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Food policy and nutrition economics in the SDG era

Sheryl L. Hendriks

Department of Agriculture Economics, Extension and Rural Development, University of Pretoria, Private Bag X20, Hatfield, Pretoria, 0028, South Africa

ABSTRACT

Despite significant global interest in food policy since the 1974 food price crisis, the Sustainable Development Goals (SDGs) are the first set of international development commitments in which the narrow focus of hunger and poverty explicitly include nutrition (SDG2) – beyond only health indicators related to maternal and child health indicators. This recent (re)appreciation of the role of nutrition as a fundamental element of development policy and a driver of economic growth generates the need for new analytical tools to determine the potential nutritional gains of development programmes and policies as well as the costs of not acting on nutrition imperatives in multisectoral public policy initiatives. This shifts the focus of policy analysis towards multidisciplinary and transdisciplinary domains, creating a need for training and research that spans multiple disciplines in which most graduates and professionals do not yet have the training and tools to conduct appropriate analyses. Capacity is essential to address critical skills shortages and high demand and professional development to keep pace with change. This paper identifies what the implications of recent development imply for agricultural economics training institutions, research and the profession in general and in particular in South Africa.

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1. Introduction: the rapidly changing policy context

For analysts and academics alike, the world of development policy changes quickly. Decision makers are faced with increasing complexity and a growing list of elements that have to be taken into account in policy reform and design. It is tempting to reduce these elements to a simple list of tick boxes to show that women, youth, climate change, resilience have been mentioned along with issues related to sustainability and environmental concerns. Ensuring that the growing list of global concerns is addressed in an integrative manner is challenging for both policymakers and analyst.

Despite the well-grounded and long-stranding knowledge that nutrition is essential for development, and notwithstanding its centrality to many development approaches over the decades, it is not until recently that it has been taken seriously. Why? Is it because its importance has been stressed through graphic and miserable images of famine that we have become immune to? Is it because the urgency has never been presented as a business case? Perhaps food policy theory logic is upside down? The benefits of improved nutrition facilitate human development, increase incomes for households that in turn raise demand for food and non-food resources, enrich livelihoods and lead to increased employment opportunities across the food system. Yet food policy theory states this the opposite way around.

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CONTACT Sheryl L. Hendriks sheryl.hendriks@up.ac.za Department of Agriculture Economics, Extension and Rural Development, University of Pretoria, Private Bag X20, Hatfield, Pretoria, 0028, South Africa

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The recent and widespread (re)appreciation of the role of nutrition as a fundamental element of development policy and a driver of economic growth is also not new in development discourse and focus. History demonstrates that even when the importance of food security and nutrition in development is appreciated, policy actions do not necessarily lead to significant reductions in widespread hunger and malnutrition. Only near the close of the Millennium Development Goal (MDG) era and in the negotiation of the Sustainable Development Goals (SDGs) was the MDG's narrow focus of reducing extreme hunger and poverty (MDG1) broadened to include food security and nutrition (SDG2). SDG2 seeks to end hunger, achieve food security and improved nutrition and promote sustainable agriculture (United Nations, 2015).

Perhaps the separate trajectories of development policy and the lack of a cadre of professions able to think not only in the box (discipline), outside of the box (beyond their discipline) but without a box (not constrained by discipline boundaries) has deprived millions in developing countries the realisation of the inalienable right to be free from hunger and malnutrition. This paper seeks to explore the current complexities facing policy-making and analysis about the SDGs and identifies the implications of recent developments for Agricultural Economics training institutions, research and the profession in general and in particular in South Africa.

2. Food policy's conceptual development journey

Throughout history, food policy has tried to balance production and consumption issues. The first documented reference to global food policy arose in the 1930s food crisis (Cépède, 1984). Economists convened in London by the League of Nations in 1933 concluded that agricultural overproduction, particularly of food, was the primary cause of the crisis (Cépède, 1984). A significant proportion of the world's population did not have access to enough food to remain healthy and productive and for children to grow and develop (Cépède, 1984). In response, a group of nutritionists, union delegates and farmers at Geneva lobbied at the General Assembly of the League of Nations in September 1935 that the two perspectives on the world food problem (oversupply and hunger) needed to be brought together. It took a further food crisis in the 1970s to get the issue of hunger on the table. The crisis led to the 1974 World Food Conference where the Universal Declaration on the Eradication of Hunger and Malnutrition was proclaimed, stating that every man, woman, and child has the inalienable right to be free from hunger and malnutrition.

The 1973/4 crisis led to the emergence of food policy as an area of study and the focus of development efforts, supported by the establishment of multiple inter-governmental structures, the Food Policy Research Institute and the journal *Food Policy*. The early volumes of *Food Policy* provide a rich documentation of the thinking of the time and the design and approach of food policy. The reasoning of the time is also captured in the Food Policy Analysis text of Timmer *et al.* (1983). This has been the core text for training analysts for over 40 years.

