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Feed the Future Innovation Lab for Food Security Policy

Research Paper 40 January 2017

THE KALEIDOSCOPE MODEL OF POLICY CHANGE: APPLICATIONS TO FOOD SECURITY POLICY IN ZAMBIA

By

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ABSTRACT

What explains the persistence of socially sub-optimal policies over long periods of time? What factors and forces provoke episodes of policy reform that punctuate long periods of policy inertia? These key questions increasingly concern the international donor and research communities, given the growing need to achieve policy impact with scarce resources. To address these questions, this paper introduces the Kaleidoscope Model of policy change. Inductively derived from both empirical examples in developing countries and theoretical scholarship on the political economy of reform, the model encompasses a set of 16 operational hypotheses to identify the conditions under which policies emerge on the agenda and ultimately are implemented. The paper tests the model empirically in Zambia by evaluating eight policy reform episodes related to agricultural input subsidies and vitamin A fortification. Empirical application and hypothesis testing relies on rigorous process tracing of policy chronologies through secondary sources and semi-structured interviews with a purposive sample of 58 stakeholders in Zambia. By examining two very distinct policy domains within the same country, we are able to identify which hypotheses prove most robust and which are more policy-specific. In an era of growing pressure on donor resources and government budgets, the Kaleidoscope Model offers a promising framework through which practitioners and researchers can assess when and where investments in policy reforms are most feasible given a country's underlying political, economic, and institutional characteristics.

KEYWORDS: Agricultural input subsidies, Kaleidoscope Model, micronutrients, policy process, political economy, Zambia

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1. Introduction

The "results-based agenda" that emerged more than a decade ago in the wake of the Millennium Development Goals and the Paris Declaration for Aid Effectiveness has resulted in growing donor demands to achieve and measure policy impact (see OECD 2014; Ravallion 2009; White 2014). Motivations include improved accountability to donor country taxpayers and increased responsiveness to the needs of developing country citizens. Yet, policy impact requires an informed understanding of the nuances of policymaking processes in order to recognize the opportunities for, and feasibility of, generating intended reforms.

Interest in policy processes has given rise to two large bodies of experience in policy systems, each with important strengths but also some shortfalls. On the one hand, academic theories about public policy and political economy provide a rich and nuanced perspective on policy change. Yet, such theories collectively identify a large number of relevant variables in the policy process without delineating the minimal set that are necessary and sufficient for obtaining policy change across a broad range of policy and country settings. A meta-analysis of the public policy literature revealed more than 100 variables advanced by scholars to explain drivers of policy implementation (see O'Toole 1986). This proliferation of explanations leads sceptics to dismiss the value of policy process analysis as too context-specific to uncover generalizable findings. On the other hand, donor-led policy reform efforts, which typically occur within a broad array of political systems, focus on a small handful of standardized approaches for generating policy change, such as policy conditionality or mutual accountability. This obscures the complexities of policymaking both across and within countries.

This paper draws together evidence and experience from both the academic and donor communities to develop a practical and holistic framework for analyzing the policy process in developing country contexts. Known as the Kaleidoscope Model (KM), the framework draws on actual episodes of policy change from the public administration, political science, and international development experiences to inductively derive a set of variables that prove consistently important across multiple policy arenas and country settings. In doing so, the KM addresses a series of questions related to the genesis, design, and commitment to a particular set of interventions by national and international policymakers. For instance, why did a particular policy emerge on the agenda in one country but not another? What accounts for variations in policy design in similar country settings? And why was implementation effective in one place but insufficient in another?

Although the KM offers a generalizable framework applicable to a broad range of policies, this paper applies the KM to food security policies. A nascent body of contemporary literature now exists on policy processes related to food and agriculture (e.g. Binswanger and Deininger 1997; Pinstrup-Andersen 2014; Poulton 2014), and nutrition and public health (e.g. Gillespie et al. 2013; Pelletier 2011; Shiffman and Smith 2007). The KM integrates insights from these studies into a common framework relevant to policy systems more broadly.

Specifically, we apply the KM in Zambia to examine drivers of policy reform in two areas of food security policy: agricultural input subsidy programs (ISPs) and vitamin A fortification. These policies vary in political visibility, durability, and speed of impact. Focusing on the

drivers of change across these two different policy areas in the same country provides a structured comparison of policy reform. We engage in process tracing to uncover drivers of policy change based on interviews conducted with a purposive sample of 58 stakeholders in Zambia and a variety of secondary sources.

The following section reviews donor approaches for influencing policy change. The subsequent section introduces the KM, drawing on public policy, political economy, and case study literature as well as the growing body of donor experience. Thereafter, we test the KM on eight episodes of policy reform in Zambia across the two policy domains. This is followed by a summary of which KM variables prove robust across the two policy domains. The final section concludes with broad observations about policy systems that result from our findings.

2. Donor Approaches to Food Security Policy Change

Donor operational efforts to encourage policy change in developing countries have evolved over the past five decades, as have the implicit assumptions about government behavior and interest group incentives that undergird these efforts. Table 1 summarizes the six main approaches and the underlying hypotheses that have guided donor policy interventions.

Monte Carlo Hypothesis. Historically, the first large-scale donor efforts to promote policy change focused on using aid to change the level and distribution of benefits and costs from a particular policy to increase the likelihood of change (see Snodgrass and Rice 1970). Just as changing payout matrices triggers behavioral change in casinos and race tracks, donors aimed to change the behavior of policy makers and affected stakeholders by altering incentive structures. We refer to this behavioral premise as the Monte Carlo Hypothesis. To confront resistance to policy change by beneficiaries of the status quo, Monte Carlo approaches support financial payouts that create new winners and convert former losers into beneficiaries. One obvious operational example includes the structural adjustment policies of the 1980s and 1990s, which rewarded governments with donor financing if they liberalized input markets and privatized agricultural parastatals (Sahn et al. 1997, Kherallah et al 2002). More recently, the Comprehensive African Agriculture Development Program (CAADP) encourages governments to prioritize agriculture by offering donor support for governments that sign compacts indicating increased national investment in the sector.

Table 1: Implicit hypotheses underlying donor policy interventions

Hypothesis	Underlying premise	Operational examples
Monte Carlo	Changes in the payoff matrix influence the probability and direction of public investments and policy change.	• Policy lending programs • Structural adjustment programs • CAADP investment plans
Sherlock Holmes	Better empirical evidence leads to better policies.	• ReSAKSS • Fewsnet • Food security portal • DHS data program
Contagion Inoculation	Prominent policy "success stories," can spur international emulation.	• Abuja Fertilizer Summit • SUN initiative
Masters of the Universe	Top-down negotiations and high-level commitments can enable and enforce policy change.	• New Alliance agreements • Maputo Declaration
Frank Lloyd Wright	Institutional architecture matters; open, transparent, evidence-based policy processes improve policy outcomes.	• Joint sector reviews • GAFSP • Feed the Future program
Hercules	Champions of policy change can overcome flawed institutional architecture to effect policy change and confront powerful Dark Knights	• Africa Lead Champions of Change • AGRA policy champions • Transform Nutrition champions

Source: Authors' compilation.
Notes: Please see text for acronyms

Sherlock Holmes. Guided by the mantra "evidence-based policymaking," a wide array of donor policy interventions rely on the premise that credible evidence can convince altruistic decision makers to modify their policy positions (Head 2008; Nutley *et al.* 2003). Guiding assumptions about the power of evidence to shape policy underpins a variety of donor-supported research institutes and data initiatives, including the Regional Strategic Analysis and Knowledge Support System (ReSAKSS), FEWS NET, and the Demographic and Health Systems (DHS) program.[1] Nonetheless, both donor experience and academic research suggest that technical knowledge alone rarely translates automatically into better-designed policies or improved policy outcomes (Nelkin 1992; Stoker 2010).

Contagion Inoculation. The importance of empirical information is magnified by the assumption that showcasing prominent evidence on policy success stories can spur international emulation. For instance, the 2006 Abuja Fertilizer Summit extolled Malawi's "fertilizer success story," which helped spur a new round of fertilizer subsidy programs across Africa costing approximately US$1 billion annually (Jayne and Rashid 2013). Likewise, by showcasing the *Lancet* special issue on micro-nutrient malnutrition in high-profile international forums, public health researchers helped launch the Scaling Up Nutrition (SUN) initiative, which promotes micronutrient supplementation programs in more than 50 countries (Horton, 2008; SUN 2014).

