementation in South Africa through a pilot study. The University of Cape Town, supported by the DoH's Directorate: Nutrition, conducted the study. One respondent mentioned that the country team working on MOST participated in a meeting in Senegal, where they were trained to use a programme called Profiles. Profiles allowed for the assessment of the cost and lives lost should a specific intervention not be implemented. It uses scientific data to estimate the impact that nutritional improvements would have on important development indicators such as mortality, morbidity, fertility, school performance and labour productivity. Victor Ogwayo was responsible for the Profiles outlook for South Africa. The South African government recognised the importance of vitamin A supplementation when presented with the results of this assessment.

The primary objective of MOST in South Africa was to increase the coverage of vitamin A supplementation by supporting South Africa's programme of delivery through the routine immunisation and child health services system. Initial efforts focused on improving vitamin A

supplementation service delivery and coverage in the Eastern Cape, but expanded nationally in 2004. MOST support for the Eastern Cape was provided under a subagreement with the University of the Western Cape, which directly assisted the Eastern Cape DoH. Support was provided in the areas of training, communication, logistics management, and monitoring and evaluation. The total funding to South Africa amounted to $800 000 between 1999 and 2004 (USAID, 2005).

The South African government's 2000 report to the UN Committee on the Rights of the Child stated that child nutrition was high on the list of government priorities. The report included the SAVACG findings and commented that vitamin A status could be improved through routine vitamin A supplementation at growth-monitoring visits or through the Expanded Programme of Immunisations (EPI). The UN Committee expressed alarm at the high level of deficiency and recommended that South Africa reinforce its efforts to allocate appropriate resources and develop comprehensive policies and programmes to improve the health situation of children, particularly in rural areas (UN, 2000).

In 2000, routine nationwide vitamin A supplementation of women and children was rolled out, with the exception of the Western Cape. The province did not incorporate the preventative component of vitamin A supplementation until April 2005. Prior to the national vitamin A supplementation programme in 1997, the province implemented a medically targeted (curative) vitamin A supplementation programme despite having the second-lowest prevalence of vitamin A deficiency in the country (21% according to SAVACG). Because provincial governments in South Africa are relatively independent, the Western Cape chose not to implement routine vitamin A supplementation. Respondents in the current study interviews alluded to the fact that there might have been political reasons for the Western Cape's position on vitamin A supplementation, suggesting that perhaps because the province is governed by the Democratic Alliance (DA), it may have chosen not to implement an ANC-mandated policy.

Studies on the cost of blanket vitamin A supplementation implementation for South Africa were published in the *South African Medical Journal* in 2001 (Saitowitz, Hendriks, Fiedler, Le Roux, Hussey and Makan, 2001). It acknowledges support from the USAID-funded Basic Support for Institutionalising Child Survival (BASICS) Programme. The paper set out the cost implications for rolling out a national blanket vitamin A supplementation programme in all provinces (Saitowitz et al., 2001). The study found that vitamin A supplementation would be financially feasible, as personnel costs constituted the highest proportion of the budget (68%). If vitamin A supplementation was rolled out as part of the EPI, it would be part of the maternal and child health service offered in South Africa. If integrated within the maternal and child health service, vitamin A supplementation would be funded by the provinces through conditional grants made by National Treasury (Saitowitz et al., 2001).

In 2003, vitamin A supplementation was integrated into the EPI and Integrated Management of Childhood Illnesses (IMCI) programme in health facilities. As such, additional costs were mainly associated with the procurement of vitamin A capsules and the training of nurses and community health workers. From the commencement of vitamin A supplementation, only one donation from UNICEF was received for its implementation. Thereafter, the government took full responsibility for all vitamin A supplementation-related costs. The DoH has showed continual commitment to vitamin A supplementation through the procurement of vitamin A capsules and the funding of initiatives to promote vitamin A supplementation. As such, budgetary requisites have not threatened the discontinuation of vitamin A supplementation. Community health workers are recruited to assist with the distribution of vitamin A supplementation during child health weeks.

However, their involvement in vitamin A supplementation distribution has been delayed because, according to legislation, vitamin A is a Schedule 4 drug, which means that it is a prescription drug and can only be administered by qualified health care professionals. As such, special permission was required for community health workers to distribute the drugs. The Medical Control Council (MCC) of South Africa granted permission in 2008.

Implementation

Although the utilisation of this programme has not been well documented, the integrated approach for vitamin A supplementation is effective, as children between the age of 6 and 12 months visit health facilities as part of their immunisation schedule. For children between the age of 12 and 59 months, however, vitamin A supplementation coverage is low because these children are not taken to facilities for immunisation after the age of 18 months until they are five years old. A small study conducted among children between six and eight years old in a semi-urban population in KwaZulu-Natal, found that vitamin A supplementation had an overall coverage of 34.9% during six to 60 months of life, with children receiving, on average, three doses over this period (Comley, Nkwanyana and Coutsoudis, 2015). Data regarding the low coverage and the concerning findings of the 2005 NFCS-FB-1 data indicated that vitamin A deficiency rates had doubled, leading to the evaluation and reform of the vitamin A supplementation policy in 2008. In particular, the methods of vitamin A supplementation distribution were revised.

District Health Information System (DHIS) data showed progressively higher levels of vitamin A coverage in the Eastern Cape over the MOST period (2002–2003). Coverage of children between six and 11 months old increased from 15 to 68%. Coverage of children aged 12 to 23 months also increased, from 8 to 35%, which is a notable achievement for a routine delivery system.

Evaluation and reform

In 2009, a national integrated Child Health Week intervention was launched in eight of the nine provinces, excluding the Western Cape. Child health weeks were one of the eight strategies identified in the 2008–2011 National Plan on Maternal, Neonatal, Child and Women's Health and Nutrition of the DoH. The Plan aims to improve the health and nutrition of women and children (DoH, 2012). Although South Africa ratified the MDG, which committed member states to reduce under-five mortality by two-thirds from the 1990 level, it is one of the few countries in the world that is not on track to achieve this goal. In fact, the situation has worsened during the MDG era (DoH, 2012).

The main purpose of the annual child health weeks in 2009 was to reach 80% of children between 12 and 59 months old with essential health services using an outreach strategy. The services provided during these weeks include vitamin A supplementation, catch-up immunisation, deworming and nutritional screening. Through this programme, around 80% of children aged between 12 and 59 months were covered (four million) as compared to the low coverage from routine supplementation at health facilities. This campaign is an annual opportunity to increase community awareness of the importance of key care practices and monitor the growth of children aged between six and 59 months old (DoH, 2012).

In 2011, the Essential Drug List (EDL) Committee adopted the WHO recommendations that vitamin A supplementation is not recommended for the prevention of maternal and infant morbidity and mortality and removed vitamin A supplements for postpartum women from the EDL. The routine post-partum vitamin A supplementation of South African women ended in August 2012, around the same time as the SANHANES survey (Shisana et al., 2013).

The SANHANES study (2013) found that 43.6% of South African children under five years of age were vitamin A deficient (serum retinol < 0.70 umol/L), although a 20% decrease in national vitamin A deficiency in children was observed (43.6% in 2012 compared to 63.6% in 2005). The WHO reports that vitamin A deficiency in children remains in the severe public health importance category in South Africa (> 20%). Data for females of reproductive age show a decrease in the national prevalence of vitamin A deficiency by more than 50% (13.3% compared to 27.2% between 2005 and 2011), which now reflects as a moderate public health problem. According to the SANHANES, it is unlikely that the reduction in vitamin A deficiency in women of reproductive age could be attributed to supplementation because the levels of supplementation were too low and the frequency of supplementation was not sufficient to result in such large margins of reduction (Shisana et al., 2013)

Generally, the DoH is the government department responsible for vitamin A supplementation policies, guidelines and roll-out, whereas the MCC is responsible for regulating distribution, including providing permission to community health workers to distribute vitamin A supplementation. The DoH is responsible for procuring and distributing vitamin A capsules to municipal health clinics. At these clinics, children aged 6 to 12 months received a single high-dose vitamin A supplement. In addition, community health workers have been distributing supplements during the annual child health weeks since 2009. The clinic nurses and community health workers are also responsible for recording vitamin A supplementation coverage. This information is submitted to the district where the information is collated, and then to the provincial government, which is then responsible for sending it to the national government, which reports on the national coverage of vitamin A supplementation at national and international levels.

Table 8: Policy chronology of vitamin A supplementation

Year	Intervention	International events	Political events	Nutrition events related to vitamin A supplementation	Coverage (six to 11 months)	Coverage (12 to 59 months)
1955			Congress of the People, Kliptown			
1979		UN Convention on the Rights of the Child				
1987		Conference on Child Repression and the Law in Apartheid South Africa				
1990	World Child Summit					
1992		International Conference on the Rights of Children in South Africa				
1993	Launch of report on the rights of children (by the National Committee on the Rights of Children and UNICEF) Signed 1990 Declaration and Plan of Action of the World Summit on Children					
1994		International Conference on Nutrition 1	Democratisation of South Africa 49th ANC National Conference	SAVACG: 33.3% children had a vitamin A deficiency		
1995		UN Convention on the Rights of Children				
1996	NPAC framework approved		Parliament establishes SAHRC	NPAC		
1997	Vitamin A supplementation first linked to polio national immunisation days		New Constitution came into effect emphasising children's rights to nutrition and women's right to food			

Year	Intervention	International events	Political events	Nutrition events related to vitamin A supplementation	Coverage (six to 11 months)	Coverage (12 to 59 months)
	Vitamin A supplementation policy drafted (not published)		50th ANC National Conference			
1999		African Charter on the Rights and Welfare of the Child	President Mbeki comes into office			
2000	13th International AIDS conference	UN MDG African Charter on the Rights and Welfare of the Child				
2001	Research published to inform vitamin A supplementation policy design, implementation and cost DoH's national vitamin A supplementation programme rolled out (children > 5years and post-partum women)					
2002			51st ANC National Conference Government rules that Nevirapin must be provided at all hospitals			
2003	Routine vitamin A supplementation of children (six to 59 months) and post-partum women at clinics in eight of nine provinces Cabinet approves NPAC (2012–2017)	Lancet Nutrition Series	South Africa approves anti-retroviral (ARV) drugs		27.9%	8.8%
2005				NFCS-FB1:	86.2%	18.9%

Year	Intervention	International events	Political events	Nutrition events related to vitamin A supplementation	Coverage (six to 11 months)	Coverage (12 to 59 months)
				63.9% of children 27.2% of women		
2007			52nd ANC National Conference: Polokwane Resolutions		96.7%	28.1%
2008	Campaign targeting children not reached by routine vitamin A supplementation	Lancet Nutrition Series		WHO Landscape Analysis	100%	33.9%
2009	Launch of the national Integrated Child Health Week intervention in eight of nine provinces – provides vitamin A supplements to children aged 12 to 59 months		Jacob Zuma comes into office		100%	34.6%
2011	Routine vitamin A supplementation of women stopped after EDL Committee adopts WHO recommendations and removes vitamin A supplements for postpartum women from the EDL				107.9%	41.6%
				Development of the Roadmap for Nutrition		
2012	Vitamin A supplementation policy guidelines published	WHA goals	53rd Manguang National Conference Resolutions Endorsing the NDP	SANHANES-1: 43.6% of children 13.3% of women	93.2%	40.5%
2015		UN SDGs				
Source: Coverage obtained from DoH, 2014						

14.3. Iron supplementation

Agenda setting

The SAVACG report was the first national survey to determine IDA in the South African population. The study found that 21% of children under 5 were iron deficient (haemoglobin < 11 g/Dl). The rate of iron-deficient anaemia (haemoglobin < 11 g/dℓ and ferratin < 12 µg /ℓ) was reported as 5%. By 2005, rates for anaemia and iron-deficient anaemia had worsened to 28.9 and 11.3% of children respectively. Anaemia rates for women (both measures) were the same as for children (SAVACG, 1996).