A reading of these early papers and texts demonstrates the ability of a cadre of thinkers who embraced the complexities of the global food problem and the challenges of development in the post-independence phase in Africa. The policy architects of the time were acutely aware of the magnitude of the diverse challenges of hunger and malnutrition in what was termed "the third world". For example, Josling (1975) in a paper in the first issue of *Food Policy*, observes that a large proportion of the world's population is born into poverty. While acknowledging that not all the poor are undernourished, malnutrition and hunger are concentrated among such communities. However, Josling (1975) noted that: "... the poor are, almost by definition, outside the mainstream of economic activity. This fact alone presents a major difficulty in finding solutions". It was recognised that a simple production response would not solve this problem as there is no practical way of ensuring that those who need the food would have access to it. Only a comprehensive and integrated strategy could deal successfully with the complex factors involved in the causation of malnutrition and hunger (Escobar, 1988). Therefore, food and nutrition policy had to be an integral part of national development (Escobar, 1988).

Despite the carefully articulated understanding of the complexities of the interconnectedness of agriculture and nutrition in food policy, when it came to getting down to business the professional constructs of policymakers, analysts and practitioners alike confined their long-term attention and actions to their familiar domains. This has led to three usually disparate areas of policy development and practice: agriculture, nutrition and sustainable development. It is only in the SDGs that these three areas, at last, come together. To explain, let me turn to a brief historical overview of the trajectory of these three domains.

2.1 The foundational theory of food policy

Food policy has traditionally centred around three main issues: (i) increasing agricultural investment and production; (ii) the problem of food security, and (iii) agricultural trade (Josling, 1975). Food policy encompasses the collective efforts of governments to influence the decision-making environment of food producers, food consumers and food marketing agents to further social objectives (Timmer *et al.*, 1983). These objectives nearly always include improved nutrition and rapid growth in domestic food production leading to income-earning opportunities and security against famines and other food shortages (Timmer *et al.*, 1983). Food policy analysis is, therefore, the process of research and thinking designed to discover the complementarities and trade-offs among food policy objectives and to identify policy options, strategies and programmes that can stimulate rapid economic growth, poverty alleviation, and stability (Timmer *et al.*, 1983; Timmer, 2000).

As Timmer *et al.* (1983) explained, the issue of hunger is enmeshed in the set of processes that produce (and consume) agricultural commodities on farms, transform these commodities into food in the marketing sector, and sell the food to consumers to satisfy nutritional as well as aesthetic and social needs. These processes make up the food system. This system frequently leaves many poor people inadequately fed because of a network of connections that determine their employment and income status; the prices they pay for food and other goods and services and their ability to migrate in search of better opportunities. However, the same food system offers vehicles for the policy interventions that reach poor people with sustainable improvements in their access to food.

Timmer (2010, 2013) explains that at its drafting stage, there was not even an agreement in the development profession that such a goal was feasible. Notwithstanding this, Timmer (2010) explains that the central organising theme of food policy analysis post the 1974/5 food crisis was the “food price dilemma”. The food policy analysis text, therefore, sought to reiterate the centrality of food prices – and the signals they sent to farmers, traders, consumers and finance ministers.

Can we leave it to these signals and the system to change the lot of the poor? As stated by Olivier De Schutter (2011), UN Special Rapporteur on the Right to Food, too much attention has been paid to addressing the mismatch between supply and demand on the international markets:

as if global hunger were the result of physical scarcity at the aggregate level – while comparatively too little attention has been paid both to the imbalances of power in the food systems and to the failure to support the ability of small-scale farmers to feed themselves, their families, and their communities.

2.2 The centrality of nutrition in food policy

The recognition of nutrition as a fundamental element of development and malnutrition as a public health problem is not new. It was recognised in the post-1975 period that eliminating hunger was more likely through “coordinated effort involving many sectors and a complicated array of policies with partially conflicting objectives and effects” (Timmer *et al.*, 1983, 61). Food policy analysis, therefore, sought to identify these relationships and find ways to reduce the conflicts and enhance nutrition (Timmer *et al.*, 1983, 61). Despite this awareness, attention has waxed and waned in development discourses over the decades of development (from the 1960s).

During the 1960s and 1970s it was widely acclaimed that lowering the prices of food staples, the most inexpensive sources of energy in the diet, would alleviate malnutrition (Pinstrup-Andersen, 2000). The 1974 World Food Conference was a turning point for development as hunger was no longer viewed merely as a food supply problem solved by agricultural production or a health problem solely within the biomedical domain. However, this was somewhat forgotten in the early days of food policy work.

A major stumbling block at the time was that ready solutions were not available. As Berg and Austin (1984) report, when Arturo Tanco, President of the World Food Council and Minister of Agriculture of the Philippines, asked for a set of nutrition guidelines for the agriculture ministers of the world in the mid-1970s, the response from the international nutrition community was meagre and mostly unfeasible. Similarly, in 1977 a group of senior planners who met at the University of California at Berkeley discovered that academia had fewer practical answers than they had expected (Berg and Austin, 1984).