[1] Please see http://www.resakss.org/; http://www.fews.net/; and http://dhsprogram.com/

Masters of the Universe. A complementary approach, which can facilitate policy diffusion, involves top-down negotiations and high-level commitments to stimulate policy change. Under the G8's New Alliance framework, high-level negotiations between the public and the private sector are expected to alter policy landscapes and influence implementation behavior (USAID 2014). The Maputo Declaration, issued by African presidents during their 2003 CAADP launch, included a public commitment to invest ten percent of total national expenditure in agriculture and served a similar role in guiding policy change (see Benin and Yu 2012).

Frank Lloyd Wright. Spurred in part by the importance of ownership and accountability enunciated in the Paris Declaration, the Frank Lloyd Wright Hypothesis relies on the premise that open, participatory, transparent, and evidence-based policy architecture and policy processes can precipitate change. Operational help in designing, building and strengthening the broad contours of the policymaking process has emerged recently in the "institutional architecture" efforts funded within USAID's Feed the Future program (Kline and Cormier 2015). Notable related efforts include the emphasis on inclusive dialogue and transparency within the New Alliance for Food Security and Nutrition (USAID 2014), the tenets of consultative and transparent processes within the G-20's Global Agriculture and Food Security Program (GAFSP) (GAFSP 2011), and the mutual accountability focus of the Joint Sector Reviews for Agriculture initiated through CAADP (NEPAD 2015).

Hercules Hypothesis. In many developing country policy settings, the status quo features weak institutions, limited evidence, and poorly articulated policy processes. In these opaque policy environments, Dark Knights, which are numerically small but politically influential interest groups, can hijack and champion self-interested policies. Large grain millers, for example, lobby for export bans in bumper harvest years, hoping to profit from higher margins when farm prices fall (see Dorosh et al. 2010). To counter these Dark Knights, the Hercules Hypothesis asserts that donor support can motivate and empower publicly-minded champions to effectively lobby for policy change. Operational examples include the Africa Lead Champions of Change program (DAI 2014), the Alliance for a Green Revolution in Africa (AGRA) policy champions (AGRA 2014), and Transform Nutrition champions.[2]

The strength of these donor efforts is that they focus on a handful of fundamental constraints to reform. However, in practice, policy reform proves to be more complex than implied by each of the above approaches on their own.

3. The Kaleidoscope Model of Policy Change

The Kaleidoscope Model (KM) builds on this donor experience as well as on insights from public administration and applied political economy literatures to provide a meso-level theory of policy change across varying country and policy contexts. The inner circle in Figure 1 highlights the primary explanatory variables driving policy change. In turn, numerous secondary factors influence the policy context. The middle ring in Figure 1 presents a non-

[2] See http://www.transformnutrition.org/category/nutrition-champions/ (Accessed May 2016).

exhaustive list of these "contextual conditions." Drawing on other studies of policymaking in developing countries (see Fox and Reich 2013; Kaufman and Nelson 2004), the figure focuses on five key elements of the policy cycle: agenda setting, design, adoption, implementation, and evaluation and reform. While acknowledging that the policy process is often iterative and nonlinear (see John 1998; Sabatier 2007), most existing theories on policy process implicitly focus on one or more of these stages. Thus, the stages serve as an organizing device to emphasize which variables take precedence at different stages rather than as a predictive theory positing that policymaking occurs in such a linear fashion.

We refer to the resulting framework as the Kaleidoscope Model because just as shifting a kaleidoscope refracts light on a new pattern, so does focusing on a particular stage of the policy process reveal a different constellation of key variables that are important for driving change. Like the pieces of a kaleidoscope, many of the contextual conditions remain the same, but as policy dynamics unfurl, some factors tend to play a disproportionately larger role in driving toward policy change than others at any particular point in time. The rest of this section describes the framework and our rationale for emphasizing the key variables highlighted in the inner circle.

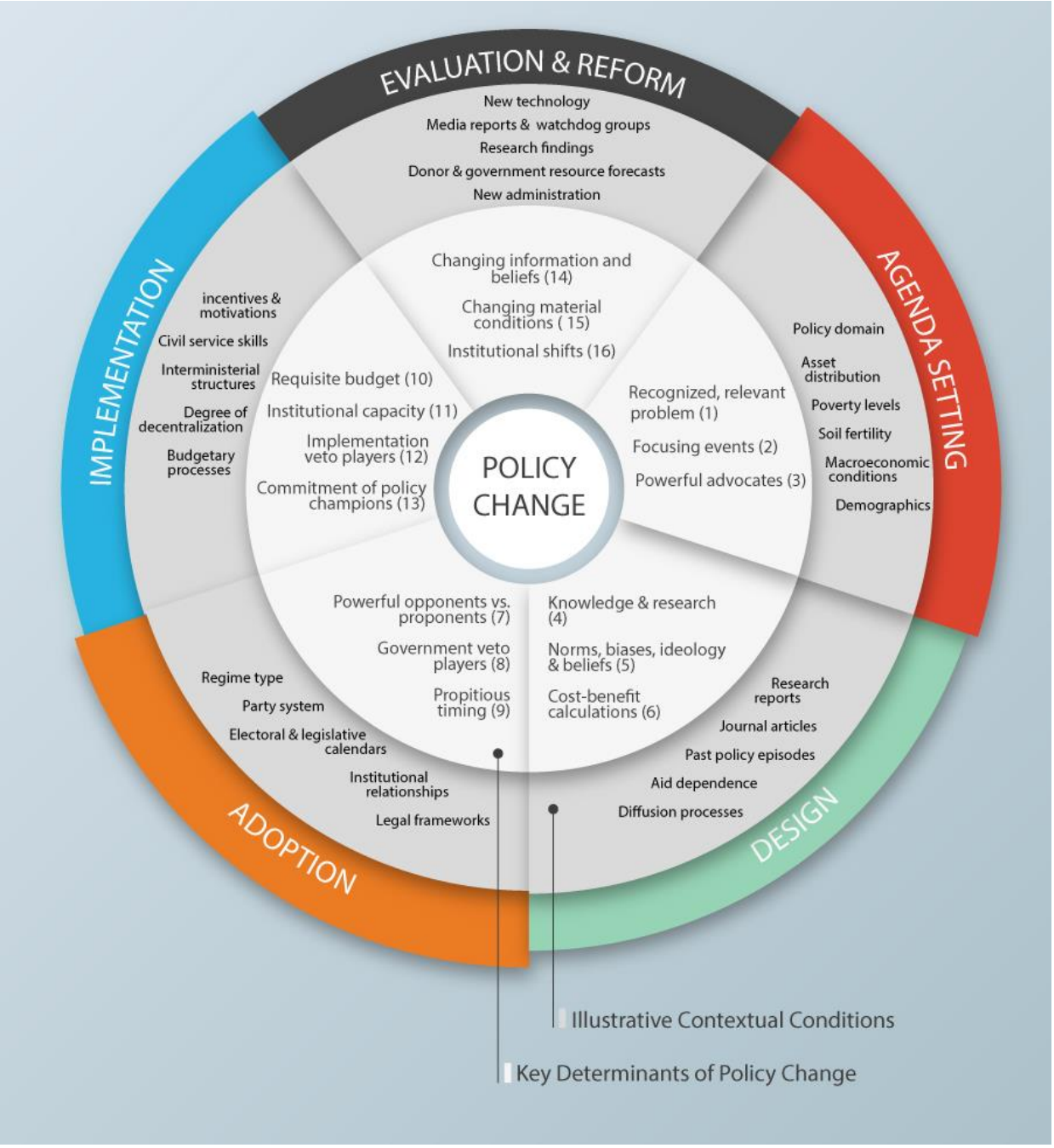
a. Agenda Setting

Why do certain issues emerge on the policy agenda while others do not? Three common explanatory variables appear to reoccur in the literature. First, the policy needs to address a *recognized, relevant problem* for key segments of the country's population (see Kingdon 1984). The relevance criterion narrows the range of policy issues that could potentially emerge on the agenda because certain issues will have greater resonance with decision makers. In turn, a country's material conditions, including levels of poverty, demography, and macroeconomic context, shapes the resonance of specific issues (see Binswanger and Deininger 1997). For instance, in reviewing nutrition policy change, Pelletier et al. (2012: 28) found that in those countries where chronic undernutrition emerged on the policy agenda, one of the most influential factors was clear evidence on the size and urgency of the problem.