Design

The SAVACG recommended a national three-year programme for the high-dose distribution of iron sulphate syrup to all children between the ages of six and 24 months, and in 1998, iron and folic acid supplement recommendations were published in the Standard Treatment Guide and EDL for South Africa. However, the programme targeted women and not children. In 2003, the DoH introduced a policy that made it compulsory for iron and folate supplements to be routinely given to all pregnant women attending antenatal clinics in South Africa. No childhood supplementation strategy for iron is, or has been, in place in South Africa.

Implementation

Although the capacity exists to provide supplements or iron and folic acid to women during antenatal clinic visits, stock-outs are common and often negatively impact on implementation. In recent years, certain provinces have experienced stock-outs in iron and folic acid. Reports have attributed this to global stock-outs.

Evaluation and reform

The 2012 SANHANES revealed that for children and women, anaemia rates had halved from the 1994 levels. Only 10.7% of children and only 11.8% of women were classified as anaemic (Shisana et al., 2013). These national surveys (and other subnational studies) consistently found higher rates of anaemia among urban than among rural populations across all age groups.

South Africa has ratified several legally binding agreements, such as the 1989 Convention on the Rights of the Child and the 1981 Convention of the Elimination of All Forms of Discrimination Against Women. Both these conventions are reflected in South Africa's Constitution. The articles on child rights specifically articulate the right to nutrition. However, the rights of women are focused on discrimination. Women's rights to food within the Constitution are focused on energy provision and combating hunger and not on nutritional status. This is probably why iron supplementation received little attention and support. The link between foetal growth and nutrition is not legally recognised in South Africa.

Iron policy chronology

	Intervention or action	International events	Political events	Evidence of iron deficien
			Democratisation of South Africa 49th ANC National Conference	SAVACG: 21% of children had anaem (haemoglobin < 11 g/dL) 5% of children had IDA
0s	1998 – Iron and folic acid supplement recommendations published in the Standard Treatment Guide and EDL for South Africa		1997 50th ANC National Conference New Constitution came into effect	
		UN MDG		
			51st ANC National Conference	
	DoH introduced a policy making it compulsory for iron and folate supplements to be given routinely to all pregnant women attending antenatal clinics in South Africa	Lancet Nutrition Series		
				NFCS-FB1: 28.9% of children and wom anaemia 11.3% of children and wom IDA
			52nd ANC National Conference: Polokwane Resolutions	
		Lancet Nutrition Series		
		President Jacob Zuma comes into office		
		WHA goals	53rd Manguang National Conference Resolutions The NDP is endorsed	SANHANES-1: 10.7% of children were ana 11.8% of women were anae
		UN SDGs		

South Africa does not have an iron supplementation strategy for children. Iron supplementation has been targeted at pregnant women during pre-natal clinic visits. Recent improvements in women and children's iron status appear to be linked to maize meal and wheat flour fortification. However, both vitamin A and iron are part of the multi-mix that is used in the fortification of flour, and the incidence of iron-deficient anaemia is persistent, due to iron deficiency.

Respondents in the interviews for this case study suggested that specific rights on child nutrition have been instrumental in changing nutrition policy in South Africa. However, women's rights are not specifically articulated with respect to nutrition (as for the unconditional rights of children to nutrition). Thus, iron supplementation receives little attention and support.

14.4. Fortification of maize meal and bread flour

Agenda setting

South Africa's milling industry was deregulated in 1991. The "voice" of industry was channelled through the Chamber of Milling. While the Chamber ensured that essential services such as laboratory support and intelligence gathering remained functional, a loss of personnel and a period of reorganisation led to reliance on the technical services provided by laboratories belonging to the maize and wheat control boards. In 1997, the marketing control boards (including those for maize and wheat) were disbanded. The remaining funds from the control boards were invested in trusts. Government and the industry nominated trustees.

The unique position of the boards could have had a positive impact on the fortification programme, as they had the authority to allocate grain industry funding to any required research or programme evaluation. Individual milling groups also made resources available for research considered to be of industry importance.

Prior to 1991, all mills had to be registered, although many illegal small mills were in operation. After 1991, the deregulation on the boards waived this requirement. Consequently, the number of small mills in South Africa increased dramatically, especially in the maize-milling sector. This raised concern in the Chamber of Milling, as these small mills were very difficult to find, did not operate year-round and would be difficult to monitor in terms of compliance with fortification.

Design

One of the recommendations of the 1994 SAVACG was to investigate the feasibility of various food fortification programmes to address micronutrient malnutrition in the country. The study recommended the mandatory multiple fortification of maize meal, white and brown wheat flour, as well as white retail sugar. The recommendations were that the fortified food should deliver 33% of the RDAs per serving at the point of consumption. It should also consider the inherent content of these micronutrients in the foods, the anticipated losses of these micronutrients during production, distribution, storage and food preparation, as well as the limitations that may arise from organoleptic considerations of such additions.

In 1997, the Micronutrient Initiative and UNICEF established an overall framework for food fortification. UNICEF provided US$2 million. With the funding, a series of studies was

commissioned, starting with the NFCS in 1999, followed by studies to understand the operation of the milling industry. The CSIR was contracted to undertake stability and consumer acceptability studies for the fortificant mix.

The USAID's MOST project also provided short-term technical advice on fortification from 1999 onwards.

A communications strategy was developed to bring the milling and baking industry on board with an agreement for mandatory fortification, fortification levels, regulation and monitoring, quality assurance and enforcement requirements.

The process of implementing fortification was initiated through consultations undertaken in the DoH's Directorate: Nutrition. A tender for the NFCS was awarded to a consortium of nine universities that taught dietetics and nutrition in South Africa. The studies that informed the fortification programme design included the 1999 NFCS, an industry assessment, nutrient stability and consumer acceptance. It was of critical importance that the framework for programme implementation included a National Food Fortification Task Group, which was more commonly known as the National Fortification Alliance (NFA). This Group consisted of the DoH (both Nutrition and Food Control directorates), UNICEF, the Micronutrient Initiative, the Chamber of Milling, the Chamber of Baking, the sugar industry and the Consumer Goods Council. This core group would later second individuals and/or organisations to various working groups and technical committees.

In 2002, South Africa applied for a GAIN grant. The grant application, which was based on a competitive bidding process, required the inclusion of a five-year business plan with a detailed budget containing sources of funding and respective contributions from government, the private sector and others. South Africa was one of the countries that won this competitive bid and the country was awarded a grant of US$2.8 million in 2003, with the Development Bank of South Africa (DBSA) providing fiduciary oversight.

Mandatory maize meal and wheat bread flour fortification came into effect in October 2003. The micronutrients included in the fortification mix were vitamin A, thiamine, riboflavin, niacin, pyridoxine, folic acid, iron and zinc. The launch of the Fortification Programme marked the transition of external funding for the project from the Micronutrient Initiative to GAIN.

However, it was only in early 2004 that the grant agreement was signed between GAIN and UNICEF. The Micronutrient Initiative funded the programme during this period of transition. GAIN funding supported four key areas, including compliance monitoring and enforcement training, social marketing and communications, programme management and administration, and monitoring and evaluation. UNICEF South Africa was the executing agency of the GAIN grant. UNICEF handled all procurement, technical reporting and financial administration. The support also included programme assistance for the NFA Secretariat, which enabled dialogue between government and key stakeholders. For monitoring and evaluation, funds were provided for the development and implementation of a baseline survey, monitoring through trained environmental health practitioners and auditing of the fortificant mix manufacturers, suppliers or importers, and equipping laboratories for sample testing (DoH and UNICEF, 2007).

On 7 April 2003, the official regulations (R504) relating to the fortification of certain foodstuffs were published. By 7 October, the majority of millers were fortifying maize and bread flour. This included mills in Swaziland, Lesotho and Mozambique, which received support from the National Chamber of Milling. R504 was amended in 2008 to the R1206 amendment of regulations relating to the fortification of certain foodstuffs. The amendments concerned the labelling of products and the requirements for monitoring, which included two inspection audits per year. R504 also stipulates that millers can only procure pre-mix from suppliers that are registered with the DoH.

Environmental health practitioners were trained to conduct mill- and retail-level monitoring. However, this is not in their scope of work, so routine monitoring does not take place. Monitoring and evaluation is weak because of a lack of human resources, but necessary to provide evidence that could lead to policy reform. The marketing of fortified products to the general public was underfunded and did not increase awareness of fortified foods and their benefits. Marketing was important to increase consumer acceptance and purchase of fortified products.

The DoH, in partnership with the dti, created a scheme to subsidise the costs incurred by large, medium and small millers for the purchase and installation of fortification equipment. The subsidy scheme was structured in such a way that small millers would receive a 100% equipment subsidy, medium-sized millers a 75% subsidy, and large millers a 50% subsidy. Millers that do not register as tax-paying businesses do not qualify for the equipment subsidy (DoH and UNICEF, 2007).

To increase compliance among small millers, the Micronutrient Initiative provided funds towards a large-scale mapping and needs assessment project that was conducted by the University of Pretoria. The exercise identified small millers who required financial support and training to meet their obligations under the new legislation. The study located these mills for future monitoring (DoH and UNICEF, 2007).

Evaluation and reform

Regulations and the design of fortification programmes are continuously evaluated to improve the quality and acceptability of products. In August 2015, amendments were drafted to include cake flour in the fortification regulations, and submitted to the DoH's Legal Services Unit in September 2015. These amendments were drafted in consultation with industry, academia and civil society.

The 2003 NFCS recommended that the Food Fortification Task Group become a permanent committee on food fortification within the DoH's Directorate: Nutrition with a clear mandate to monitor and coordinate all aspects of the proposed food fortification programme (Labadarios et al., 2008).

The 2005 NFCS found persistent deficiencies, with the exception of folic acid (a water-soluble vitamin) status, which was adequate within the sample population. This result for folic acid may indicate a beneficial outcome of the fortification programme (Labadarios, et al., 2008).

These surveys motivated further investigation of why the fortification programme was not leading to significant population-wide improvements in micronutrient status. The DoH commissioned a study in 2010 to investigate the compliance of millers. This study was funded by GAIN. The findings led to the development of a self-auditing process that would require millers to absorb all monitoring costs. In 2015, GAIN also funded two surveys on coverage in Gauteng and the Eastern Cape, with the

technical support of the United States Centers for Disease Control and Prevention (CDC) and the National Research Foundation (NRF)/Department for Science and Technology (DST) Centre of Excellence in Food Security. The study found room for improvement in the adequacy of fortification levels.

In addition to compliance and adequacy, the fortification levels included in the original legislation were established according to WHO guidelines. The WHO had later increased their recommended micronutrient levels and recommended using a different type of iron from the one used in the South African programme.

In 2013, a collaborative and intense industry-inclusive consultative process was initiated by the DoH (funded by GAIN) to discuss the type and form of nutrients to be added to the multi-mix with regard to bioavailability and stability.

The choice of iron is dependent on the bioavailability of the compound and its tendency to cause organoleptic problems in the product. Electrolytic iron, at a level of 35 mg/kg of flour, was used in the original mandatory national food fortification. However, because of uncertainty regarding its efficacy (especially at the consumed levels), alternative iron compounds, such as ferrous fumarate and NaFeEDTA, were considered, with higher bioavailability in the human body once ingested.

Pre-mix trials (funded by GAIN), using the revised WHO formulation, were completed by the end of 2015. These results, along with the recommendations of mill variability studies, were used to inform the DoH in finalising the amendment to the fortification regulation in order to update the micronutrient formulation and add cake flour to the fortification programme. The amendment to the regulations was drafted and submitted for comment in 2015. The draft was also distributed to industry working groups for comment. The draft amendment was submitted to the DoH's Legal Services Unit in September 2015, and gazetted in March 2016.