Berg and Austin (1984) have reported that none of the technological fixes (such as single-cell protein, fish protein concentrate, synthetic amino acid fortification and oilseed protein isolates) that proliferated around the time of the World Food Summit did much to reduce malnutrition. This facilitated a willingness to entertain a much broader approach to nutrition than would traditionally have been accepted. The appetite for innovation came from four fundamental propositions:

- (i) Mass alleviation of protein-calorie deficiencies would not be achieved through medical treatment and health systems.
- (ii) Although malnutrition was redefined as a food problem, the main issue was access to food rather than the total supply of food – a shift that focussed on poverty, income distribution and employment.
- (iii) Although malnutrition was strongly related to poverty, some nutritional improvements were possible without increases in incomes as dietary diversity could improve without calorie intake *per se*.
- (iv) As malnutrition was seen as both a consequence of and contributor to underdevelopment, finding solutions required that disciplines beyond nutrition (primarily economic and managerial disciplines) work together to find policy solutions (Berg and Austin, 1984).

The implementation modality was integrated nutrition planning. The “multi-sectoral” nutritional planning approach (the International Nutrition Planning Program or FNPP), was conceived in a 1972 paper (Escobar, 1988). This strategy of integrated rural development focused on small farmers and adopted a variety of applied health, nutrition, and food programs (primary health care, nutrition education, food stamps, food gardens, etc.) (Pines 1982; Berg and Austin, 1984; Escobar, 1988). The drafting of national nutrition plans and the establishment of inter-ministerial councils was encouraged.

Amidst political and administrative obstacles to applying the methodology, FNPP was phased out after 1982, having failed to fulfil its promise. Harriss (1987) claims that its failure was partly attributed to thinking that international agricultural research could design technical solutions to social problems. Like Integrated Rural Development, nutrition planning was mostly oblivious to the implementation problems related to pluralistic programmes (Berg and Austin, 1984; Maxwell, 1998). Nutrition suffered from an identity crisis, delegated to economic planners and scientists who possessed little political influence or operational authority (Field, 1987). Nutrition planning did not address how changes in broader national policies could be incorporated into nutrition plans or how nutritional considerations could be included in the plans of other sectors (or even the extent to which nutrition policy objectives are compatible with policy goals in the other sectors).

Slowly, the emphasis shifted to protein-energy malnutrition (Underwood, 2000) and then to the income strategies in the 1980s (Kennedy and Haddad, 1992). As a result of much new research in the 1980s and 1990s and a sequence of conferences (the 1990 World Summit for Children, the

1991 Policy Conference on Hidden Hunger and the first International Conference on Nutrition in 1992), that continued to expose the plight of under nutrition, malnutrition became more widely accepted as a public health concern that required government action (Underwood, 2000). Deficiencies of vitamins and minerals were added to the list of scourges frequently associated with protein-energy malnutrition (Underwood, 2000). Attention turned to questions of whether merely producing more low-cost, energy-dense foods widely consumed by the poor (such as maize, rice, wheat or cassava), could solve the problem of malnutrition, or greater emphasis should be placed on crops such as legumes and livestock that provide higher protein content per unit (Underwood, 2000).

The food policy experiments of the 1970s and 80s rendered some surprises that challenged the foundations of food policy theory. First, although food supply was significantly improved and millions were saved from starvation in India, the Green Revolution did not bring about significant improvements in nutrition. Kennedy and Haddad (1992) explain that some of the explanations for this lie in the misconception that eliminating hunger will solve the malnutrition problem. Second, the underlying assumption was that by increasing producer prices (which in many countries had been kept artificially low) farmers' incomes would improve and at the same time domestic food production would increase (Kennedy and Haddad, 1992). However, supply did not always elicit a perfect response as farmers were often constrained either by limited land (as in many parts of Asia) and/or scarce labour (as in many parts of Africa) (Kennedy and Haddad, 1992). It, therefore, came as a surprise to some that higher production prices made some farmers more food insecure; primarily because they were net purchasers of food and increases in food prices outweighed the profit from increased producer prices.

Third, researchers have also found that increases in caloric consumption were lower than expected. Often dietary diversity increased more than calories *per se*. Earlier research may have underestimated the increases in revenue needed to fill the energy gap. Likewise, the control, source and flow of income are important in influencing household food security, especially for women (Kennedy and Haddad, 1992).

A fourth unexpected consequence seldom mentioned in food policy discussions is pointed out by Gómez *et al.* (2013). From the 1970s to the mid-1990s the price of staple foods in much of Asia decreased relative to the cost of micronutrient-rich foods (e.g., vegetables and pulses). Gómez *et al.* (2013) attribute this to greater productivity gains in staple foods and the resulting reallocation of land towards those crops. As a result, micronutrient-rich foods became relatively (and in some cases, absolutely) less affordable, particularly to the poor (Kennedy and Bouis, 1993; Bouis, 2000; Kataki, 2002).