Yet, a relevant problem typically is not sufficient on its own to engender a policy intervention. A second variable is the occurrence of a *focusing event.*[3] The policy literature has referred to such events as "critical junctures" (Collier and Collier 1991), "punctuated equilibria" (Pierson 2004; Thelen 2003), or "windows of opportunity" (Kingdon 1984; 1995), but in all cases, they refer to shocks or events that have the potential to shift the policy landscape. The focusing event may be a major food or price crisis, an economic collapse, regime change, or a natural disaster. For example, the 2007–2008 food crisis was a major impetus for the introduction of new fertilizer, trade, and social protection policies (see Pinstrup-Anderson 2014). As the Masters of the Universe approach suggests, such focusing events may also include high-level international declarations or initiatives that elevate the status of certain policy issues.

[3] See Birkland (1997) on "focusing events."

Figure 1: Kaleidoscope Model of Policy Change



Source: Authors' compilation

Finally, *powerful advocates* play a key role in pushing for action. Given that countries confront multiple problems simultaneously, advocacy coalitions can be instrumental in framing a particular problem as having immediate or dramatic impacts on society if not addressed (see Binswanger and Deininger 1997; Swinnen et al. 2011; Zahariadis 2007). These advocates come from a range of sources, including government ministries, political parties, civil society, the

private sector, the research community, foreign investors, or donor agencies. In the case of malnutrition, international advocates such as the United Nations' High Level Task Force and UNICEF, along with national presidents, have been instrumental in placing nutritional issues on the policy agenda (see Acosta and Fanzo 2012; Gillespie et al. 2013; Pelletier et al. 2012).

b. Policy Design

During the design stage, policy advocates propose a narrow menu of viable solutions to address the policy problem on the agenda. Three factors appear to play an important role in explaining how policies are designed. One factor is *empirical research and knowledge* disseminated through epistemic communities of researchers and experts as well as donors, policy entrepreneurs, and technocrats. Such communities can facilitate the diffusion of external policy experiments, as suggested in Kingdon's (1984) multiple streams framework or in the donors' Contagion Inoculation approach. They can also provide more authoritative evidence of what policy design features will work best to achieve particular goals. At the same time, these communities may have stark divisions among them in terms of an appropriate policy design, and institutionally entrenched technical perspectives can also cause some solutions to be prioritized over others (see Freeland 2013). In addition to research reports, the media plays a critical role in the diffusion of knowledge but may also privilege certain policy design options through oversimplification or exaggeration of an issue (Parsons 1995).

A second distinct but related factor driving design issues involves *norms, biases, and ideologies*. Sabatier's (1988) notion of different types of policy beliefs is relevant in this regard. While there may be secondary beliefs about the narrow design features of a policy, these may be informed by deep beliefs about human nature shaped by norms and socialization (see also Sabatier and Jenkins-Smith 1993). The type of focusing event identified in the agenda-setting stage can play a strong role in this regard. Crises, for example, reduce the time for thoughtful analysis and research, prompting policymakers to rely on on-the-shelf solutions from elsewhere or on "bounded rationality" (see Simon 1972), cognitive shortcuts, and deep beliefs.[4] For example, the food price crisis of 2007-2008 caused African governments to sometimes pursue disadvantageous trade policies that reflected long-standing mistrust of private traders (FAO 2011; Dorosh et al. 2009). Ideologies of parties or governing groups about the role of the state vis-à-vis markets can likewise shape which policy designs are feasible and which are unthinkable.

Ideas and beliefs, however, intersect with *cost-benefit calculations* of advocates and decision makers. Policy designs shape the interest group dynamics that emerge and subsequently influence policy adoption. These calculations may involve political goals, such as winning votes, or financial concerns. For example, targeted input subsidies or cash transfers can be a more affordable means of assisting the vulnerable than universal subsidies, which may be easier to implement but are prone to leakage. In aid-dependent countries, policymakers may assign greater weight to donor preferences for a particular policy design to obtain resources necessary for policy implementation.

[4] Hirschman (1981) has made the useful distinction between pressing problems that are forced on policymakers due to crises and chosen problems that are related to policymakers' own preferences and perceptions of a problem situation.

c. Policy Adoption

Even after a set of reform designs has been proposed, it cannot be assumed that a policy reform will be adopted (see Pierson 2004). A first critical determinant of adoption is the *relative power of opponents versus proponents*, including the private sector, donors, civil society, and government agencies. Opponents to adoption may not have existed at the agenda setting stage but emerge after a policy design is solidified. The institutional context shapes which actors are more or less powerful and are more or less relevant to the veto players. Different regimes typically derive their support and legitimacy from different sets of stakeholders, with democracies often needing to cater to a broader range of stakeholders than authoritarian settings (see Bueno de Mesquita et al. 2003). When opponents are powerful, this may reduce the prospects for rapid policy adoption, especially in more pluralistic political contexts. By contrast, authoritarian systems may be more insulated from interest group dynamics and popular pressures, leading to faster policy change (see Amsden 1992; Booth 2012; Evans 1995; Poulton 2014).

Secondly, policy designs require the concurrence of *government veto players* to be adopted. Veto players are those individual or collective actors who have to agree in order for a proposed policy change to occur (see Tsebelis 2002). Such players are typically identified by a country's constitution and political system. Democracies, parliamentary systems, and federal countries typically have more veto players than authoritarian systems, presidential, and unitary countries. Policy change is much slower when there are more veto players because a greater range of stakeholder interests need to be taken into account (Tsebelis 2002). The relevant policy domain is also relevant since it delineates the range of ministers, legislative, and regulatory actors whose concurrence might be required for policy change.

When and how quickly adoption occurs often involves a degree of *propitious timing*, which in turn is shaped by the nature of the policy and the motivations of the policy advocates. If parliamentary approval is needed, then adoption depends on the legislative calendar. If advocates want to gain political traction for a policy, they may take into account the electoral calendar. For instance, while India's Congress Party had included broad food subsidies in its 2009 election manifesto, the ultimate passage of the Food Security Act in 2013 as a presidential ordinance and law was strategically timed during the run-up to the 2014 elections, leading the opposition to dub it the "vote security" act (see Iyer 2013). By contrast, adoption of regulatory policies, such as for bio-, seed, or food safety regulations, might be slower given the need for review by relevant legal authorities (see Jaffe 2006).

d. Policy Implementation

Policy implementation refers here to administrative changes, public expenditure outlays, and the delivery of the actual goods and services promised by the policy. The nature of a policy dictates how closely intertwined the adoption and implementation stages might be. If a policy change belongs to the "stroke of the pen" genre, which is how many macroeconomic or deregulation reforms are characterized, then adoption is tantamount to implementation (see Doner 2009; Grindle 2004a).

A key requirement for implementation is access to the *requisite budget*. Delays in resource disbursements may trigger delays in implementation, especially for non-stroke of the pen reforms. For instance, the implementation of Malawi's Farm Input Subsidy Programme was initially delayed due to donor threats to rescind aid (Chirwa and Chinsinga 2014). Likewise, former Kenyan President Daniel Arap Moi stalled on implementing a national health insurance fund, even after it was passed by Parliament, because of concerns over its costs (Grépin and Dionne 2013).

Implementation also requires a certain degree of *institutional capacity* among the agents responsible for rolling out or scaling up policy reform. This encompasses not only technical capacity, which includes education, skills, and relevant infrastructure, but also administrative capacity. The degree of policy complexity, the periodicity of the policy (for instance, one-time change or annual oversight), and the potential need to adhere to international standards (such as the Cartagena Protocol for biosafety or the Codex Alimentarius for food safety) dictate the required levels of technical capacity. If policy implementation is to be partly controlled by subnational authorities, then local governments need the requisite resources and training to fulfill their mandates (see Lapping et al. 2013; Pelletier et al. 2012). Inter-sectoral capacity is also a challenge for implementation, especially for nutrition or agricultural biotechnology (see Birner et al.2007; Gillespie 2014; Pelletier et al. 2012).