: Overview of multi-mix fortification chronology

	Legislation	Scientific studies, research and evidence	Persons involved	Monitoring, evaluation and implementation
	Foodstuffs, Cosmetics and Disinfectants Act No. 54 gives the Minister of Health the authority to regulate or "prescribe" fortification			
		SAVACG report recommends an investigation into the feasibility of fortification		
			South Africa creates the multi-stakeholder National Food Fortification Task Group (NFFTG)	
		NFCS identified the foods most commonly consumed in South Africa by type and amount		
	Regulations relating to the fortification of certain foodstuffs were passed and enacted; these regulations provided for the fortification of wheat flour and maize meal	Studies by the ARC, MRC, CSIR on organoleptic properties	Supported by a US$2.8 million grant from GAIN The Cancer Association of South Africa (CANSA) drove folic acid – extra studies done by the CSIR	The DoH is responsible for training environmenta practitioners to do sampling for monitoring, in ad their other responsibilities General lack of capacity to sample and lack of fun analyses
		NFCS-FB 2008 (done in 2005) found limited improvements in malnutrition in the population, especially vitamin A and iron deficiency Only folic acid deficiency improved		
	Regulations relating to the fortification of certain foodstuffs are amended to update standards for certain fortification ingredients,			

	Legislation	Scientific studies, research and evidence	Persons involved	Monitoring, evaluation and implementation
	nutrient content claims and sampling procedures for importers			
		Compliance Project –DoH conducted this project with GAIN funding Nigel Sunley was appointed as a consultant to draft a survey sampling plan All universities involved – students collected maize meal and bread flour samples Report published – dosage problem: the first bag from the batch has more nutrients, and the last bag has less – the hypotheses is that this would, on average, give good exposure Millers need training to know when to administer the mix Adoption of mix formulation (studies in process)	Funded by GAIN Nigel Sunley (private consultant) commissioned by DoH Analyses by South Africa Bureau of Standards (SABS), South African Grain Laboratory (SAGL) and DoH laboratories (measurement of uncertainty was wide) The DoH with intense (although optional) industry consultation University of Pretoria, Tshwane University of Technology, SAGL, Nigel Sunley Funding from GAIN, Winter Cereals Trust and SAGL	
				In-house auditing system in development to replac monitoring SABS developed an auditing template
	Amendment submitted with some changes, including B12 added and the iron type changed to ferrous fumarate plus ethylenediaminetetraacetic acid (EDTA)			

14.4.1. Inclusion of specific nutrients within the micronutrient multi-mix

14.4.1.1. Folic acid

Although the multi-mix process is detailed above in terms of the Kaleidoscope Model, some of the nutrients demand analysis of the specific Kaleidoscope Model's key determinants. The sections that follow only cover relevant Kaleidoscope Model components where applicable to the specific nutrient.

Agenda setting

The quantity of folic acid added to the fortification multi-mix presents an interesting case for an assessment of the drivers for policy change. At a meeting between the Chamber of Millers and the DoH, an agreement was reached to reduce the prescribed level of folic acid of the pre-mix from 1500μg/kg to 750μg/kg. These values were significantly lower than the 33% of RDA per portion recommended by the NFCS. The millers strongly lobbied in favour of the lower values due to a fear of the influence that folic acid could have on the colour of maize meal (adding a yellow tint to white maize meal).

CANSA lobbied strongly against this reduction in folic acid level. CANSA funded a study at the CSIR to investigate the organoleptic influence of higher folic acid levels on the consumed product. The results showed that no organoleptic issues, such as colour or taste differences, arose when folic acid levels were retained at the higher level. CANSA's scientific justification for higher levels was backed by the association of folic acid deficiencies with an increased incidence of neural tube defects and oesophageal cancer observed in South African men.

The scientific evidence was presented to the DoH and the regulation published to include the higher quantity of folic acid in the mix.

Evaluation and reform

In 2005, the NFCS baseline study found that folic acid status was adequate throughout the country (Labadarios et al., 2008). Higher serum and red blood folate concentrations were found among people who ate green leafy vegetables more often.

14.4.1.2. Iron

Adoption

The selection of the type of iron to be used in fortification raised considerable debate. The form of iron and required levels were initially established according to WHO guidelines. Electrolytic iron was chosen as the form of choice. However, the WHO later increased its recommended micronutrient levels and recommended using a different type of iron (either ferrous fumarate or NaFeEDTA) to the electrolytic iron used in the South African programme.

The prime advocate for ferrous fumarate was Gary Klugman, Director of the Celanem Institute South Africa, who also marketed amino acid-encapsulated or chelated micronutrients for Albion Laboratories in the USA. South African companies' choice of iron was based on four factors. Firstly, industry and academic trials – both in South Africa and abroad – showed no negative sensory impact

on the product when fortified with ferrous fumarate. Secondly, South Africa had consulted one of the foremost minds on the subject – Prof Patrick McPhail, who is currently part of the medical advisory board of the Iron Disorders Institute and an expert in African siderosis (iron overload). He presented a position paper on the matter to the DoH. Thirdly, the options presented by Klugman were considered (or known) to be likely to have adverse interactions, such as an impact on the taste or visual effects of the flour. These options were also not affordable. Finally, scientific knowledge at the time might be limited, future developments may occur and the situation would need to be reviewed periodically. It was finally agreed that the iron source would be reviewed two years after mandatory implementation.

Evaluation and reform

The first review of the form of iron used in the multi-mix occurred in December 2004. It was agreed that the type of iron used would be revised by June 2005. The options for the type of iron fortificant at that time were NaFeEDTA and ferrous fumarate. In May and June 2012, meetings were held to discuss this. GAIN provided the funding and technical support.

The 2008 NFCS-FB-1 found that almost one-third of women and children were anaemic on the basis of haemoglobin concentration, with moderate and severe anaemia being relatively uncommon. One in five women and one in seven children had a low iron status. Nearly 30% (28.9%) of women and children had anaemia, with 11.3% having IDA.

The 2008 NFCS-FB-1 recommended the following:

- An iron sulphate syrup supplement programme should be implemented for three years for all children in the six- to 23-months age group.
- The distribution of iron supplements at antenatal clinics should be assessed in terms of approach, the type and dose of the iron supplements dispensed, as well as compliance.
- Community-level iron fortification should be explored in terms of feasibility and safety.
- Industries that manufacture pre-mixes should be self-regulating and self-monitoring. These industries should strictly comply with current legislation and ensure, in collaboration with the millers, that the correct amount of iron reaches the consumer at the household level.
- The micronutrient component of the INP should be strengthened in expertise and appropriately resourced to address current shortfalls of the food fortification programme.

In 2013, the SANHANES-1 study found that 10.7% of children and 11.8% of women were still anaemic. Although these rates have halved since the 1994 SAVACG study, the values are still a cause for concern.

As mentioned in section 1.7, the original fortification regulation has since been amended to change the form of iron that is included in the mix from electrolytic iron to more bio-available ferrous fumarate and NaFeEDTA. This change is also in line with the revised WHO recommendations, with the vision that it might improve iron absorption once ingested.

14.4.1.3. B-vitamins

Design

In the 1970s, the National Nutrition Research Institute (NNRI) of the CSIR established that high levels of pellagra existed due to the diets of certain population groups being deficient in niacin and riboflavin (B vitamins). The problem was debated among local researchers. Inspired by the work of Bressani (1953) and his team in Guatemala on the fortification of maize products, research projects were initiated. Three projects were led by Dr Jeanne du Plessis as coordinator, Dr Pieter van Twisk of the NNRI, and Dr W Wittmann, a paediatrician at the DoH. This research led to the establishment of vitamin B intake levels appropriate for South Africa (based on the average daily consumption of maize meal by the target group).

A trial of adding a pre-mix vitamin B fortificant was initiated. A mill in a community at Boyne, halfway between Polokwane and Tzaneen in Limpopo, was identified as a trial site. The mill belonged to the Zion Christian Church. The mill ground maize grown by the community. Permission was given to use the mill for experimental purposes. The mill was equipped with a custom-made feeder for the pre-mix. Before, during and after the trials, blood samples were drawn from the community and clinical tests were conducted. The trials were repeated following queries by certain local nutritionists. However, the results of the second trial supported the initial results. The findings indicated that pellagra could be eradicated through the fortification of maize meal with niacin and riboflavin at the pre-determined levels.

Adoption

Despite the findings, implementation hinged on changing the existing legislation to allow for the addition of B vitamins. The support for fortification from the maize-milling industry was also required. The DoH prepared the required changes to the legislation for submission. Following consultation with the Maize Board, support in favour of fortification was given by its management. Subsequent to this go-ahead, the support was revoked at a meeting of maize millers who were addressed by the CEO of the Maize Board. The CEO of the Maize Millers Association vetoed the decision, positing that fortification would negatively affect the sale of maize.

Evaluation and reform

However, a few companies were willing to champion niacin- and riboflavin-fortified maize. They worked in collaboration with the researchers and provided evidence that fortified maize would not have a negative impact on sales. Evidence was brought to the DoH, which then vetoed the Maize Millers' decision against fortification by establishing mandatory fortification legislation.

14.4.1.4. Calcium

Calcium was omitted from the final gazetted fortification mix. Although calcium fortification would not affect the colour or taste of flour or bread, even at the high levels used, it was not deemed possible to add it to the mix. The amount of calcium that would need to be added to flour to make a significant contribution to nutrition would require millers to install additional micro feeders to handle the calcium addition. This would have entailed additional costs and would have required additional human capacity.

14.4.2. Specially fortified maize meal for children

GAIN and the DoH have been in conversation since 2015 to produce a specially fortified maize meal for children based on the WHO Guiding Principles for appropriate complementary foods. Technical assessments have been completed. The product will be simple to formulate and could be processed at existing maize-milling facilities. The product will offer the opportunity for value addition and improved margins for millers. It will be distributed through both retail and government channels. Legislative changes relating to the product formulation, protein quality, packaging and shelf life are necessary. The DoH committed to supporting the development and implementation of a dedicated logo, the potential offtake through government channels, as well as negotiating with the dti for financial support.

14.4.3. Stakeholders in the micronutrient fortification debates

The stakeholders in the multi-mix fortification debates have changed over time. GAIN, UNICEF and the Micronutrient Initiative played an important role in the initial stages of fortification in South Africa, both as advocates and as donors. GAIN's role is currently restricted to supporting monitoring and evaluation activities. The Micronutrient Initiative is no longer active in South Africa.

Donor participation is no longer necessary due to the successful implantation of fortification and the support of industry. Industry actively participates in consultations on fortification. Although consultation with industry is required in policy formulation in South Africa, interviewees for this case study commended government for the 2010 consultative processes.

Two government departments participate in fortification, the DoH and the dti. The DoH is responsible for compliance monitoring and ensuring the equitable participation of all stakeholders in consultations. The DoH lobbied the dti to provide millers with equipment subsidies. However, the subsidy system has not been user-friendly and respondents expressed frustration, commenting that the dti has provided limited grants, if any. Policy decisions are made by Cabinet.

The SAGL, the SABS and academics play a role in assisting with monitoring compliance. All institutions and individuals related to the project have access to the laboratories that analyse samples and test the sensory effects of fortificants on products. The SAGL has played a particularly important role in the development of a new monitoring compliance tool that is currently being rolled out. The SAGL assisted in the development of a compliance monitoring tool that enables industry millers to measure fortification compliance at several stages of the fortification process.