Many of these observations are explained through Delgado *et al.*'s (1998) study of agricultural growth multipliers. An analysis of expenditure data in Burkina Faso, Niger, Senegal and Zimbabwe showed that rising rural incomes were likely to put considerable upward pressure on the relative prices of many farm goods, mainly local food items, some non-farm goods, and services. Many of these items were tradable and did not have a highly elastic supply of imports to alleviate these pressures.

Fifth, substitution led to more calorie-rich, but less diverse and micronutrient-rich diets. As people move from manual agricultural labour to less vigorous non-farm activities, their energy expenditure falls. Unless intakes are adjusted, at some point energy intake begins to contribute to excess calorie intake manifest in overweight and obesity (Gómez *et al.*, 2013). The rising rates of overweight and obesity, even in developing countries and rural areas bear witness to this shift.

3. From production, consumption and trade to nutrition-sensitive food systems and sustainability

Midway through the MDG period, the centrality of nutrition in development was stressed through the 2006 World Bank's *Report Repositioning Nutrition as Central to Development: A Strategy for*

Large-Scale Action. However, it was the 2007/8 global food price crisis that grabbed real attention for nutrition. Following the global food price crisis of 2007/8, food security debates shifted focus to the significant levels of vulnerability, volatility and uncertainty arising from a confluence of complex and interconnected globalisation and geopolitics (related to climate change, conflict, competition for land, energy, urbanisation and water). All have relevance for food policy and challenge the scope and capabilities of food policy analysts to embrace new challenges in an already complicated matrix of policy concerns. They also challenge the ability of food policy experts to propose solutions that build sustainability and resilience in the long-run while solving critical problems in the moment.

Several knowledge platforms and events have supported the clarification of the problem and the potential solutions. Some of these included the first Nutrition for Growth Summit in 2013 where a partnership to accelerate progress towards achieving the 2025 World Health Assembly targets for nutrition were established (WHO, 2014). The 2014 Second International Conference on Nutrition Rome Declaration on Nutrition (FAO and WHO, 2014) redefined the definition of malnutrition, referring to “malnutrition in all its forms – underweight, micronutrient deficiencies as well as overweight and obesity”. The Scaling Up Nutrition (SUN) movement reiterates the global commitment to nutrition, supporting national plans of action to combat malnutrition in early childhood.

The Committee on World Food Security come to realise that 40 years of political deliberation had not yet solved hunger and the Committee established the High Level Panel of Experts on Food Security and Nutrition (HLPE) to a better shared understanding of both problems and potential solutions given the multidisciplinary complexity of food security (Gitz and Mybeck, 2013). Recent interest in food systems emerged from one of the HLPE’s 2014 reports (HLPE, 2014). This concept revisits Timmer *et al.*’s (1983) assertion that the food system “frequently leaves many poor people inadequately fed through its network of connections that determine their employment and income status, the prices they pay for food and other goods and services and their ability to migrate in search of better opportunities”.

Poverty has been declining in Africa, per capita income rising and the continent has experienced robust economic growth over the past 20 years (Bahiigwa *et al.* 2016). While remarkable progress has been made during the last two decades in reducing extreme hunger in Africa (Malabo Montpellier (MaMo) Panel 2017), population growth, demographic changes, and urbanisation continue to place pressure on food systems to increase yields and make more food available, while at the same time making more diverse, affordable and nutritious foods available to address all forms of malnutrition (MaMo Panel 2017).

The over-reliance of many African countries on imports to meet the local demand for staple foods, in particular, makes these economies vulnerable to many risks, insecurities and uncertainties (NASAC, 2018). While importing staple food is not harmful per se, disproportional reliance on external sources for food is a risk that threatens long-term resilience. Increasingly, even rural households in Africa rely on purchased staple foods. Urbanisation will also influence dietary patterns and may well lead to nutrition transitions in African cities (Jayne and Ameyaw 2016).

Despite the changing landscape of nutrition, most food and nutrition policies in Africa still focus on under nutrition. Rising awareness of growing rates of overweight and obesity – not only in developed but also in developing countries – has now given rise to an interest in understanding the “nutrition transition”. A nutrition transition happens when the food environment no longer supports healthy eating and consumer’s food choices are limited to high energy, high-fat food alternatives with severe negative consequences for nutrition and health. Rapid food system transformation can induce a nutrition transition that will see consumption preferences shifting to include more aspirational than affordable, sugar-laden soft drinks, mass-produced confectionary and fast foods. Future food policy will also have to be cognoscente of the need for sustainable production, sustainable consumption and nutrition-sensitive systems.

The current context complicates the foundations of food policy as initially proposed (see Timmer *et al.*, 1983). Could the latest development paradigm, the Sustainable Development Goals provide some of the solutions for development planners?