In cases where decision makers delegate policy implementation to the private sector, civil society or sub-national government agencies, discretionary application by these agents can lead implementation to deviate from the designers' intent or even stymie implementation altogether. In these instances, *implementing stage veto players* emerge. For instance, Lipsky (1980) highlighted that bureaucrats make policy based on the routines and everyday practices they adopt in their organizational settings, and as a consequence of their high degree of discretion. One example is Nigeria's Land Use Act, which has been in effect for more than thirty years. By giving state governments a high level of discretion over allocating land rights, the LUA has enabled bureaucrats to often charge citizens higher fees than stipulated for obtaining certificates of occupancy to ensure tenure security (see Adeniyi 2011). Similarly, private sector actors may sometimes refuse to implement government policies that undermine their profitability or competitive advantage.

To overcome incentive, resource, and capacity challenges, the *commitment of policy champions* remains critical. These champions are a subset of the advocacy coalition that helped at the agenda-setting and adoption stages, typically high-level bureaucrats or political leaders that sustain momentum even when others' attention might fade (see Pelletier et al. 2012). Champions can help give legitimacy and support to implementing agencies, or recognize bottlenecks and create new agencies. For instance, in Malawi, placing the Department of Nutrition, HIV and AIDS in the Office of the President and Cabinet ensured that nutrition received high-level attention (see Gillespie 2014).

e. Evaluation and reform

Most policies are consistently subjected to small refinements and some are even completely overhauled. Three key variables appear to play a primary role in explaining the likelihood of

such policy refinements. The first is the *changing beliefs of existing policy champions* about the effectiveness of a policy or the original policy goal. Hall (1993) notes that this might occur at three levels: making routine amendments to existing policy instruments, adopting new policy instruments to address existing policy goals, or shifting the goals themselves as policymakers learn from past policy mistakes and become influenced by new ideas and debates. As in the policy design stage, the drivers of belief changes may come from media reports, parliamentary inquiries, advocacy groups, donor evaluations, and research findings. For instance, a research study in 2001 reported the presence of transgenic DNA in maize in Oaxaca, Mexico, which then generated public opposition and forced the Mexican government to revise its biosafety legislation (see Aerni and Bernauer 2006).

The second factor, which strongly interacts with the first, is *changing material conditions.* Such conditions include the continued availability of financial resources given the macroeconomic environment, especially for those policies that require a consistent outlay of expenditures, such as subsidies or social transfers. The emergence of new technologies, such as electronic smart cards for obtaining food subsidies can also shift beliefs about what is possible. A highly consequential change in material conditions occurs when the original relevant problem that engendered the policy has been addressed as a result.

The third factor is the emergence of *shifts in the institutional setting*, which can affect policy priorities and preferences. Institutional changes can upend the entire policymaking machinery. Such changes include the arrival of a new cabinet minister or president, the passing of a new constitution that re-assigns powers over functions, or the reshuffling of parliamentary committees. For instance, frequent ministerial turnover in places as diverse as Senegal and Nepal has been tied to a high level of agricultural policy volatility (see Quinn 2013; Resnick 2014). In some cases, these shifts create a new constellation of veto players who may want to create their own legacy and stake a new direction.

f. Empirical application of the Kaleidoscope Model.

Three principal tools guide empirical applications of the KM (see Haggblade et al. 2016; Resnick and Mason 2016). First, a detailed policy chronology outlines the key policy events and causal factors driving policy change. Second, stakeholders are mapped according to their relative power and preferences using circle of influence graphics (see Grindle 2004b). The inner circle of these graphics delineates those actors that hold power over policy change (see Grindle 2004a). Finally, a hypothesis table summarizes the significance of each KM variable in driving policy change. Table 2 summarizes the KM hypotheses, its 16 key variables and their measurement. The exposition below demonstrates the application of the KM and these tools in Zambia.

Table 2: Summary of Kaleidoscope Model Hypotheses and Operationalization

Policy Stages	Determinants of Policy Change	Hypothesis	Measurement
Agenda setting	1. Recognized, relevant problem	A relevant problem is identified by a concerned particular constituency with reference to credible evidence or to popular perception	Identify evidence used to justify the problem and measure its significance. Identify the constituency concerned.
	2. Focusing event	A well-defined event focuses public attention on a problem or creates a window of opportunity for policy change	Define the specific event that put the policy on the agenda.
	3. Powerful advocates	Strong individuals, organizations, or companies support a new or changed policy to key decision makers.	List actors lobbying for policy change.
Design	4. Knowledge & research	Evidence-based knowledge shapes feasible design	List existing or commissioned case studies, research, or examples that informed the design of the policy program.
	5. Norms, biases, ideology & beliefs	Beliefs and biases shape the range of design features that are acceptable	List norms or beliefs that influenced policy design and to whom they belonged.
	6. Cost-benefit calculations	Expected costs and expected benefits (political, economic, social) determine preferred design.	List particularly salient costs or benefits that influenced policy design.
Adoption	7. Powerful opponents vs. proponents	•For a policy to be adopted, supporters must be relatively more powerful than opponents. •For a policy to not be adopted, opponents must be relatively more powerful than supporters.	List the supporters and the opponents of the policy drawing from government, private sector, civil society, donors and other international groups.
	8. Government veto players	•For a policy to be adopted, government agents with ultimate decision-making power must be supportive or neutral. •For a policy to be vetoed, government agents with ultimate decision-making power must be an opponent.	List government decision-makers with ultimate authority. Classify actors as proponents, opponents, or neutral. Identify if the veto player opposed reform (negative) or allowed it to proceed (positive).

	9. Propitious timing	Supporters wait for opportune moments (political, economic, social) to push policy change.	Identify if timing (political,economic,social) was leveraged to help increase the probability of program adoption. Identify the specific event and how it influenced the probability of adoption, with specific reference to when it occurred vis-a-vis the period of adoption.
Implement ation	10. Requisite budget	Government or donors provide fund sufficient to carry out the new policy or program as intended	Identify if funding for the program was sufficient for the new policy over time. Also note if there were periods when funding was not sufficient and the program deviated from stated intent.
	11. Institutional capacity	Government, organizations, or companies were available and able to practice and manage the new policy or program as it was intended	List the actors tasked with program implementation. Consider the following factors: 1) Did they have the human resources to implement the program as designed? 2) Did they have the capacity for monitoring and oversight? 3) Did they have the ability to engage in inter-ministerial coordination, if needed? 4) Did they have the decentralized infrastructure to do this, if needed?
	12.Implementing stage veto players	Designated implementers -- from the private sector, NGO or local agencies -- have both incentives and willingness to implement the policy program	Did private sector, NGO or local agency implementers or refuse implementation? Why?
	13. Commitment of policy champions	Strong individuals, organizations, or companies continued to publicly support the program	Identify any strong proponents who acted as a watchdog to ensure the program was operating as intended.
Evaluation & Reform	14. Changing information & beliefs	New learning emerges that impacts how decisionmakers believe the policy/program should be structured	List new information or beliefs that emerged post-implementation and influenced how policymakers think programs should be structured.
	15. Changing material conditions	Available resources, technology, or policy relevance has changed since the policy was originally implemented	List changes in the policy environment (resources, problem status, technology) that influence the need for the operation of the program.
	16. Institutional shifts	New actors enter the policy arena as the result of elections, cabinet reshuffle, or new staffing	Identify key changes in policy institutions: new administration, new minister, new policy architecture. What new perspectives and priorities did the new players bring to the policy debates?

Source: Authors' compilation.

4. Applying the Kaleidoscope Model to Food Security Policies in Zambia

Many comparative studies of the policy process tend to focus on just one policy subsystem, such as education (Grindle 2004a), public health (Grépin and Dionne 2013), maternal mortality (Shiffman and Smith 2007), agriculture (Binswanger and Deininger 1997) or social protection (see Haggard and Kaufman 2008). The few existing multi-sectoral studies (e.g. Kaufman and Nelson 2004) tend to focus on different countries, masking whether the theoretical framework or the country context explains the observed outcomes.