14.5. Iodisation of salt

South Africa has achieved the virtual elimination of IDD. Since 1998, the number of households using and consuming salt with an iodine content of more than 15 ppm has been consistently increasing.

IDD was the earliest micronutrient problem to be identified in South Africa. Incidence of iodine deficiency was first reported in the Langkloof area of the former Cape Province in 1927. Before 1954, endemic goitre was observed in several areas in the country. Later, iodine deficiency was diagnosed based on low median urinary iodine concentrations in some studies (Jooste and Strydom, 2010. A

"goitre belt" was identified as an area along the southern and eastern portion of the country, extending through central South Africa. In 1948, the University of Pretoria established the South African Goitre Research Committee. The Committee recommended voluntary salt iodisation. In 1954, the voluntary iodisation of salt was implemented at 10 ppm to 20 ppm. No further policy changes were pursued until the 1990s.

In 1994, the SAVACG survey noted visible goitre in 1% of children, however, the relative young age of the respondents (6 to 71 months) included in this study could have been a reason for the low prevalence, as goitre develops with age. Iodine deficiency was considered a pressing problem due to the avoidable drop in IQ and brain damage. Ideas and beliefs on how to address IDD were influenced by international consensus on the appropriate public health approach to eliminate iodine deficiency (Jooste, 2015). The salt iodisation policy design was guided by international recommendations. Salt producers carried the costs of salt iodisation and recovered these through sales of iodised salt.

At the end of 1995, the mandatory iodisation of food-grade salt (40 ppm to 60 ppm) was implemented in South Africa to comply with one of the nutrition goals of the 1990 World Summit for Children that aimed at eradicating IDD by 2000. These efforts were led by the MRC and the DoH, with support from UNICEF.

Respondents mentioned that the monitoring of household consumption of iodised salt was conducted through a series of MRC studies. In 1998, the National IDD Survey, performed by the South African Institute for Medical Research (SAIMR) was commissioned by the DoH. The study surveyed primary school learners. It found that, 62.4% of households consumed iodised salt. The study found that 89.4% had normal iodine status. However, 10.6% of children in rural areas (specifically) were iodine deficient (Witten, Jooste, Sanders and Chopra, 2004).

As indicated earlier, although it is mandatory to iodise all commercial salt intended for human consumption, the complete elimination of IDD is not possible because non-iodised salt often enters the market. Rural and poor consumers often trade in non-iodised salt. Salt used for agriculture and animal feed (sold at a lower price in large quantities) is often traded in informal settlements. Salt sifted from salt pans in the Northern Cape is also traded informally in these areas.

In 2005, it was found that four out of 10 women and five out of 10 children nationally had urinary iodine concentrations higher than the recommended levels (Labadarios et al., 2008). Despite these observed levels of excess, the band for iodisation was widened to 35 ppm to 65 ppm in 2006 to assist industry in meeting levels of compliance. The DoH Directorate: Food Control amended the regulations to assist industry in complying with the legislation.

Unfortunately, institutional restructuring resulted in the MRC closing its laboratory in 2013, which included the iodine laboratory. The MRC was one of the few organisations that closely monitored salt fortification and provided regular data on IDD.

Table 11: Iodine policy chronology

Year	Intervention or action	International events	Political events	Evidence of iodine deficiency
1927				Endemic goitre reported in the Langkloof area of the erstwhile Eastern Province
1948	Appointment of the South African Goitre Research Committee by the University of Pretoria			
1954	Voluntary iodisation of salt with potassium iodate legally introduced at 10 ppm to 20 ppm			
1994			Democratisation of South Africa 49th ANC National Conference	
1990		World Summit for Children established goal to eradicate IDD by 2000		
1995	Mandatory iodisation at 40 ppm to 60 ppm introduced for all table salt This does not apply to processed foods or agricultural salt			
1998				DoH Directorate: Nutrition national IDD rate of 40.9% Rates highest in the Eastern Cape (54.7%) and KwaZulu-Natal (56.8%)
2000		UN MDGs		
2002			51st ANC National Conference	
2003		Lancet Nutrition Series		
2005				NFCS-FB1: 19.2% IDD rate
2006	Mandatory iodisation band widened to 35 ppm to 65 ppm			

14.6. Reduction of sodium in foods

Agenda setting

The rate of morbidity and mortality associated with NCDs has increased globally. In 1990, the global morbidity rate attributed to NCD was 27%. The current rates of NCD-related morbidity can be

attributed to half of the total disease burden (WHO, 2016). Overweight and obesity are also increasing among children. In South Africa, 49% of mortality can be attributed to injuries and NCDs, with two out of five deaths occurring as a result of NCDs (WHO, 2016).

In response to the 2011 UN General Assembly High-level Meeting of Heads of State and Governments, the adoption of the Political Declaration on the Prevention and Control of NCDs and the National Summit Declaration of NCD Targets to Reach by 2020, the DoH published a Strategic Plan for the Prevention and Control of NCDs (2013–2017). One of the specific targets set includes the reduction of the mean population intake of salt to less than 5 g per day by 2020. Related to this is the target to reduce the prevalence of people with raised blood pressure by 20% by 2020 (DoH, 2013b). In 2013, the government of South Africa was the first country in Africa to implement mandatory, comprehensive limits on sodium across a range of processed foods. The limits will apply from June 2016.

Design

An internal document on salt reduction was drafted in January 2012. A consultative stakeholder meeting was convened in March 2012. The draft regulations related to the reduction of sodium in certain foodstuffs was published for comments in the *Government Gazette* in July 2012. In December of the same year, a working group discussed comments and finalised the regulatory documents. The legislative change was gazetted on 20 March 2013 (R214/2013).

The initial impetus for regulating the sodium content of foods came from the national government, specifically, the DoH. The government consulted with stakeholders in the food industry, NGOs, researchers and academia. All stakeholders supported the need to address hypertension in South Africa. Most stakeholders also agreed with the need for regulation. However, stakeholder groups differed in their perceptions of the extent and quality of the consultation on specific details such as salt reduction targets and timing. Government, NGO, research and academic stakeholders reported the process to have been "highly consultative", while food industry stakeholders were more sceptical, specifically with regard to compliance and enforcement.

Adoption

The South African experience suggests the following three important lessons for governments seeking to develop similar regulations:

- Early involvement of the food industry in negotiations on targets and timing
- Clear communication to all stakeholders of the goals and context of the regulation
- Prioritising and resourcing enforcement of the regulation, once introduced (Kaldor, 2015)

15. Cases where micronutrient discussions did not lead to policy change

The following section looks at two other possible vehicles of micronutrient fortification that were included in policy discussions, but have never been adopted. Sugar was one of the fortification vehicles that was considered for vitamin A fortification. However, it was decided against it during the consultation process. Biofortification of OFSP was another vehicle that was recommended for

addressing vitamin A deficiency. However, although many programmes are being implemented, it has not been included in nutrition policies. Both these cases provide insight into situations where policy change did not occur.

15.1. What happened to sugar?

Design

Many early decisions on vitamin A fortification were based on the use of three vehicles that could deliver approximately a third of the RDA. Many meetings took place outside of the NFA. Thus, decisions related to dropping sugar from the list of possible vehicles is not fully understood.

Cost-benefit calculations reflected that fortifying maize meal was cheaper than fortifying sugar. Sugar was considered the better choice because it could be centrally processed, which eases the fortification process. The sugar manufacturers are located in one area, which makes it easier to monitor compliance. However, concerns were raised that the impact of fortifying sugar would be much less in peri-urban children. Fortifying sugar could result in higher levels of vitamin A adequacy in peri-urban children, but may have less impact in rural children (Labadarios, et al., 2008).

Another factor, which favoured the fortification of maize meal and bread flour over sugar, was a well-documented case for the multiple micronutrient fortification of flour, as was the case in Venezuela. Compared to the single-nutrient fortification of sugar, flour was considered to be the better option.

Adoption

The sugar industry did not support the idea of fortifying sugar and rarely attended NFA meetings. It was concerned that the cost of fortification would result in high levels of competition in the sugar market and that European importers would not want fortified sugar. The nutrition fraternity and dentists also lobbied against using sugar as the fortification vehicle, stating that the promotion of an "unhealthy" food for better nutrition would be counter-intuitive. The DoH continues to oppose sugar fortification because of concerns related to overweight and obesity. Interestingly, the iodisation of salt (of which excessive consumption is linked to various NCDs) was not contested.

The discussions on sugar fortification ended acrimoniously when representatives of the sugar industry and the dti informed a meeting of the NFA that sugar fortification was not in the country's interest due to the value of its sugar export trade. Years later, it was realised that South Africa's export of raw sugar (rather than the processed fortified product) would not have been affected by fortification.

Sugar was dropped as a fortification vehicle. However, the vitamin A content of the maize meal or wheat flour fortificant was not adjusted despite the levels being determined based on the consumption of both sugar and maize meal or wheat flour.

15.2. Biofortification of orange-fleshed sweet potatoes with vitamin A

Since 1952, a sweet potato research programme has been operational at the ARC's Roodeplaat Vegetable and Ornamental Plant Institute (ARC Roodeplaat). OFSPs that contain beta-carotene have been included in the ARC's programme since the 1980s, but the work was aimed mainly at the frozen-food industry. In 1996, the ARC expanded its work on OFSPs. The programme is linked to Sweet

Potato Action for Health and Security in Africa, which is coordinated by the International Potato Centre (Laurie, Faber, Adebola and Belete, 2015). This work was complemented by a smaller breeding programme at the University of Natal in Pietermaritzburg in 1994.

The ARC demonstrated the potential of this crop-based approach to improve food and nutrition security in three studies. In 2000, the Ndunakazi Home Garden Project (conducted by the ARC in collaboration with the MRC) found a favourable effect on the maternal knowledge regarding vitamin A and an increase in the habitual intake of yellow and dark-green leafy vegetables in children aged two to five years old, with an improvement in serum retinol concentrations (Faber, Phungula, Venter, Dhansey and Benadé, 2002). A follow-up study, the Lusikisiki Project, which was conducted in 2005, found that participating households showed lower levels of reported childhood illnesses, had better knowledge of nutrition and consumed vegetables rich in beta carotene more frequently than non-participating households (Laurie and Faber, 2008). The DoH in the Eastern Cape initiated a high-dose vitamin A supplementation programme in 2002, into which OFSPs was successfully integrated through a community-based communication project called Mdantsane for Vitamin A. Project evaluation showed that the integrated approach resulted in increased coverage of vitamin A supplementation, knowledge of vitamin A needs and benefits, and the cultivation and consumption of OFSPs (Mdingi, 2007).

To encourage greater production and consumption of OFSPs, training workshops were held with communities, schools, crèches, local government departments and NGOs between 2005 and 2009. This created a demand for high-quality, virus-free planting material of the improved cultivars. Such cultivars were not available at scale before 2010. To have a long-term impact on food and nutrition security, large-scale dissemination of healthy vines of improved cultivars was needed to improve and sustain OFSP production. Disease-indexed mother plants of all the new cultivars were maintained at the ARC. The distribution system of these plants evolved over the years from direct distribution from the ARC to households to distribution through community-based nurseries, then through centralised nurseries and eventually through nursery enterprises. From 2010 to 2013, cuttings from four large-scale centralised nurseries (one at the ARC and three at universities, with easy access to rural populations) were distributed mostly to government departments and planted in food gardens, at correctional facilities and in school gardens. In addition, five to 10 individual small-scale commercial farmers purchased cuttings from the nurseries for growing during each planting season (Laurie et al., 2015).