4. SDGs – the bridge between food policy, nutrition and sustainable development

Parallel to the development of food policy, the theoretical framework for sustainable development evolved between 1972 and 1992 through a series of international conferences and initiatives (Drexhage and Murphy, 2010). The first major international gathering to discuss sustainability at the global scale was the UN Conference on the Human Environment, held in Stockholm in 1972. In 1983, the UN convened the World Commission on Environment and Development (WCED), chaired by Norwegian Prime Minister Gro Harlem Brundtland. This group produced the landmark publication *Our Common Future* (or the Brundtland report) that defined sustainable development as “development that meets the needs of current generations without compromising the ability of future generations to meet their own needs” (WCED, 1987, 45).

The Brundtland report provided the foundation for the 1992 United Nations Conference on Environment and Development (Earth Summit) in Rio de Janeiro, Brazil that laid the foundations for the global institutionalisation of sustainable development (Drexhage and Murphy, 2010). The Earth Summit adopted the Rio Declaration on Environment and Development and Agenda 21, a global plan of action for sustainable development, followed by the 1997 Earth Summit + 5 in New York. The 2002 World Summit on Sustainable Development in Johannesburg led to a significant shift in the perception of sustainable development—away from environmental issues toward social and economic development. This shift was driven by the needs of the developing countries and was strongly influenced by the Millennium Development Goals (MDGs) (Drexhage and Murphy, 2010). At the Rio + 20 Conference, Member States launched a process to develop a set of Sustainable Development Goals (SDGs), which were to build upon the MDGs and chart the way for a post-MDG development focus. In September 2015, the United Nations General Assembly adopted the universal, integrated and transformative 2030 Agenda for Sustainable Development, along with a set of 17 Sustainable Development Goals and 169 associated targets (UN, undated).

Unlike the MDGs that applied to developing countries, the SDGs are universal – meaning all countries have to address them and are being judged on their progress (UN, 2015, 1). It is accepted that sustainable development calls for a convergence between the three pillars of economic development, social equity and environmental protection (Drexhage and Murphy, 2010). In this context, it is fitting that the SDGs move beyond the MDG1 focus on eradicating extreme hunger and poverty, to a more appropriate commitment to “end hunger, achieve food security and improved nutrition and promote sustainable agriculture”. All 17 SDG goals include food security-related indicators and 12 contain nutrition-related goals and raises hope that progress on overall development will bring about more significant progress on SDG2-specific targets. As with the initial food policy approach (Timmer *et al.* 1983) malnutrition is seen as a lever for mobilising development efforts to deal with poverty and the basic needs of the poor, supported by substantial scientific evidence, accumulated over the previous decades that points to the significant personal and social costs of malnutrition.

During the MDG period, the proportion of undernourished people worldwide declined from 15 per cent in 2000–2002 to about 11 percent in 2014–2016 (UN, 2017). The least developed countries and landlocked developing countries have made the most progress. Nevertheless, almost one in four persons still suffer from hunger in those countries. Globally, about 793 million people were undernourished in 2014–2016, down from 930 million in 2000–2002 (UN, 2017). In sub-Saharan Africa, the hunger rate dropped by seven per cent from 2000 levels. Still, the number of undernourished sub-Saharan Africans has increased by 16 million – reaching 218 million – partly attributed to the region’s high population growth rate. Asia and Africa accounted for 63 per cent of undernourished

people globally in 2014–2016. Despite significant advances since the start of the MDG era in 2000, the 2017 SDG Report (UN, 2017) claims that at the current rate of progress, the world will not meet the zero hunger target (SDG2) by 2030.

5. How different is the situation today?

Ending hunger is still central to the global development agenda and the challenge of doing so is just as daunting as ever. In some ways, the context for food policy is entirely different to that of the 1970s and 80s. The global food balance is much more favourable than before the Green Revolution era and global trade has soared (AGRA, 2017). Governments have many more options in meeting food needs through a mix of production, import and export options than in the 1970s (AGRA, 2017).

These gains are threatened by some formidable challenges. One of these is climate change. Climate change will have far-reaching impacts on crop, livestock and fisheries production, and will change the prevalence of crop pests (Campbell *et al.*, 2016). Climate change is associated with some uncertainties relevant to food systems such as not knowing the exact shape of future climates or even the next season (Heal and Millner, 2014). What is known (based on a meta-analysis of over 1700 model simulations) is that crop yields of major staples are likely to decline by between three and 10 per cent per degree of warming (Asseng *et al.*, 2014; Campbell *et al.*, 2016). There are likely to be losses of essential nutrients such as proteins and micronutrients (Fe, Zn, Mn, Cu) with increased disease and spoilage and concentrations associated with increased CO₂ levels and more variable and warmer climates (Da Matta *et al.*, 2010; Campbell *et al.*, 2016). Livestock and fish systems are also likely to be negatively affected, affecting the supply of essential nutrient-rich foods. The increase in pests will be a significant threat to agriculture and food systems, increasing food losses at all stages of the food system. Reductions in the supply, of course, lead to increases in price, affecting affordability for consumers and declines in income for producers.