Consequently, we apply the KM in the same country, Zambia, but to two different policy arenas: agricultural input subsidies and micronutrient interventions.[5] As shown in Table 3, the two domains vary in a number of ways that prove useful in testing whether the model is sufficiently robust to assess a broad range of food security policies. Much of the nutrition research comes out of the medical profession, with carefully controlled experiments and a strong level of consensus about the cost and impact of various nutrition interventions on human health (see Bhutta et al. 2008; Ruel et al. 2013). By contrast, agricultural policy research from the social sciences typically offers less rigorous counterfactuals and remains subject to conflicting interpretation, as contentious debates on fertilizer subsidies illustrate (Morris et al. 2007; Jayne and Rashid 2013). While fertilizer policy discussions involve only two ministries (agriculture and finance), micro-nutrient policies are more inter-sectoral and may also involve health, community development, and education ministries as well.

Table 3: Variation in Food Security Policy Domains

Characteristics of Policy Domain	**Input Subsidies**	**Micronutrients**
Evidence Base	Abundant but contested (social science)	Abundant and uncontested (medical science)
Time frame to impact	Short-term	Long-term
Visibility of Response	High	Low
Beneficiaries	Targeted	Dispersed
First Movers	Domestic governments	International donors
Inter-ministerial Coordination	Low	High
Opportunities for rent seeking	High	Low

Zambia provides an apt context for exploring these two food security domains. Approximately 60 percent of Zambia's population lives below the poverty line, and about half of the total population relies on the agriculture sector for their livelihoods (see de la Fuente et al. 2015; CSO 2013). Limited access to farming inputs has long been a major hindrance for greater agricultural

[5] Please see Haggblade et al. (2016) and Resnick and Mason (2016) for the full-length case studies. These are available at the Food Security Policy Project website at: http://fsg.afre.msu.edu/fsp/

production and income growth. Likewise, malnutrition is a key challenge in Zambia where childhood stunting rates are, at 40%, higher than the African average (IFPRI 2016). Despite progress in recent decades, vitamin A deficiency (VAD) continues to affect more than 50 percent of school-aged children, with long-term health implications (IFPRI 2014). Among the policy instruments deployed to address these problems, Zambian policy makers have introduced agricultural input subsidies and vitamin A fortification.

Zambia has a hybrid form of government that combines the Westminster tradition of parliamentary democracy with strong presidentialism (Burnell 2003). Parliament theoretically is an oversight body that is responsible for approving the budget and enacting laws. However, since the president's party typically controls a majority in parliament, the legislature often acts as a rubber stamp for executive policies. Ministers can propose policy changes, which are subject to Cabinet approval and oversight by the Ministry of Justice. Cabinet ministers can then issue Statutory Instruments (SIs) to change policy without review by parliament or non-state actors (see Africa Lead 2014; Chapoto et al. 2015). Ministerial volatility in the country is problematic with, for example, 8 individuals serving at the Ministry of Agriculture and Livestock (MAL) between 2002 and 2015.[6]

The following two sections take advantage of this broader policymaking context to analyze drivers of policy change related to input subsidies and vitamin A fortification. Data for testing the KM hypotheses come from a range of secondary resources, including academic articles, donor reports, parliamentary hansards, and media findings. In addition, the authors conducted semi-structured interviews with 58 knowledgeable stakeholders in Lusaka, Zambia between June-August 2015. As shown in Appendix 1, these interview respondents collectively span government ministries, the research and donor communities, civil society, and the private sector.

5. A Rocky Road to Input Subsidy Reform

Input subsidies for smallholder farmers have been a cornerstone of Zambia's agricultural policy for decades. Prior to structural adjustment, Zambia had an extensive system of agricultural subsidy programs that resulted in maize cultivation in unsuitable areas and diverted research away from high value exports (see Deininger and Olinto 2000). In the wake of structural adjustment in the early 1990s, currency depreciation increased the cost of importing inputs and hindered smallholder access, a fact compounded by a continued lack of private sector engagement in input markets (Kherallah et al. 2000). By the end of the 1990s, fertilizer use on crops such as maize had fallen by 40% compared to the pre-structural adjustment period (Jayne et al. 2002). Addressing low fertilizer use became a primary objective of the Fertilizer Subsidy Program (FSP) that was launched in 2002. The policy chronology outlined below focuses on four specific policy events, including the emergence of FSP, a transition to the Farmer Input Support Program (FISP) in 2009, a failed attempt to add an electronic voucher (e-voucher) in 2013, and a successful attempt in 2015.

[6] Until 2009, MAL was named the Ministry of Agricultural and Cooperatives (MACO). To avoid confusion, we refer to MAL throughout, even prior to 2009.

a. Re-emergence of input subsidies

The Southern African drought of 2000-2002, which reduced crop yields by 40 percent, precipitated Zambia's return to input subsidies. In May 2001, the Zambian government declared a state of disaster to mobilize humanitarian assistance (Philipose 2007). As seen in Table 4, the crisis also coincided with the 2001 presidential campaign. Three months after being elected with only 36 percent of the vote, Levy Mwanawasa of the MMD announced the fertilizer subsidy program in parliament, which was quickly included in the finance minister's budget speech two weeks later (see MoFNP 2002; NAZ 2002).

Support for FSP was relatively widespread. Mwanawasa argued that it was not only essential for addressing short-term food insecurity but also for diversifying away from dependence on copper (Cherry 2002). The program also appealed to rural voters who had increasingly become the bastion of the MMD's support as the party lost ground in urban areas (Rakner 2013; Resnick 2014). Simultaneously, FSP would help support the government-owned Nitrogen Chemicals of Zambia (NCZ), which was running at a loss and chosen as one of the three main companies to supply the subsidy scheme in its first year (see MoFNP 2002). The timing of the program coincided with Zambia's qualification for debt relief funds under the Heavily Indebted Poor Country (HIPC) initiative, which became accessible in May 2002 when it finalized its Poverty Reduction Strategy Paper (MoFNP 2002).

The program was intended to only last three years and had multiple objectives, including generating long-term demand for input use among needy smallholders, promoting savings mobilization, and increasing fertilizer demand from the private sector. Beneficiaries were limited to those growing 1-5 hectares of maize, and they received 8 bags of fertilizer and 20kg of maize seed under the program (MACO 2002). While the three-year sunset clause reflected a general rhetoric in the donor community about the importance of an enabling environment, FSP's design features did not appear to emanate from any specific research or technical assessments. In fact, some of the provisions even contradicted program objectives and previous research. For instance, the decision to focus the program on maize inputs only contradicted government decisions in the mid-1980s to remove distortions in the maize subsector that encouraged overproduction of the crop (see IMF 2002). Furthermore, the program was not targeted to disproportionately favor more remote areas, thereby discounting recommendations from previous agricultural projects, such as the Agricultural Sector Investment Program (ASIP).

The initial few years of FSP implementation was characterized by poor targeting, late deliveries of inputs, and insubstantial evidence of improved agricultural productivity(see Govereh et al. 2006; Jorgensen and Loudjeva 2005). FSP began in the 2002–2003 agricultural season with 120,000 smallholders and a government subsidy of 50 percent of inputs. Instead of concluding the program in 2005, which was the original stated intention, FSP beneficiaries rose to 200,000 smallholders by the 2008–2009 season with the government subsidizing 75 percent of the inputs.[7] As observed in other countries that pursued input subsidies in the 2000s (Jayne and

[7] Zambia's Fifth National Development Program institutionalized the subsidy program by suggesting that FSP continue until 2008 (see MoFNP 2006).

Rashid 2013; Wanzala-Mlobela et al. 2013), Poverty Reduction Budget Support from the donor community was a key factor in funding and expanding FSP (de Kemp et al. 2011).