Some 85 members from cooperatives were trained in cultivating OFSPs and produced the crop in different climates and socio-economic settings in the Eastern Cape, Limpopo and KwaZulu-Natal from 2011 to 2014. In the Eastern Cape, the provincial DSD, in partnership with an NGO (Triple Trust Organisation), the ARC and a commercial bank, implemented OFSP production units on a wider scale. Growers received training in cultivation, marketing, business skills and processing the roots into 10 different post-harvest products. During 2011/12, five sites in two districts (Amathole and Nelson Mandela Bay) were producing good-quality OFSPs for the local market. During 2013/14, four more cooperatives in the two districts were trained (Laurie et al., 2015)

It was a major boost for sweet potato initiatives in South Africa when the DRDLR made funds available (from 2013 to 2015) for the establishment of economically viable sweet potato enterprises in rural communities in six of the nine provinces in the country. During 2013/14, five vine grower

enterprises were established in four provinces. Ten sweet potato entrepreneurs in three provinces produced new cultivars. These were sold on the local informal market with great success, emphasising the potential of earning household income. During 2014/15, vine supply increased substantially from nine vine growers, and has large scope in raising the produced volumes of OFSPs (Laurie et al., 2015).

Owing to the increased demand for food-based approaches to solve micronutrient deficiencies, biofortification as a strategy was placed on the Codex Alimentarius Nutrition Committee Agenda in 2005 by the Health Canada Representatives of the Government of Canada. However, because of the limited scientific evidence at the time, it was not prioritised. HarvestPlus/IFPRI invested significant resources in generating scientific evidence and delivered a conference room document to the Codex Committee on Nutrition and Foods for Special Dietary Uses (CCNFSDU). In 2013, the Committee asked for a discussion paper, which was prepared by HarvestPlus/IFPRI and Health Canada. The Committee reviewed the discussion paper and posed a number of questions. A member of government had to take the process further and so the governments of Zimbabwe and South Africa volunteered to prepare a revised discussion paper. A research paper was written based on nine questions raised by the Committee and responses were incorporated into the revised discussion paper. The Codex Alimentarius Commission formally approved the new work and a Codex electronic working group, in which the South African government, academia and civil society members participate, was formed in 2014 to develop a formal definition for biofortification.

For a long time, the main proponents of OFSPs were the ARC and MRC. They played the role of advocates, researchers and providers of new technology. On a continental level, they have received support from the International Potato Centre (IPC). Academic institutions have also provided research support in the past.

The government, however, only recently began supporting OFSP biofortification. The DRDLR and DSD are providing support for OFSP in the form of enterprise development. They provide financial support to farmers who are interested in producing OFSPs.

Table 12: Policy chronology of OSFP biofortification

Year	Intervention or action	International events	Political events	Evidence of Vitamin A deficiency (<20ug/dℓ)
1994		ICN 1	Democratisation of South Africa 49th ANC National Conference	SAVACG: 33.3% children
Late 1990s	The ARC's focus on OFSP expanded to focus on vitamin A deficiencies		1997 – 50th ANC National Conference	
2000		UN MDGs		
2001	Integrated of OFSP within the vitamin A supplementation programme in the Eastern Cape			
2002			51st ANC National Conference	
2003		Lancet Nutrition Series		
2005				NFCS-FB1: 63.9% of children 27.2% of women
2007			52nd ANC National Conference: Polokwane Resolutions	
2008		Lancet Nutrition Series		
2012		WHA goals	NDP is endorsed 53rd Manguang National Conference Resolutions	SANHANES-1: 43.6% of children 13.3% of women
2015	Codex Biofortification Electronic Working Group established; co-led by DoH	UN SDGs		

16. Overall testing of the model

Having described the agenda setting, design, adoption, implementation, and evaluation and reform elements for each of the key micronutrients under investigation, we return to the testing of the Kaleidoscope Model. This section evaluates the five stages (in the inner core of Figure 2 and listed in row 1 of Table 5) in the policy process to identify key variables that defined the necessary and sufficient conditions (outer core of Figure 3 and listed in column 1 of Table 11) for micronutrient policy change to have occurred in South Africa. Identified in the inner core of Figure 4, these variables serve as key hypotheses for empirical testing.

Table 12 presents a consolidated Kaleidoscope Test of all five cases. The * is an indication of whether the occurrence of the hypothesis was confirmed in each case. A blank space indicates that a hypothesis

did not have an influence on policy change. Because this table consolidates all five cases, the more asterisks allocated to a hypothesis, the more influence that hypothesis has on policy change. For example, the hypothesis "powerful advocates" had 12 asterisks, which indicates that it is important for influencing policy change in South Africa. Propitious timing only has one asterisk, which indicates that this hypothesis did not occur often, consequently limiting its influence on policy change.

Table 13: Consolidated K-model test

Key determinant	Agenda setting	Design	Adoption	Implementation	Evaluation and reform
Focusing event	******				
Powerful advocates	**********				
Relevant policy problem	*******				
Knowledge, research and ideas		*******			
Norms, biases, ideology and beliefs					
Cost-benefit and risk calculations		****			
Relative power of opponents as opposed to proponents			****		
Government veto players			**		
Propitious timing	***	***	****		
Requisite budgetary allocations					
Institutional capacity				****	
Implementation veto players					
Commitment of policy champions				**	
Changing information and beliefs					******
Changing material conditions					**
Institutional shifts					

16.1. Agenda setting

Various factors and/or events may initiate a policy formulation process.

16.1.1. Focusing events

With the instatement of democracy and a new government in 1994, it is clear that the political and institutional setting was conducive to policy change. The newly appointed ANC wanted to realise its ideals, and promises and change were the order of the day. The political manifesto of the ANC was translated into the major policy (strategic) objectives after 1994. These objectives formed the framework for all decisions, policy formulation and drafting of legislation, as well as the implementation of administrative acts during the period until the next election (Republic of South Africa, 1994).

However, a number of factors and events converged in 1994 to put nutrition (especially for children) on the policy agenda. South African policy makers engaged in numerous international events and meetings related to health, nutrition, and human and children's rights. The enthusiasm of returning political exiles who had been actively engaged in these events and movements while in exile was also evident.

A confluence of changes, elements and influences led to a strong policy interest in nutrition in South Africa in the early days of democracy. These factors included the following:

- The changing government
- The abolition of apartheid
- The integration of the former homelands into one country
- The formation of new geographic boundaries with nine provinces
- The struggle heroes' engagement in human rights movements
- The President's commitment to children's welfare in particular
- The new government's deep commitment to the Freedom Charter
- The country's re-entry into the international arena after sanctions
- The multiplicity of international conventions and declarations related to human rights and children's rights and the MDG, among other things

A strong monitoring and evaluation culture has also led to the realisation that many policy, legislative and/or implementation frameworks have significant shortcomings that lead to continuing cycles of policy change. Combined with clear evidence from international and local research and population studies, including an assessment in 1994 of the 1991 NNSDP (McLachlan, 1994), there was ample historical and current evidence to show that addressing nutrition was a pressing problem.

There were also multiple international conventions on the rights of children, as set out in the section that details the policy chronology. These conventions gave impetus to the ANC's rights-based policy agenda. These international events included the UN's 1976 International Covenant on Economic, Social and Cultural Rights (ICESCR), the 1981 Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW*)* and the 1989 Convention on the Rights of the Child.

Continent-based events included the African Union's 1981 African Charter on Human and Peoples' Rights that came into force in 1996, the 1990 African Charter on the Rights and Welfare of the Child

that came into force on in 1999 and the Protocol to the African Charter on Human and Peoples' Rights on the Rights of Women in Africa that came into force in 2003.

SADC's 2008 Protocol on Gender and Development, which came into force in 2013, is an example of a regional event.

16.1.2. Powerful advocacy coalitions

For most of the post-1994 micronutrient policies, key agents gave voice to international agreements and advances in improving nutrition. These agents varied, depending on the specific nutrients involved, but the major engagement was in the fortification multi-mix, as this required the convergence of a number of players in the international, government, academic and private sectors. Throughout the years leading up to the transition to democracy in 1994, UNICEF played a key role in all nutrition-related policy change and, indeed, all elements of the policy cycle. It funded a number of key meetings before and after 1994, funded status quo reports and surveys, and provided technical support directly to government.

Status assessment reports, expert task forces and committees, as well as national surveys formed an important part of the agenda-setting process, informing officials and decision makers (Cabinet considers these reports) in defining the problem, establishing the nature and extent of the problem and identifying possible policy instruments to address the problem.

The clarity provided by the Constitution and the early policy documents of the ANC and national government, such as Growth, Employment and Redistribution (GEAR) Strategy and the Rural Development Programme (RDP) helped reach consensus on issues. Commitment to the cause of the Freedom Charter and the resolve of all parties in post-apartheid South Africa to find solutions for the sake of peace and security were a major contributing factor to consensus on the pressing need to address malnutrition. The broad-based support for President Nelson Mandela also played a significant role. Not only was he an exceptional leader, but his personal commitment to children was also contagious and his inclusive governance drew people from all lifestyles and political persuasions to work together towards solutions for the common good.

16.1.3. Relevant policy problem

The various status assessment reports, reviews and surveys were powerful tools in agenda setting for all South Africa's nutrition policies after 1994. Although surveys, investigations and reviews (such as the Carnegie reports) have highlighted the plight of public health and human productivity due to nutritional deficiencies, options for addressing these were marred by political ideologies and economic policies. Faced with governing the "new" South Africa, the evidence had to be tackled in a way that addressed past inequalities and set the country onto a path of development for all people. The ambitious task was supported by concurrent reforms in political geographies (provincial boundaries were re-established) and institutional restricting into a single governance system.

The various status enquiries showed that micronutrient deficiencies were indeed public health concerns (especially with regard to children). Once convinced that micronutrient deficiencies were indeed a widespread public health issue that affects maternal and child mortality and morbidity, steps

were taken to identify the most appropriate vehicles to address the issue at scale. However, this was not done at a population-wide scale until the abolishment of apartheid.

For example, before 1954, endemic goitre was observed in several areas in the country and later iodine deficiency was diagnosed based on low median urinary iodine concentrations (Jooste and Strydom, 2010). The South African Goitre Research Committee had already identified the problem and recommended the uptake of voluntary salt iodisation. The SAVACG only assisted in confirming IDD. Legislation on mandatory salt iodisation was implemented in 1995. These efforts were led by the MRC and DoH, with support from UNICEF.

The USAID-funded MOST was conducted to inform design, implementation and the cost of vitamin A supplementation through a pilot study. It provided an outlook on how the omission of a specific nutrition intervention would affect health care provision and lives lost. When the South African Government was presented with these results, it recognised the importance of vitamin A supplementation. Various national surveys (historical evidence and newly commissioned work) confirmed the extent of the problem and led to the implementation of supplementation.

The regular food consumption surveys have all been commissioned to evaluate the extent of nutrition problems in South Africa or to evaluate the impact of interventions and so initiate a further round of policy debate and change. These also informed intervention design.

16.2. Design

The design of the current micronutrient programmes in South Africa is strongly informed by international evidence and soundly based on local evidence. Thorough investigation of the problem and its causes, and extensive consultation informs and shapes the design of the programmes.

In most of the micronutrient cases, the South African Government found innovative means of designing the micronutrient strategies so that costs were either transferred to the private sector or absorbed through existing structures. This is essential for sustainability. For example, vitamin A supplementation was integrated into the EPI. As a result, the only cost to government was for the procurement of the supplements. In the case of salt iodisation, the design was guided by international recommendations. Salt producers covered their own costs for salt iodisation and recovered that cost through sales of iodised salt. Similarly, millers of maize and bread flour are responsible for fortifying their own products and the only cost to government is for monitoring compliance.