Notwithstanding the growing list of challenges that translate into an increasing number of priorities that policymakers need to attend to, the challenge of how to stimulate and sustain economic growth that reduces poverty, generates employment and fosters equality while at the same time improving nutrition for all persists. Resilience rather than efficiency alone has emerged as a major concern in policy circles (de Shutter, 2017). There is a growing movement around the development of models and skills for scenario planning and futures around food systems.

Most of these models look at aggregate supply and demand, relying on large datasets for precision. Nutrition is achieved at the individual level and the requirements for adequate nutrition are particular to the stage in the life-cycle, level of activity and sex. Aggregate data masks the realities of deprivation and neglect at the individual level. Coverage and reach of nutrition programmes may well neglect the neediest and vulnerable groups and peoples. While programmes such as the Scaling-Up Nutrition focus on the first 100 days of children (from conception to roughly two years of age), there is a rising concern for the nutrition of adolescents (future parents) and the elderly (quite often the neglected inhabitants of rural areas). As more population-wide nutrition data becomes available and technology reduced the cost and burden of collecting such data, new tools and methods of analysis could help us more clearly understand the responses and impacts of policy change on individuals and help us target specific interventions more precisely. One such area is that of nutrition economics, an emerging field of applied economics that uses existing tools to explore nutrition topics.

Population growth and agricultural system change have significant implications for food policy – regarding production, consumption and trade. Population growth in Africa is likely to continue to put pressure on food, land and water resources. The geography and demography of Africa are likely to change considerably by 2030. The so-called youth bulge will add to the pressure. Not only will the number of mouths to feed increase, but many will also migrate to urban centres in search of employment and opportunities. This will change the dynamics of rural areas, particularly concerning labour supply and the ratio of producers to consumers. With such change comes consumption preference

change, leading to demand convenience and ready prepared foods that require little or no energy for preparation. Food systems are likely to become more urban-based and consumer-driven, with a premium on quality and food safety (AGRA, 2017). It is now recognised that most of the economic growth in Africa over the MDG era has been characterised by rapid urbanisation without industrialisation (Rodrik, 2016). Nearly all non-agricultural growth in Africa has been in the services sector where workers earn low wages in low productivity jobs (AGRA, 2017). Such transitions have limited prospects for more rapid and sustained incomes needed to raise per capita incomes (AGRA, 2017).

Africa is entering a phase of agricultural transformation, with value-added and employment being created by small enterprises across and along value chains (AGRA, 2017). Large agribusiness in the form of seed and fertiliser companies, agro-processing and supermarkets have started to play an increasing role in the food system. This changes the dynamics of food policy in the 2030 Agenda. Agricultural transformation in Africa will need to reform the entire food system. This will have to include the core elements of food policy – production, consumption and trade but with the criteria of inclusion, sustainability and resilience across the entire system. But unlike the development planning of the past, the responsibility for driving such policy reform is no longer the development community but governments themselves.

Food policy governance is also different today. Whereas in the past, food policy was primarily used to indicate the whole range of policy efforts that affect food system outcomes, more recently, food policy has emphasised the need for integrative strategies that align policy efforts across sectors to achieve a common vision (Candel and Pereira, 2017). Many governments now realise that multi-sectoral action is an absolute necessity for dealing with the complexities of recent crises and cross-cutting issues threatening the economy, society and environment. Many have recognised that multi-sectoral coordination and action is necessary for food security (MaMo Panel, 2017). Many have put in place transversal development policies with food security and nutrition goals and many of these are managed through high-level centrally coordinated systems (MaMo Panel, 2017).

Timmer (2010), with hindsight, posits that several themes received little attention in *Food Policy Analysis* (Timmer *et al.*, 1983), but require extensive treatment today. Gender analysis was not prominent in the original text, reflecting the dominance of the “unitary household” model of farm and household decision-making at the time. Timmer (2010, 86) adds:

Further treatment of intra-household decision-making, especially concerning nutrient intake and schooling decisions, is now possible. A “behavioural” perspective would add power to efforts to understand the formation of expectations, attitudes toward risk, as well as the participation of farmers and households in financial markets. Neither “environment” nor “sustainable” appears in the index, much less the problems looming from climate change. All would need to be incorporated into the analysis now.

We know that despite the intent of many international conferences and pledges, development efforts fall short of delivering long-term solutions to hunger and malnutrition. Perhaps the convergence of food policy, nutrition and sustainable development in the SDGs offers some hope for development planners in overcoming the challenges of complexity? If so, what does the agricultural economics profession provide to support the delivery on the SDGs and development agendas in the SDG era?