Table 4: FSP and FISP Subsidy Policy Chronology

Year	Policy Events	Political Events	Economic Events	Research and Other Events
2001		Levy Mwanawasa (MMD) elected with 36% of the votes	• Government declares disaster in wake of droughts • Draft PRSP is finalized	
2002	• Mwanawasa announces subsidy in parliamentary speech • Input subsidy announced in budget speech • **FSP launched**	Mwanawasa inaugurated as president	• Bailout of NCZ announced • PRSP approved by World Bank and IMF	
2005			• MoU on Poverty Reduction Budget Support signed with donors • Zambia receives 100 % debt relief under Multilateral Debt Relief Initiative	CSPR Report on FSP released
2006		• Mwanawasa re-elected • Ben Kapita becomes new MACO minister	• Launch of CAADP process • Fifth National Development Plan (FNDP) finalized	Govereh et al. (2006) report on high opportunity cost of FSP spending compared with other agricultural public investments
2007	FSP contracted suppliers suspend deliveries due to delayed payments from MACO		Joint Assistance Strategy for Zambia initiated	
2008	MoFNP proposes that general subsidy replaces FSP and Cabinet asks MACO to respond	• Mwanawasa dies • Rupiah Banda (MMD) wins presidential elections • Brian Chituwo becomes new MACO minister	Price of fertilizer increases by 60% due to food and fuel price crisis	• ZNFU position paper on FSP • MACO organizes FSP stakeholder consultation • FSP Evaluation workshop by

Year	Policy Events	Political Events	Economic Events	Research and Other Events
				ACF-FSRP-MACO
2009	• Cabinet Committee of Ministers declare that FSP becomes FISP • **Banda announces shift from FSP to FISP in Parliament**			• Fertilizer Study Tour of Kenya, Malawi, and Tanzania led by Food Security Research Project • Zoona pioneers e-vouchers • Xu et al. (2009) paper on FSP crowding out private sector
2010	Small quantity of rice seed distributed through FISP	• Peter Daka becomes MACO minister	PRBS donors include e-voucher as criterion in the PAF indicators	Ministry of Community Development explores e-voucher for EFSP
2011	Traditional chiefs added as beneficiaries of FISP	• Michael Sata (PF) elected president • MACO renamed MAL and Emmanuel Chenda becomes MAL Minister	• Signing of CAADP compact • Sixth National Development Plan finalized	Jayne et al. (2011) argue for holistic strategy beyond FISP
2012	• Sorghum and groundnuts added to FISP • Min. Sichinga announces e-voucher launch	• Robert Sichinga becomes MAL minister	• WB's PRSC II indicates e-vouchers as a target condition for 2012 • Zambia issues first Eurobond for US$750 million	Number of research papers on problems with FISP and viability of e-voucher, including Burke et al. (2012a, 2012b), Mason and Jayne (2012), and Sitko et al. (2012)
2013	**Min. Sichinga tells parliament the e-voucher was not going to proceed**		Final draft of National Agricultural Investment Plan (NAIP)	Number of papers on impacts of FISP targeting (see Mason and Jayne 2013; Mason and Ricker-Gilbert 2013; Mofya-Mukuka et al. 2013)
2014		• Sata dies; Vice President Guy Scott	• Zambia issues 2nd Eurobond at US$ 1 billion	• ZNFU launches prepaid Visa card system

Year	Policy Events	Political Events	Economic Events	Research and Other Events
		becomes interim president • Wilbur Simuusa becomes MAL Minister	• Launch of PF's Revised SNDP	under its Lima Credit Scheme • CSOs sign proposal requesting GRZ bring back e-voucher
2015	• **Cabinet approves e-voucher** • Donors provide US$ 1.6 million to roll out e-voucher • **President Lungu launches e-voucher system**	• Edgar Lungu (PF) elected president • Given Lubinda becomes MAL minister	• Article IV consultation with IMF, which recommends e-voucher for FISP Zambia launches 3rd Eurobond for US$ 1.25 billion	Two stakeholder workshops on e-voucher

Source: Adapted from Resnick and Mason (2016)
Notes: Boldfaced text indicates whether the policy was actually adopted and implemented.

Despite these resources, FSP implementation was affected by the constrained production capacity of NCZ, failures in coordination between MoFNP and MACO, and delayed payments to input suppliers (see Jorgensen and Loudjeva 2005). In 2008, payments were so delayed that private sector fertilizer suppliers suspended the release of fertilizer stored in their depots for that agricultural season (see Musonda 2008). Despite these problems, the program retained a high level of political support from Mwanawasa and during the 2006/7 agricultural season, which coincided with Mwanawasa's re-election campaign, the number of FSP beneficiaries increased by almost 70 percent.

By 2008, there was mounting evidence from the media, the Auditor General, the research community, and civil society of corruption, leakage, late deliveries, the high cost of the program, and crowding out of the private sector (Kasanga 2008; Mason et al. 2013; Mason and Jayne 2013; Minde et al. 2008; OAG 2006; 2008; Xu et al. 2009). Some opposition party MPs were even pushing for FSP reform (see NAZ 2007). This scrutiny coincided with the beginning of the global food and financial crisis, which resulted in high inflation for staples and imports, prompting the government to seek US$68 million in mid-2008 to cover additional procurement costs (Chapoto 2015). MoFNP then suggested that FSP be re-evaluated, resulting in two large stakeholder workshops in April and June 2008 (MACO 2008). Mwanawasa, the original advocate and champion of FSP, died shortly thereafter and was replaced by his vice-president, Rupiah Banda. This collectively created the space to re-evaluate FSP and consider alternatives.

b. Transitioning from FSP to FISP

Despite six years of FSP, the underlying problem of low use of inorganic fertilizer among smallholder farmers still remained with only 30 percent using fertilizer in the 2008/09 agricultural seasons (Sitko et al. 2011). The global food price crisis made maize and inputs more expensive for poor consumers and smallholder producers. Subsidies were not necessarily

discredited, but there was a strong interest in improving their efficacy. Donor partners funding poverty reduction budget support (PRBS) noted in early 2009 that FSP crowded out much needed rural investment programs (see Saasa 2010: 39). MoFNP suggested a universal subsidy to reduce administrative costs associated with targeting (MACO 2008).

For the 2009/10 agricultural season, FSP was transformed into the Farmer Input Support Program (FISP). Like under FSP, the government continued to handle the physical procurement, transport, and distribution of inputs while suppliers were selected through a tendering process. Key changes included that beneficiaries had the capacity to farm 0.5 hectare (rather than just 1 hectare), input packs were reduced from eight to four bags of fertilizer, and from 20 kg to 10 kg of maize seed. In subsequent years, rice, sorghum, and groundnut seeds were added to diversify away from maize. Beneficiaries were selected by Camp Agricultural Committees (CACs) rather than by the cooperatives/farmer organizations of which they were members. [8]

Reducing the number of input bags was intended to reduce high levels of leakage, which resulted in farmers selling excess subsidized fertilizer under FSP. These and other changes were informed by research commissioned by the GRZ from the World Bank (see World Bank 2010) as well as a study tour for government officials to Kenya, Malawi, and Tanzania that was organized by Michigan State University's Food Security Research Project (FSRP). The tour revealed that Zambia distributed more fertilizer than neighboring countries with subsidy programs. Yet, reducing the quantity of the subsidized inputs per beneficiary required addressing deep-seated beliefs among politicians that subsidies win rural votes. Convincing President Banda therefore required emphasizing that if the number of bags per beneficiary were reduced, the number of beneficiaries could be doubled. As one stakeholder involved in the reform stated, "Policy for agriculture inputs is politically motivated. We needed to guide him [Banda] from a political angle."[9] PRBS commitments and disbursements also peaked in 2009 (see de Kemp et al. 2011), providing confidence that MoFNP would allocate additional resources to FISP, which is labeled by the government as a poverty reduction program. By July 2009, cabinet agreed to transform FSP into FISP, and President Banda announced the reform to Parliament two months later.

Despite these changes, program implementation continued to face a number of constraints. Financially, FISP required a high level of resources as the subsidy rate increased to 79 percent by the 2011/12 agricultural season and grew to target almost one million beneficiaries. Between 2009 and 2011, spending on FISP was approximately one-third of all government spending on agriculture (see Mofya-Mukuka et al. 2013). Notable spikes in beneficiaries and the subsidy rate occurred prior to the 2011 presidential elections, which saw Banda and the MMD ousted by Michael Sata and the PF due to support from urban areas.

Administratively, agricultural officers would spend almost 80 percent of their time overseeing FISP rather than focusing on their extension duties (World Bank 2010). Late fertilizer disbursements persisted due to both the continued granting of procurement contracts to capacity-

[8] CACs currently consist of cooperation/farmers organizations from each zone, traditional establishments in the camp, the church, community-based organizations, non-MAL public offices (for example, those involved in health, education, and community development), and an MAL extension officer who serves as executive secretary.
[9] Anonymous interview, Lusaka, Zambia.

constrained NCZ and late payments to private suppliers of urea fertilizer. Two private suppliers, Omnia and Nyiombo, halted supplying fertilizer in the 2012/13 season due to non-payment by the PF government, which in turn claimed it inherited a financial backlog from the MMD (Sayila 2012).