16.2.1. Knowledge and information

International trends and evidence also led to a change in beliefs about how to address nutrition. Before 1994, food was the solution to hunger and malnutrition as articulated in so many reports and policies. There was a notion that the quality of food was important, but most reports up to the second Carnegie Report cite poverty, ignorance and disease as the key causes of malnutrition. The solutions therefore lay in increasing incomes, making specific foods more affordable (mostly through agricultural and consumer subsidies and later making more foods exempt from value-added tax (VAT). In some cases, food was made more accessible through feeding schemes and educating people on what to eat. A far more targeted and preventative approach has been adopted since 1994.

16.2.2. Norms, biases, ideologies and beliefs

Evidence of the influence of ideas and beliefs is blatant from the historical review of South Africa's history with regard to nutrition policy. Prior to 1994, political ideologies strongly shaped policy change. Even where there was clearly a relevant and pressing problem, policy change reflected the ideals of the day. Prior to the apartheid era, nutrition policy was clearly focused on curative efforts with a few efforts to support health to ensure the supply of migrant labour. Such efforts were only focused on areas where such instruments supported the economic development of the farming and mining sectors of the Union. In apartheid South Africa, policies deliberately only supported and advanced the white population, and the separate development and service nature of the country had no consolidated nutrition programme.

The ideology and beliefs of the ANC are clearly articulated in the new South Africa. After 1994, the national government set about realising these through the reform of policies and implementation of national programmes to address the inequalities of the past, realise human and children's rights and improve nutrition in areas deemed to be a constraint to development and a burden on society. Population-wide nutrition programmes were implemented.

16.2.3. Cost-benefit calculations and risk

Cost-benefit calculations are required as part of the preparation for the submission of policy documents, but this element does not present a strong case in any of the assessed micronutrient studies. However, in the case of the multi-mix fortification, studies were conducted to determine the cheapest and easiest product to fortify. Both sugar and maize flour were considered, and although it was determined that maize flour was the better product to fortify, both products were considered for consultation with industry to increase opportunities for coverage.

However, it seems that only interventions that can be funded from the fiscus are considered as policy options by the South African government.

16.3. Adoption

Once the South African government has agreed on the agenda-setting phase and invested in the design of a new policy or reform of a policy, the process can move along a structured process of review, iteration, consultation and approval. In fact, many of the Kaleidoscope elements in the adoption phase (veto players, opposition and propitious timing) play a more significant role in the agenda-setting and design phase. This is illustrated in Annexure 8 in the cases of vitamin A supplementation, salt iodisation and the fortification multi-mix tests.

16.3.1. Veto players

In the case of sugar, several groups were opposed to fortifying sugar with vitamin A. These included dietitians, dentists and the sugar industry itself. Dieticians and dentists argued that sugar posed health and dental hygiene risks. The sugar industry argued that fortifying sugar threatened export sales, although it was later discovered that this information was inaccurate. Both these opponents were able to veto fortifying sugar with vitamin A. It is likely that the strong arguments highlighting the potential

threats to public health and trade played a major role in vetoing this decision. It is also likely that the number of groups opposed to sugar fortification also had a bearing on the decision.

Two key consultations occurred in the case of maize flour fortification. The first consultation was for the fortification of maize flour with B vitamins. The Chamber of Milling was concerned that small millers would not be able to compete in the market given the added cost of fortification. Although the Chamber's Chairperson vetoed fortification, a couple of millers were willing to voluntarily fortify and champion B vitamin fortified maize. Eventually, the DoH overturned the Chamber's decisions and legislation on the mandatory fortification of maize flour with B vitamins was established. During the second consultation in2003, the milling industry posed some opposition with regard to fortification. They were concerned that fortification would increase production costs. They also wanted assurance that fortification would not have an impact on the organoleptic or performance characteristics of their product. However, a significant proportion of industry had already been fortifying their products and did not oppose fortification.

16.3.2. Relative power of opponents as opposed to proponents and veto players

In the case of micronutrients in South Africa, the trend has been to hold consultative forums with various stakeholders prior to the implementation of key decisions. For example, during the initial discussions on vitamin A supplementation design, a team of experts, nutritionists and other professionals formed part of a policy draft team. The team did not reach consensus on the initial design of vitamin A supplementation. Some opponents lobbied that South Africa should not implement blanket vitamin A supplementation, but should implement medical vitamin A supplementation, such as in measles and kwashiorkor cases. The opponents of vitamin A supplementation argued that supplementing children who were not vitamin A deficient might result in vitamin A toxicity. Although the proponents were stronger than the opponents and vitamin A supplementation was adopted nationally, the opponents were successful in convincing their own provincial government that blanket vitamin A supplementation was not necessary.

16.3.3. Propitious timing

The transition to a democratic government was propitious timing for nutrition policy in South Africa. As outlined above, so many factors and events produced an opportunity to get focus and traction on nutrition interventions, and in particular, micronutrient interventions.

As one example for a specific micronutrient, iodine is the one micronutrient deficiency that was recognised early in the 1950s. However, because it predominantly manifested in the black communities, it was not considered a priority. Voluntary salt iodisation was recommended, but mandatory fortification was not regulated until after 1994. The World Child Summit of 1990 and the end of apartheid made the timing propitious to push for salt iodisation.

16.4. Implementation

The adoption of policies and their programme instruments is facilitated through the structured institutional system in South Africa. Accountability is a key focus of the South African government and is spurred by South Africa's relatively high visibility in the region and internationally. The

structured accountability system, including the annual performance appraisals and regular reporting to Parliament on delivery and service agreements in place at all levels of government, helps ensure implementation.

16.4.1. Requisite budgetary allocations

Because South Africa has a vibrant private sector and government has the capacity to procure essential drugs, such as vitamin A and iron, budgetary requisites are often not a hindrance to policy change. Budgetary allocation, however, depends on government priorities. For example, biofortification may not be considered a key programme to achieve national priorities. As such, budgetary allocations for biofortification are limited and may stall implementation. However, stock-outs may interfere with the effective implementation of supplementation policies, as discussed above.

Given that the private sector has absorbed all fortification costs and that fortification is mandatory, requisite budgetary allocations should not hinder fortification. However, compliance monitoring is not regulated. Owing to limited funding in the DoH, industry is expected to self-regulate. This means that industry is responsible for monitoring its own fortification levels. Industry is expected to provide audit reports to the DoH. Ad hoc studies on IDD prevalence reporting declines suggest that this approach is working.

16.4.2. Institutional capacity

Although budgetary requisites are not a major concern in the area of micronutrients, institutional capacity may threaten the efficacy of micronutrient interventions. Firstly, there are challenges in the institutional management of government departments and other stakeholders that are involved in nutrition activities. A lack of horizontal coordination often results in the duplication of efforts and limited understanding of the micronutrient activities managed by various stakeholders. For example, DAFF is responsible for biofortification, but the DoH plays an important role in coordinating and promoting biofortification activities. The lack of statutory reporting on nutritional disorders and administration of, for example, vitamin A leads to a dearth of information and statistics essential for the monitoring and evaluation and assessment of the impact of interventions. Rigorous performance appraisal through the DPME is an incentive, but without statutory reporting requirements, many of these essential indicators on coverage and impact are lost.

Secondly, the institutional capacity to supplement exists at both municipal clinic level and during the child health weeks. There is clear commitment by government at national level to address vitamin A deficiency and IDA. However, the translation of priorities at the level of health care providers is weak. Health care providers may not understand the importance of providing supplements to women and children and often overlook distributing vitamin A capsules during immunisation. Health care providers do not record how many supplements are distributed either, which has an impact on the reporting of coverage. Because vitamin A reporting is not statutory, there is limited incentive for health care providers to distribute, let alone record data on vitamin A coverage. Regular stock-outs of essential vitamins at antenatal clinics, in particular, undermine the goals of nutrition at critical stages of the life cycle.

During the 2010 Landscape Analysis, policies, guidelines and other materials relating to vitamin A were available in 85.3% of health facilities visited during the analyses. The guidelines and policies are not available in some health facilities, despite being printed by the DoH and distributed to all the provinces (DoH and UNICEF, 2010).

Although the institutional capacity exists to fortify, compliance monitoring is weak owing to a lack of human resources to collect samples and the lack of skilled personnel to conduct the testing and analysis. Sample collection was supposed to be done by the environmental health practitioners. However, due to heavy workloads, samples were not routinely collected. The laboratory staff who conducted the tests did also not have the necessary training to analyse the samples when provided.

Compliance with fortification standards remains questionable. There are no tangible incentives for the private sector to fortify foods. Millers bear the monitoring costs. Although large millers are able to absorb the compliance and capacity-building costs, small mills lack technical knowledge and capacity.

There is also a concern that populations in remote areas do not consume adequate quantities of fortified products to significantly improve their dietary intakes.

16.4.3. Implementing veto players

Implementing veto players was not identified as a key determinant of policy change in the cases that were considered for this case study.

16.4.4. Commitment of policy champions

President Mandela played a pivotal role in championing the rights of children and drawing attention to their needs, promising to deliver on pre-election promises. UNICEF's continued commitment is also important. This UN agency has funded many of the current policy inquiries and provides much-needed technical support and encouragement to the government with regard to micronutrient policies and children's rights.

Fedfood, a food company with major investment in maize milling decided to champion maize fortified with B vitamins in the 1970s. It launched its fortified maize meal with a new brand name A1. The Tongaat Group also supported Fedfood's initiative and decided to market A1 in the former province of Natal. Unscrupulous members of certain competitor companies spread the rumour that A1 maize meal caused male infertility, which negatively affected marketing. However, the brand survived this bad publicity. The commitment of companies willing to champion niacin- and riboflavin-fortified maize meal caused the successful integration of B vitamins into the multi-mix.

16.5. Evaluation and reform

South Africa has a formal national evaluation framework with a regular review of policies and their impact. The DPME is responsible for implementing and managing this system and works closely with national departments and provinces. The recent review of programmes targeting children under five years of age is evidence of the ongoing effort to improve policies and programmes. The status quo reports and structured reviews overseen by the DPME provide opportunities to assess impact, review progress and make policy and programme adjustments.

16.5.1. Changing information and beliefs

South Africa consistently evaluates and reforms policy interventions. Research findings often play a major role in re-evaluating programme design. For example, in the case of vitamin A, a 2005 study determined that vitamin A supplementation was not reaching children in the 12- to -month old cohort. In response, the government established child health weeks to increase coverage.

Similarly, in 2011, the EDL Committee of South Africa adopted the WHO recommendations that vitamin A supplementation should not be administered for the prevention of maternal and infant morbidity and mortality. As a result, vitamin A supplements for postpartum women was removed from the EDL. The removal was incorporated into the standard treatment guidelines for paediatric hospitals and also into the standard treatment guidelines for primary health care. South Africa (as a member country) adopted the WHO recommendation despite champions (nutritionists and other professionals) in South Africa opposing this change. Routine post-partum vitamin A supplementation was stopped in August 2012, around the same time as the completion of the SANHANES data collection.

Respondents participating in the case study interviews alluded to the notion that vitamin A supplementation may no longer be relevant in South Africa. They suggested that the reduction of child mortality may not necessarily be a consequence of vitamin A supplementation, but rather improved Prevention-of-Mother-to-Child-Transmission (PMTCT) of HIV. Respondents also suggested that the quality of South African diets has improved and that the population is consuming more foods rich in vitamin A. As such, studies are required to determine if vitamin A supplementation is still necessary.

The NFCS-FB-1 (2005) found that, despite mandatory fortification, there was limited improvement in the micronutrient status of South African women and children. In 2010, GAIN, through the DoH, funded a national study to monitor fortification compliance of maize meal and bread flour.

Three laboratories were selected to conduct the analyses. These laboratories include the SABS, SAGL and the DoH laboratories. However, the study found large measures of uncertainty between the laboratory results. Generally, data indicated that, although the level of compliance was low, there also seemed to be a notable dosage problem. Certain products from the same batch had wide ranges of micronutrients, indicating that homogeneity of the products could be a problem.