6. What can the agricultural economics profession do to support the achievement of agenda 2030?

Delivering on Agenda 2030 and Africa’s Agenda 2063 will require a revisited form of food policy that embraces the increased complexities of climate change, urbanisation, agricultural transformation and the youth challenge amidst changes in the locus of control in planning (from external agents to governments themselves) and more inclusive forms of engagement and ownership of public policy discourse. De Shutter (2012) claims that governments and development agencies are trapped in a short-term mode of thinking. Getting out of this mode requires a food policy with a clear vision, defined timelines, alliances to drive change and the allocation of responsibilities

across sectors. This requires (i) a pathway to change designed through the consideration of (ii) policy instruments and options and (iii) the selection of those most likely to bring about the impact required to see significant change. Implementing food policy requires the human capacity for a variety of functions including advocacy, analysis, engagement, institution building, monitoring and evaluation, negotiating, partnership management, planning, policy making and training.

Ensuring that there is ample person power across academic, civil society, government and private spheres are essential for delivery on the SGD goals. However, Babu (1997) warns that having enough capacity to conduct policy analysis will not necessarily guarantee the formulation and implementation of well-designed policies. One has to ask if the current training system fashions the capacity necessary for the task?

A successful food policy analyst needs an unusual blend of technical skills, mostly economic, and a broad vision of how food systems interact and evolve over time (Timmer, 2010). Today flexibility and life-long learning are essential and will be in future. The scope of food policy is too broad to have every graduate expertly trained on all topics. Instead, we should ensure that graduates have a well-grounded foundation and a commitment to continued learning and up-skilling to keep abreast or (better still) ahead of the rapidly changing policy context. However, a few essential elements need to be embedded in training systems to ensure the current cadre and future professionals are equipped for the task. These essentials include an introduction to the broad scope of policy issues, knowing what policy options are available, an understanding of the political economy and the policy cycle, how to leverage data for decision making and a set of soft skills.

6.1 Knowledge is power

The starting point and critical factor for implementing policy change is always knowledge. Knowledge and information raise the need for policy change, are used to advocate for change, inform the design of policy revisions, shape implementation modalities and assist in the identification of what to monitor and evaluate in policy cycles. The rapidly changing face of complexity on food policy demands the command of a large body of sectoral information and the constant appraisal of changes in multiple domains. I hope I have been able to demonstrate the dire need for keeping up to date with the development of understanding and the continual revisions to theory over time. It is entirely impossible for one discipline to keep abreast of such rapid change and development across the range of policy domains that affect food policy, food security and nutrition. Team effort is required.

The agricultural economist is an essential part of this team effort. With our broad exposure to economics and development grounded in real-world applications, the agricultural economist can play an essential role in food policy discussions, offering insights that can bridge production, consumption and trade. However, Kirsten (2010, 2) has warned that: "Our preoccupation with the tools of our trade made us lose sight somewhat of the relevance of our trade. So while engrossed in our micro-applications, the world of business and policy faced new macro challenges that we seem less attuned to".

Yu *et al.* (2012) express the urgent need for interdisciplinary effort involving life science, earth and environmental sciences, as well as social and sustainability science, to better understand the issues of global change and food security. Such collaboration is not only necessary to incorporate multiple factors into food security analysis and policymaking, but also in collaboratively exchanging the latest knowledge (Yu *et al.*, 2012). Exposure to critical and emerging issues at the undergraduate level would ensure that graduates are exposed to the latest challenges in the field. It would be best to engage experts in the field in these modules. Such exposure develops an appreciation for another field of knowledge, exposes students to the philosophies and approaches of other disciplines and develops an understanding of who to go to for information and expertise in the diverse range of topics required for effective food policy. The latter is an essential skill in working in multisectoral policy analysis and policymaking. Interestingly, Prof. Johann Kirsten (2010) in his Tomlinson

Lecture reflected on the plea of his grandfather, Prof. F.R. Tomlinson, in his lecture in 1986 that departments of agricultural economics should be grounded in faculties of agricultural and natural sciences, but in touch with other disciplines such as law, geography, sociology, ecology, mathematics, institutional theory, and brought interesting dynamism to the discipline to build the capacity to apply economic theory to problems in the agriculture, environment, food and nutrition.

However, in my experience in graduate training of agricultural economics students, it is rare to find students exposed to the economics of poverty (such as the work of Aymarta Sen), behavioural economics (stemming from consumer studies) and nutrition. Ensuring that students are grounded in the basics of these elements will significantly improve their capacity to engage in current food policy work.

A rapid survey of some of the most influential analysts engaged in global food and nutrition policy (Suresh Babu, Ousmane Badiane, Stuart Gillespie, Lawrence Haddad, John Mellor, Marie Ruel, Joachim von Braun) revealed that their early exposure to hunger and nutrition shaped their career paths and influenced their work. Many report that travel or fieldwork for a PhD or Post Doc. on other topics exposed them to the realities of hunger and malnutrition and led to a personal commitment to engage in finding solutions. Others report having been exposed to nutrition and food policy as part of their graduate training programme. Many of these agricultural economists have made significant contributions to nutrition.