Consequently, many of the same problems with FSP re-appeared with FISP. Evidence pointed to FISP's inability to achieve its stated objectives, crowding out other important agricultural investments, few opportunities for strengthening the private sector, opacity in the tendering process, and late delivery of inputs (e.g. Mason et al. 2013; World Bank 2011). Many of the weaknesses of the program were even acknowledged in the government's own national development plans and agricultural strategies (see MAL 2013).

c. Targeting through an e-voucher

An e-voucher had long been considered a modality for improving FISP's effectiveness. E-vouchers enable farmers to go directly to agro-dealers for subsidized inputs and thereby reduces administrative costs because the government is no longer involved in transport, storage, and distribution (see ACF 2012). The option of using e-vouchers in Zambia first became viable in 2009 when a local start-up company known as Zoona pioneered the use of mobile payments through e-voucher scratch cards.

A broad range of stakeholders advocated for incorporating these scratch cards into FISP, including the Zambia National Farmers Union (ZNFU), Conservation Farming Unit (CFU), the Agricultural Consultative Forum (ACF), and donors. In 2010 and 2011, the donors included a voucher-based input subsidy as one of two performance criteria in the Performance Assistance Framework that underpinned Zambia's PRBS assistance (see de Kemp et al. 2011; World Bank 2012). Yet, despite this convergence on e-vouchers, there was little agreement regarding their design. A project implemented by CFU in 2009 remunerated farmers involved in a conservation farming scheme with Zoona pre-paid mobile phone scratchcard vouchers earmarked for inputs from agro-dealers (Sibanda 2010).[10] In 2010, the Ministry of Community Development (MCD) began using Zoona's e-voucher scratch cards for the Expanded Food Security Pack program that it oversees (see Kasanga et al. 2010).[11] These pilot experiences, plus the study tour to Kenya, Malawi, and Tanzania organized by FSRP and a report by Sitko et al. (2012) provided insights about possible design options.

However, the e-voucher was a radical departure from how FISP had operated for more than a decade, and there were many biases about the technology. The parliamentary agricultural committee questioned whether there was sufficient infrastructure in rural areas for an e-voucher (see NAZ 2013).[12] Others questioned the Government's ability to pay agro-dealers upfront,

[10] In 2013, the successor program, known as the Conservation Agricultural Scaling Up (CASU) program, aimed to train 21,000 lead farmers and approximately 300,000 follower farmers.

[11] The EFSP provides inputs and helps teach improved agricultural practices to "vulnerable but viable small scale farmers," who consist of those who cultivate less than 1 hectare of land and belong to any of the following categories: female/child-headed household, disabled, aged, victims of natural disasters, unemployed youths, households headed by terminally ill-patients, and institutions look after orphans.

[12] Interview with IAPRI, August 24, 2015.

which is critical for an e-voucher system to work effectively.[13] In addition, bureaucrats overseeing FISP feared losing patronage benefits as a result of a more streamlined and transparent system.[14] Thus, in October 2013, the MAL Minister announced that an e-voucher would not precede.

d. Emergence of the Visa card alternative

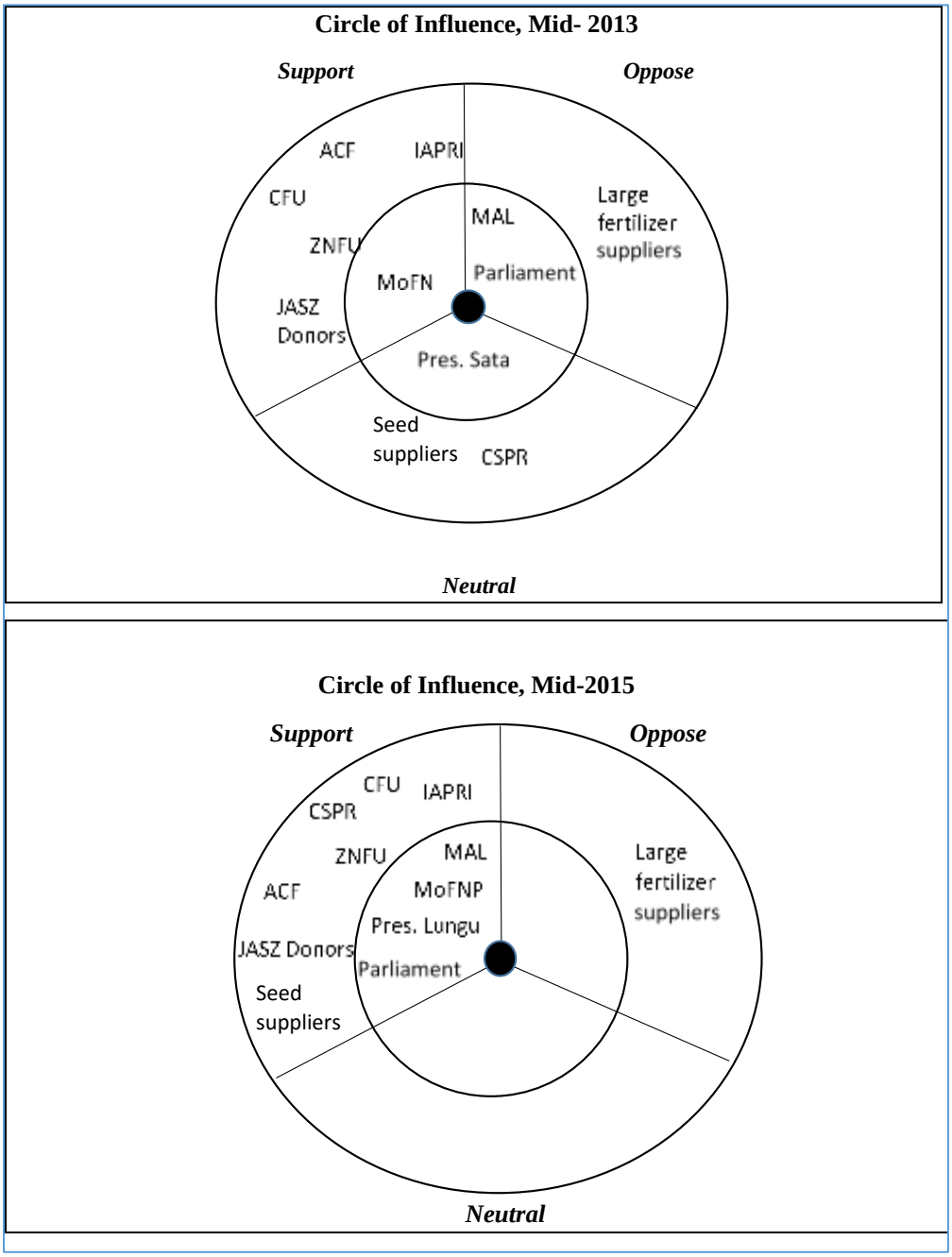
The policy dialogue gained momentum again when ZNFU launched a pre-paid Visa card platform system in August 2014 for one of their programs.[15] The Visa cards incorporated different "wallets" for seed, fertilizer, livestock feed, and herbicides. Instead of relying on mobile phones, the Visa card relies on point of sale machines made available to agro-dealers.[16] ZNFU framed the Visa scheme as "catalytic," and therefore a means of increasing private sector competition, improving access to banking, and a mechanism for ultimately linking all of Zambia's social welfare programs in one card. [17] After Edgar Lungu from the PF became president in the wake of Sata's death in late 2014, ZNFU provided Lungu's new MAL minister, Given Lubinda, more details on their Visa platform.[18] Subsequently, MAL co-hosted two stakeholder consultations in mid-2015 to discuss a Visa-based e-voucher (Mate 2015). A set of donors committed to supporting the e-voucher if it was ultimately adopted.[19] With additional time to review progress with existing e-voucher modalities, an opportunity to witness the initial pilot of the ZNFU Visa model, and promised donor support, the benefits and viability of an e-voucher became more apparent. Moreover, powerful MAL bureaucrats who previously blocked the e-voucher left MAL in 2014, removing an additional barrier to change.[20]