Because of the limitations surrounding capacity for routine monitoring, an auditing programme was initiated in 2014. The SABS developed an auditing template. Each miller is responsible for auditing the dosage of multi-mix added to each batch of maize meal or bread flour produced. These reports will need to be submitted to the DoH on a regular basis.

Due to the findings of the 2013 SANHANES survey and the volumes of all-purpose flour, government mandated the fortification of cake flour in March 2016 to improve the general population's intake of the fortificant.

16.5.2. Changing material conditions

This is not really a concern for South Africa. Resources are found when needed to address critical policy choices. Additional funding is required for various elements related to monitoring and evaluation, including repeated nutrition surveys to monitor policy impact.

16.5.3. Institutional shifts

Institutional shifts influenced policy change in only one case. The DoH – with support from the MRC and UNICEF – is responsible for the oversight of salt iodisation. The DoH had two laboratories that could analyse the iodine in iodised salt, but the MRC iodine laboratory played the biggest role in producing scientific data on urinary and salt iodine concentrations in a host of specific research studies. Changing conditions due to institutional restructuring resulted in the MRC closing its iodine laboratory in 2013, consequently, reducing the amount of rigorous data on iodine deficiency in South Africa.

17. Conclusions and reflections

Policy change in terms of nutrition in South Africa is strongly determined by the elements in the first part of the Kaleidoscope Model. Due to South Africa's specific political context over the past three decades, policy change in the country was strongly influenced by a confluence of powerful events and advocates that gave voice, action and impetus to the translation of the ANC's political manifesto. This manifesto was strongly influenced by prevailing human rights discourse and international commitments championed by President Mandela and supported by international agencies (particularly UNICEF) that are active in advocating human rights. These events and advocates served to highlight recognised and relevant public health problems and are supported by a tradition of sound evidence generated in the identification, quantification and assessment of the impact of previous efforts to resolve the problem. While recognition and evidence of the levels and severity of most of the nutrition policies investigated in this study existed before 1994, political imperatives and inclusive democracy provided the opportunity for the adoption of population-wide public interventions after 1994. Propitious timing played a very significant role in the agenda setting, design, adoption and implementation of the policies under investigation in this study.

Policy making, review and reform in South Africa is structured, inclusive and consultative. The Constitution is the guiding framework and informs the values, beliefs and ideas of various nutrition policies. In particular, the country's international commitments and the strong influence of President Mandela puts children's unconditional rights, including those relating to nutrition, at the heart of the nutrition policy agenda and motivates the roll-out of universal nutrition programmes in the DoH and more targeted complementary approaches across other sectors of government.

In many cases, the country leads in terms of nutrition-related policy change, addressing NCD policy drafting and the reduction of salt.

Intervention design has been strongly influenced by evidence-based commissions of enquiry, national surveys and careful research. While cost-benefit considerations are part of the policy change process and have, for example, informed the choice of a vehicle for fortification, only policy options that

government deems fundable (through public or mandatory public partnership and compliance) are considered in policy discussions. This element essentially forms a strong part of agenda setting in many of the micronutrient policy processes. Similarly, budgetary constraints and institutional capacity rarely constrain micronutrient policy in South Africa. However, institutional capacity is a key constraint to the implementation of policy decisions, as well as the monitoring and evaluation of implementation.

Apart from specific commercial interests in the fortification debate on specific vehicles (sugar as opposed to maize and wheat), the specific form of a nutrient (such as iron or folate) in the fortificant mix and refusal to implement vitamin A supplementation in the Western Cape, not many examples of opposing forces were found in this case study. Generally, the private and public sector work together to find workable solutions to public health issues and cooperate in the design, consultation and implementation of the solutions.

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19. Annexure A: Key informant interview guides

Interview guide: Policy institutions

Who makes the key micronutrient policy decisions? Is it Parliament, Cabinet or the Minister of Health?

Who is responsible for the implementation, as well as the monitoring and assessment of micronutrient policies?

- Iodine
- Vitamin A deficiency
- Iron
- Multi-mix fortification of maize flour
- Others (calcium, B-vitamins)

Who finances South Africa's major micronutrient interventions?

What venues exist for engaging stakeholder comment, suggestions and preferences?

What policy frameworks exist to legislate accountability?

How did they get onto the policy agenda when they did?

- Iodine
- Vitamin A deficiency
- Iron
- Multi-mix fortification of maize flour
- Others (calcium, B-vitamins)

Interview guide for specific micronutrient interventions (vitamin A deficiency, iron, iodine, mixed)

1. Agenda setting

How did this micronutrient policy (iodine, vitamin A, iron, vitamin mix) get onto the agenda when it did?

K1.1. Were there any advocates?

K1.2. Were there any focusing events?

Who championed this cause?

- Domestic advocates
- International advocates

Who opposed it?

K1.3. Why was this considered a priority issue (relevant problem)?

2. Design

Who designed the policy intervention?

What design options were considered?

Why did designers choose: a) supplementation; b) fortification (of what?);

c) biofortification?

What is the annual cost?

Who finances the cost?

K2.3. How cost-effective are the various alternatives?

K2.1. Was this a pressing or a chosen problem?

K2.2. What ideas and beliefs underlie the chosen design?

3. Decision making

Who made the final decision?

Who lobbied in favour?

Who opposed it?

K3.1. What factors led to a favourable decision? Was it propitious timing?

K3.2. What veto players exist?

4. Implementation

Who implements?

What regulatory and legislative changes took place to implement the policy decision?

What institutional oversight is there?

K4.1. Institutional capacity of implementing institution

K4.2. Commitment of policy makers

K4.3. Budget resources: What is the cost? Who pays? Are the resources sustainable?

5. Evaluation and reform

Who monitors the impact of this policy (iodine, vitamin A, iron, vitamin mix)?

Any other relevant research bearing on this policy?

K5.1. Did changing conditions lead to policy change?

K5.2. Changing beliefs? Did understanding or awareness change?

K5.3. Did resource constraints trigger reform?

20. Annexure B: ANC National Conference Resolutions

Resolution of the 49th ANC National Conference

The 1994 Resolutions of the 49th ANC National Conference confirmed that the Health Plan (on a National Health Insurance Scheme) should be reaffirmed. Subsequently, the Integrated Nutrition Strategy and Integrated Nutrition Programme was developed in 1995. In 1997, the 50th National Conference Resolutions supported the Municipal Infrastructure Programme (MIP) to deliver six main type of infrastructure, including community health facilities to rural and urban areas. It also proposed the intensification of clinic and school building programmes. It noted improvements in the nutritional status of children in particular due to health care delivery. Enhancing household food security remained a priority. It stated that policies should thus shift from food self-sufficiency to an emphasis on household food security in accordance with the ANC's commitment to the elimination of hunger and malnutrition.

Resolution of the 51st ANC National Conference

The 2002 Resolutions of the 51st ANC National Conference identified a particular need to ensure food security, including dealing with the impact of food crises on the poor. A critical intervention, the School Nutrition Programme, was named. It stated that government should expand the reach of existing programmes, such as the Child Support Grant and the School Nutrition Programme, to more children by raising the age of eligibility for the Child Support Grant and expanding the School Nutrition Programme to children beyond Grade R and in public secondary schools where possible. Schools and school governing bodies should further encourage the establishment of food gardens. A resolution to strengthen and develop programmes for child nutrition, food security and the improvement of nourishment was made. During the 2007 Polokwane Resolutions, education and health were named as the two areas that must be prioritised as the core elements of social transformation. This included specific reference to the School Nutrition Programme to include high school learners in poorer communities and that government should intervene in the high cost of health provision.

Resolution of the 53rd ANC National Conference

The 2012 Manguang Resolutions of the 53rd National Conference state that services should be better integrated, including nutritional support to expectant mothers and children up to their fifth birthday, followed by a process to develop an integrated and comprehensive food security and nutrition policy and action plan for South Africa, which is currently in progress.

21. Annexure C: Stakeholder inventories

Vitamin A supplementation

Institution	Category	Role	Resources	Influence	Policy stance
DoH	Government	Procures vitamin A supplementation and distributes to provinces		Large	Advocate
Provincial government	Government	Collated provincial vitamin A supplementation data and reports to national government		Large	Implement
District municipality	Government	Collates vitamin A supplementation coverage data and submits to provincial government		Large	Implement
Municipal clinics	Government	Distributes vitamin A supplementation Documents coverage		Modest	Implement
Community health workers	Government	Distribution of vitamin A supplementation	Limited	Limited	Implement
Medical Control Council	Government	Regulates the distribution of vitamin A supplementation Approves regulations for vitamin A supplementation		Large	Regulatory
Medical Research Council	Government	Provides evidence for policy evaluation		Modest	
USAID	Donor	Provides funding	Large	Modest	Advocate

Iron supplementation

Institution	Category	Role	Resources	Influence	Policy stance
DoH	Government	Procures vitamin A supplementation and distributes to the provinces		Large	Advocate
Provincial government	Government	Collates provincial vitamin A supplementation data and reports to national government		Large	Implement
District municipality	Government	Collates vitamin A supplementation coverage data and submits to provincial government		Large	Implement
Municipal clinics	Government	Distributes vitamin A supplementation Documents coverage		Modest	Implement

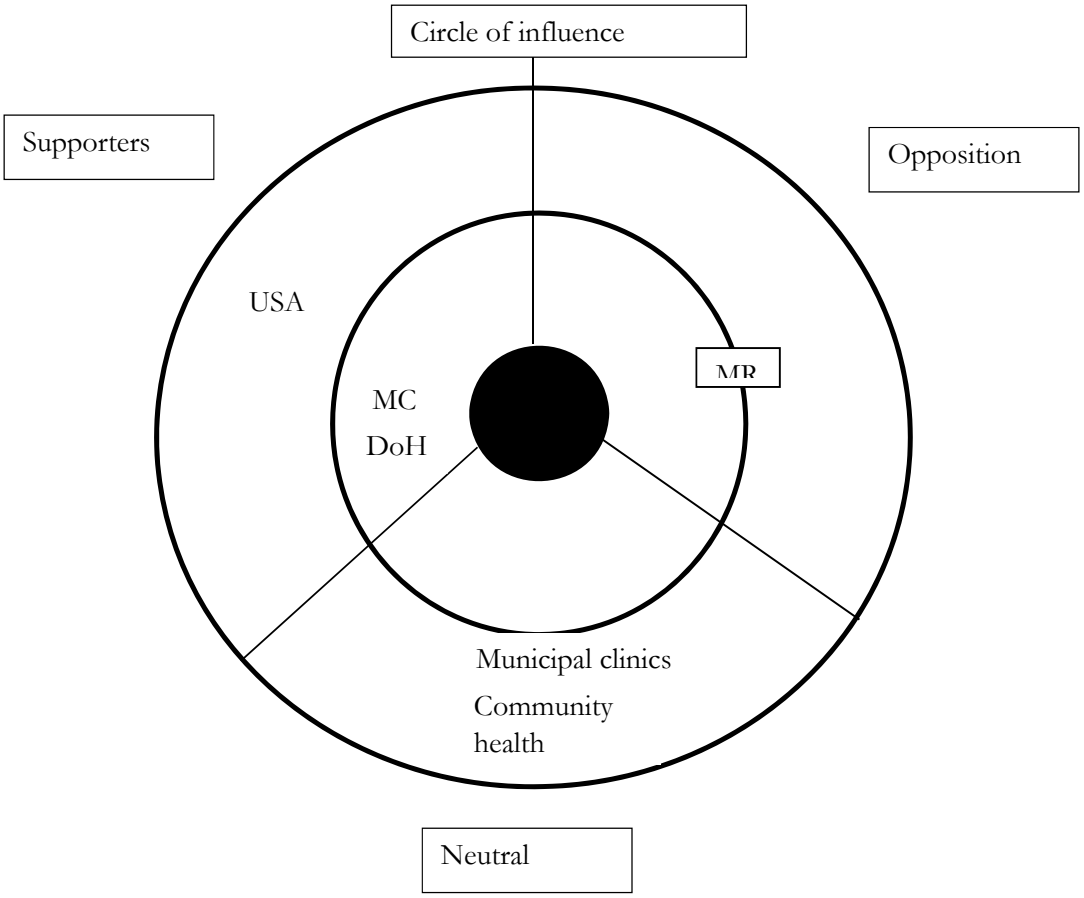
Micronutrient fortification

Institution	Category	Role	Resources	Influence	Policy stance
Parliament	Government	Approves legislation		Large	
DoH	Government	Consults with industry on fortification Conducts compliance monitoring		Large	Decision makers
The DTI	Government	Provides funding	Large	Limited	Neutral
Industry[13]	Private	Involved in consultation with policy makers		Varied	
UNICEF	Donor	Executing agency of funding	Large	Modest	Advocates
GAIN	Donors	Provides funding	Large	Modest	Advocates and provide funding
SAGL		Provides research guidance for compliance monitoring	Mostly donor supplied	Modest	Neutral
SABS	Statutory body	Monitors compliance with national standards			Neutral
Academia	Private	Provides evidence	Limited to funding	Modest	Neutral
NFA	Multi-stakeholder			Modest	