6.2 Knowing the options

The example cited earlier of the lack of policy options for nutrition at the start of the 1970s illustrates a common constraint to policy innovation and progress. All too often African governments rely on single consultants to draft policy frameworks and strategies. These consultants tend to rely on the pool of existing and known programmes – some of which are successful and others dismal failures. De Shutter (2017) outlines another problem with food policy, what he claims political scientists call the “garbage can” logic. This occurs when issues are framed depending on what solutions were at hand. If ready-to-implement solutions are not available, the problem is ignored.

There is much talk in policy circles today of “evidence-based policymaking”. The approach helps policymakers make better decisions and achieve better outcomes by drawing upon the best available evidence from research and evaluation and other sources (DPME, 2014). Other refer to this as “lessons learned”. Gathering evidence of what worked and did not work in the past helps identify policy options and evaluate their possible outcomes, trade-offs and consequences (intended or unintended). Evaluating evidence and allaying available data helps predict how long a programme will take to render results and what the costs of implementing it will be. Issues of cost-benefit and the sustainability – economically, socially and environmentally – can be considered before deciding on a specific policy or set of interventions. Such analysis will become more critical as the complexity of the context increases. This is an area where agricultural economists can have significant influence on food policy if they master the range of necessary analytical tools and methods and keep up to date with new development in the field of analysis. Applying theoretical approaches and methodologies to real-life contexts is essential in building the confidence to use these tools in professional settings.

6.3 Understanding the political economy of food policy and the policy process

Policy actors will have different perceptions about what challenges are most pressing and how to solve them depending on their backgrounds and associated interests (Candel and Pereira, 2017). Sectoral budget allocations and traditional performance appraisal systems typically work against novel multisectoral approaches. Formulating food policy goals thus implies making political choices (Candel and Pereira, 2017). Being clear about goals, instruments, sectors, and levels, while embedding these within a policy frame and governance vision will help facilitate the adoption of innovative

policy and programme ideas (Candel and Pereira, 2017). Early exposure to political science and especially the political economy of food is essential in charting the politics of a multisectoral development agenda. Understanding the policy process, its stakeholders, agents and the policy cycle provides professionals with the insight to understand positions and navigate institutional obstacles to progress.

6.4 Evidence-based policy input: the power of data

McDermott *et al.* (2015) state that current efforts to improve nutrition outcomes at scale are severely hampered by data and evidence gaps that prevent better decisions and faster learning. Multisectoral actions require better metrics, indicators and research studies and better evaluation methods across a range of topics. With increasing leanings towards open data policies, more data are becoming available and advances in technology are improving the analytical power of big data sets. This holds great potential for the analysis of multisectoral systems. Scenario analysis in global change, vulnerability, policy adaptation, and mitigation is essential for comprehensive food security assessment.

With our broad exposure to economics and development grounded in real-world applications, the agricultural economist can contribute knowledge and empirical skills to analysis, appraisal and forecasting scenarios related to possible interventions and their potential impact and outcomes. But exposure to innovations and analysis in econometrics, statistics and computing are essential to equip professionals for dealing with complexity. Broad exposure to systems in use as well as advances and potential new directions is essential. An application of knowledge to new situations is demonstrated in the emerging field of nutrition economics. For example, Babu *et al.* (2017) in a new book – *Nutrition Economics: Principles and Policy Applications* – introduce basic economic concepts and their policy applications to scholars with nutrition and some quantitative background. The text is most useful to agricultural economists wanting to engage in this exciting new field of research that directly supports the achievement of SDG2. The book applies several analytical methods to real-world data to explore nutrition-related policies.

6.5 The essential soft skills for engagement and impact

Reflecting on the life and work of Prof. Tomlinson (van Rooyen, 2000) one realises that he was not only an experienced economist but had to have had a set of powerful soft skills at his disposal. These would have included communication, persuasion and negotiation skills. Diplomacy would have been necessary for the circumstances in which he found himself. Such skills are essential for working in multisectoral domains such as food policy where one could find oneself in the mire of ideological, political and disciplinary diversity: a space where an analyst's true metal is tested to the core. The ability to present robust evidence, defend the integrity of data, admit limitations and face the possibility of conflicting trade-offs is essential. I wonder if it is only in a thesis defence that a student gets such exposure? Should we not be building more places for debate and the honing of skills essential for dealing with multi-sectoral and multi-stakeholder engagement through a student's training?

7. Closing remarks

The role of the agricultural economist in achieving the SDGs is pivotal. Armed with knowledge, skills and tools not common to nutrition in particular, the agricultural economist offers analytical power and the ability to produce evidence for decision-making. Unless equipped with the ability to think inside, outside and without a box, the contribution to team work will be limited. Exposing agricultural economics students to a broader domain than consumption theory within the supply–demand confines is essential to building an appreciation for nutrition, behavioural science and poverty dynamics in particular. Updating syllabi with food systems thinking, critiques of planning approaches

and the mastery of essential soft skills are crucial for training the next generation of professionals. I am grateful to be part of the system that does so.

ORCID

Sheryl L. Hendriks  <http://orcid.org/0000-0002-1487-4302>

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