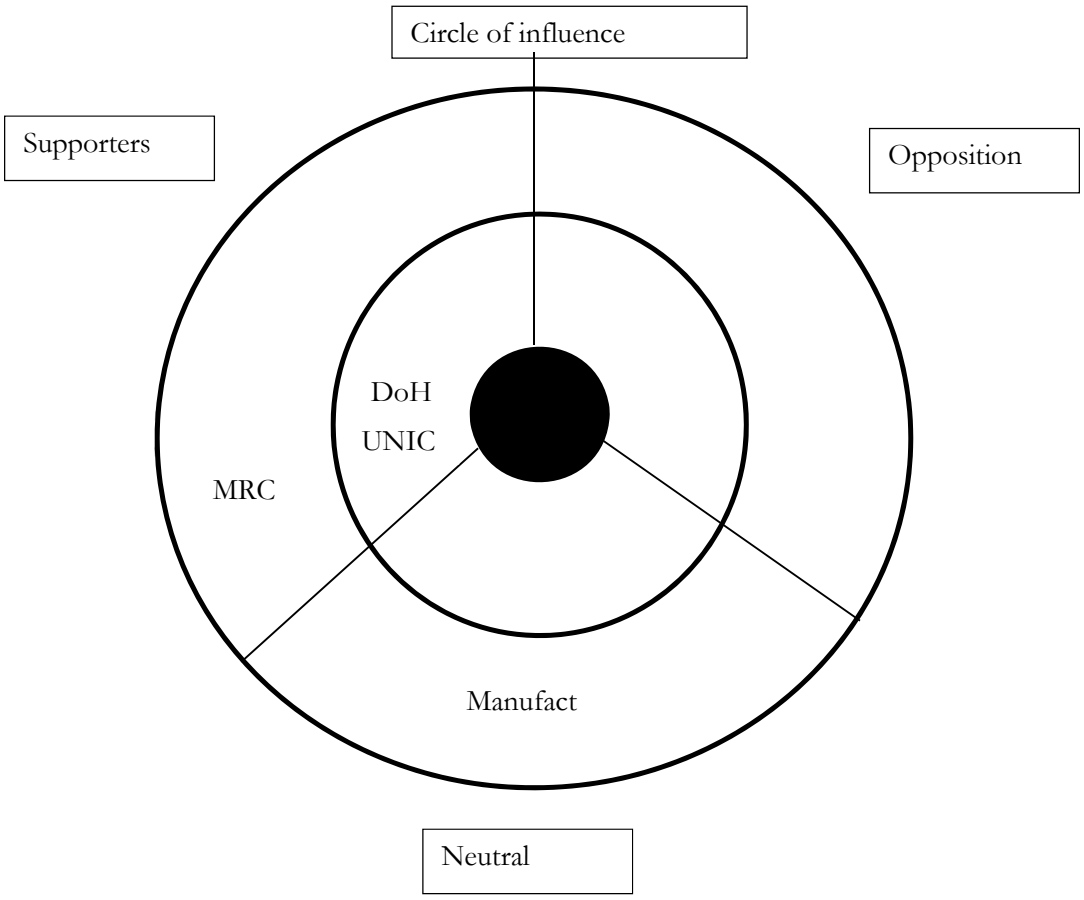
[13] These include millers and bakers.

22. Annexure D: Circle of influence

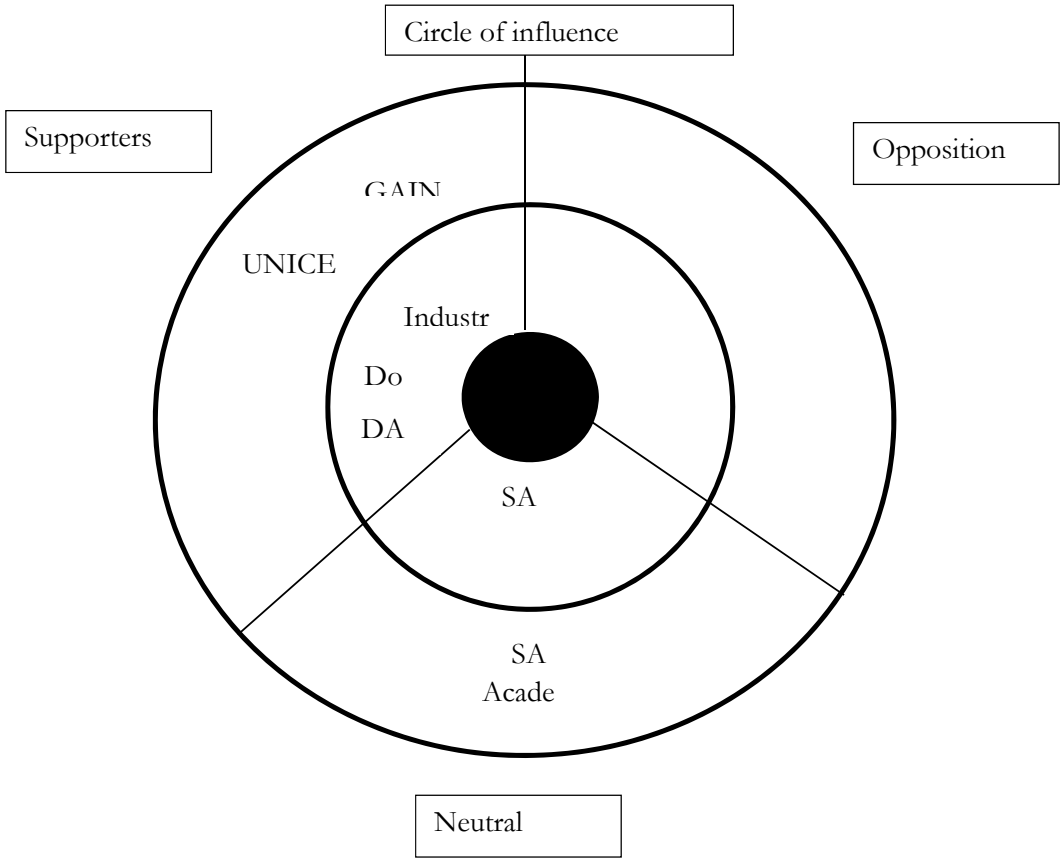
Vitamin A supplementation



Salt iodisation



Micronutrient fortification



23. Annexure E: Kaleidoscope tests

Vitamin A

Key determinant	Agenda setting			Design			Adoption			Implementation			Evaluation and reform		
Dates	1997	2001	2005	1997	2001	2005	1997	2001	2005	1997	2001	2005	1997	2001	2005
Focusing events	*	*													
Powerful advocacy coalitions	*	*	*												
Relevant policy problem	*	*													
Knowledge and information				*											
Norms, biases, ideologies and beliefs															
Cost-benefit calculations and risks					*										
Relative power of proponents as opposed to opponents							*								
Government veto players							*								
Propitious timing	*			*			*								

Vitamin A

Key determinant	Agenda setting			Design			Adoption			Implementation			Evaluation and reform		
Dates	1997	2001	2005	1997	2001	2005	1997	2001	2005	1997	2001	2005	1997	2001	2005
Requisite budgetary allocations												*			
Institutional capacity															
Implementation veto players															
Commitment of policy champions															
Changing information and beliefs														*	*
Changing material conditions															
Institutional shifts															

Salt iodisation

Key determinant	Agenda setting			Design			Adoption			Implementation			Evaluation and reform		
Dates	1954	1995	2005	1954	1995	2005	1954	1995	2005	1954	1995	2005	1954	1995	2005
Focusing events		*													
Powerful advocacy coalitions	*	*	*												
Relevant policy problem	*	*	*												
Knowledge and information					*	*									
Norms, biases, ideologies and beliefs															
Cost-benefit calculations and risks															
Relative power of proponents as opposed to opponents															
Government veto players															
Propitious timing		*			*			*							
Requisite budgetary allocations															
Institutional capacity															

Salt iodisation

Key determinant	Agenda setting			Design			Adoption			Implementation			Evaluation and reform		
Dates	1954	1995	2005	1954	1995	2005	1954	1995	2005	1954	1995	2005	1954	1995	2005
Implementation veto players															
Commitment of policy champions															
Changing information and beliefs															*
Changing material conditions															
Institutional shifts															*

Micronutrient fortification

Key determinant	Agenda setting			Design			Adoption			Implementation			Evaluation and reform		
Dates	1994	2003	2010	1994	2003	2010	1994	2003	2010	1994	2003	2010	1994	2003	2010
Focusing events	*	*	*												
Powerful advocacy coalitions	*	****	**												
Relevant policy problem	*	****	*												
Knowledge and information				*	*										
Norms, biases, ideologies and beliefs		**		*	**										
Cost-benefit calculations and risks				*	*	*									

Salt iodisation

Key determinant	Agenda setting			Design			Adoption			Implementation			Evaluation and reform		
Dates	1954	1995	2005	1954	1995	2005	1954	1995	2005	1954	1995	2005	1954	1995	2005
Relative power of proponents as opposed to opponents						*		***							
Government veto players								**							
Propitious timing	*			*			*	**							
Requisite budgetary allocations											*				
Institutional capacity											*				
Implementation veto players															
Commitment of policy champions															
Changing information and beliefs															*
Changing material conditions								*			*				**
Institutional shifts															

Legend

Multi-mix *

Vitamin A *

Iron *

Salt iodisation

Key determinant	Agenda setting			Design			Adoption			Implementation			Evaluation and reform		
Dates	1954	1995	2005	1954	1995	2005	1954	1995	2005	1954	1995	2005	1954	1995	2005
														Folic acid	*
														B vitamins	*
														Calcium	*

Sodium reduction					
Key determinant	Agenda setting	Design	Adoption	Implementation	Evaluation and reform
Focusing event	*				
Powerful advocates	*				
Relevant policy problem	*				
Knowledge and information		*			
Norms, biases, ideology and beliefs					
Cost-benefit calculations and risk					
Relative power of opponents as opposed to proponents			*		
Government veto players					
Propitious timing					
Requisite budgetary allocations					
Institutional capacity					
Implementation veto players					
Commitment of policy champions				*	
Changing info and beliefs					
Changing material conditions					
Institutional shifts					