In May 2015, the Zambian Cabinet approved MAL's proposal to pilot the e-voucher based on the Visa platform. Presidential support is necessary for any policy to be approved at Cabinet level, and the PF had long advocated improved targeting of FISP (see PF manifesto 2011; MoFNP 2014). As one informant observed, "The president hasn't intervened because everyone now 'gets it' because at end of the day, he [Lungu] doesn't get any mileage out of opposing this, and everyone in the districts are complaining about elite capture."[21] Thus, the e-voucher was adopted with sufficient time to be effective for the 2015/2016 agricultural season, which was the last one before the August 2016 elections. MoFNP had also long advocated for an e-voucher to reduce the cost of the program.[22]

[13] Interview with MAL, August 24, 2015, Lusaka, Zambia.
[14] This was an oft-repeated view in interviews, including with FAO, IAPRI, MAL, Ministry of Norway, and USAID.
[15] The Lima scheme, which began in 2008, aims to improve the financial inclusion of farmers by providing a credit guarantee covering 50 percent of the cost of conservation agriculture inputs to cover between 1 and 5 hectares (FAO 2011).
[16] Interview with ZNFU and MoFNP, August 28, 2015, Lusaka, Zambia. With point of sale machines, the banks earn money every time the Visa card is swiped so they have incentive to distribute as many machines as possible.
[17] Interview with ZNFU, August 28, 2015, Lusaka, Zambia.
[18] Interview with ZNFU, August 28, 2015, Lusaka, Zambia.
[19] These included the European Union, SIDA, Finland, DfID, the African Development Bank, and USAID.
[20] Interview with MAL, August 24, 2015, Lusaka, Zambia.
[21] Interview with MoFNP, August 28, 2015, Lusaka, Zambia.
[22] Ibid.

Since the e-voucher allows multiple fertilizer companies to participate and increases transparency in procurement, the main opponents to the e-voucher have been the major fertilizer importers who stood to lose out on their favored position in the traditional FISP program.[23] Seed companies have been less resistant because they already have more developed distribution systems with agro-dealers than fertilizer suppliers (see Sitko et al. 2012). Figure 2 uses a circle of influence graphic to demonstrate changing stakeholder positions on the e-voucher over time.

Figure 2: FISP e-voucher Reform, Changing Circles of Influence



[23] Interview with Omnia, August 28, 2015, Lusaka, Zambia.

President Lungu launched the e-voucher pilot in October, 2015 for 241,000 smallholders in 13 districts. Eligible farmers received a pre-paid Visa chip card pre-loaded with approximately US $170, and they had to make a personal contribution of around US$40 before their cards were activated.[24] Beneficiaries can use the cards to purchase fertilizer, seed, herbicide, insecticide, fungicide, livestock feed, and veterinary drugs at participating agro-dealers (MAL 2015). When registering for their card, the coordinates of the farmer's land plot are verified to ensure that recipients are indeed smallholders.

Upholding their commitments, donors provided US $1.6 million for key elements of implementation.[25] Implementing the e-voucher drew on the existing institutional architecture for FISP, including CACs, district agricultural committees (DACs), and Provincial Agricultural Coordinator's Offices. ZNFU printed the cards, engaged with the banks, and worked with the DACs to distribute the cards to beneficiaries (MAL 2015). There were some weaknesses in institutional capacity, as witnessed by the late submission of beneficiary names in certain districts (NAZ 2016). Moreover, the two selected banks for the program were overwhelmed with producing so many Visa cards, requiring MAL to involve a third bank.

Initial evaluations revealed that key weaknesses were poor sensitization of farmers who did not fully understand the system and slow activation of the Visa cards (see Kuteya et al. 2016; Mbebwe 2015). However, approximately 20,000 "ghost farmers" were uncovered through the plot registration process, and FISP was more appropriately targeted (see Kuteya et al. 2016). The PF's party manifesto for the 2016 elections claimed credit for improving transparency in the program (see PF Manifesto 2016: 26). Despite Lubinda's departure from MAL in 2016, the re-election of President Lungu in 2016 suggested that the program would nonetheless continue. Cabinet approved scaling up the pilot for 2016/2017 to 39 districts covering more than 480,000 farmers (Mwale 2015). In addition, the EU pledged significant resources for the expanded e-voucher (see Bwalya 2016).

6. Vitamin A Fortification: Why Sugar and Not Maize Meal?

In the same way that soil nutrient deficiencies concern agricultural policy makers, human micronutrient deficiencies have pre-occupied public health specialists in Zambia, particularly deficiencies in iodine, iron, and vitamin A (Horton et al 2008; MOH 2005). As a result, Zambia's micronutrient policy covers a range of micro-nutrients and delivery mechanisms, including government-supplied supplements for vulnerable groups, food fortification mandates implemented by private sector agribusiness firms, and bio-fortification of vitamin A rich sweet potatoes and maize. The discussion below focuses on a subset of these, including four vitamin A fortification reform episodes, one that came to fruition and three that failed.[26]

[24] This is based on 2016 exchange rates.

[25] These elements included Visa Card production, farmer registration, beneficiary selection, agro-dealer selection and training, and an online database for system management. Personal communication with EU delegation, September 2015.

[26] See Haggblade et al. (2016) for a review of the full range of micro-nutrient policies and their key drivers in Zambia.

a. Aborted efforts to fortify maize meal (1996)

Medical researchers in Zambia have known for many decades about the serious health risks posed by vitamin A deficiency (Friis-Hansen and McCollough 1962; NFNC 2003; Taylor and West 1983; TDRC 2015). Internationally, large-scale efforts to combat vitamin A deficiency began in the 1990s, following the UNICEF World Summit for Children held at the UN in 1990 (Horton et al. 2008). Consequently, large-scale donor resources became available in the early 1990s to promote vitamin A programs, which is when Zambia's efforts began.

As the policy chronology in Table 5 reveals, Zambia's nutrition policy makers have tried multiple times to mandate maize meal fortification as part of their broader efforts to promote increased consumption of vitamin A and other micro-nutrients. In the mid-1990s, concerns about low coverage of vitamin A supplementation through capsules distributed at clinics and schools motivated a series of complementary efforts to fortify and bio-fortify various foods with vitamin A. In May 1996, the National Food and Nutrition Commission (NFNC) and UNICEF hosted a joint workshop to explore options for vitamin A fortification of staple foods. Initially, the workshop focused on maize meal, the country's major staple, as the most promising vehicle for fortification. However, several major millers objected to mandatory fortification on the grounds that it would increase their production costs, affect taste, and place them at a competitive disadvantage compared to Zambia's thousands of small hammermills where enforcement would prove problematic. As a result, this initial maize meal fortification effort failed at the design stage.

Table 5: Vitamin A Policy Chronology

Date	Policy Events	External Influences	Domestic Influences
1990		• UNICEF World Summit on Children	• MOH begins VA supplementation
1993			• NFNC establishes Micronutrient Task Force
1995		• Tate and Lyle purchase Zambia Sugar	• Zambia Sugar privatized
1996	• Maize meal fortification fails: implementing stage veto player refuses		• DHS survey finds 68% VAD • NFNC convenes vitamin A workshop; suggests maize meal fortification first, but millers object
1997		• USAID funds national survey on VAD • USAID funds visit by Dr. Omar Dary, a specialist with experience in Guatemala, to examine prospects for sugar fortification in Zambia • USAID provides $250,000 in equipment, chemicals and training	• national survey on VAD (NFNC 1997) • Zambia Sugar expresses willingness to fortify sugar; requests $1 million in donor funding for equipment and one-year supply of fortificant

1998	• Sugar fortification mandated: SI 155	• FTF members visit Guatemala to investigate sugar fortification	• GOZ bans imports of unfortified sugar
1999			• Zambia Sugar threatens to discontinue fortification if illegal sugar imports continue • MOH agrees to improve enforcement of import ban on unfortified sugar • VA supplementation expanded to a national campaign with biannual mega-doses delivered through CHW campaigns • Kalungwishi Estate begins commercial sugar production, with under 1% market share
2000		• UNICEF supports testing and enforcement of sugar fortification • USAID MOST project sponsors training workshop for VA inspectors • NFNC expresses concern about advertising sugar as a « healthy » product • OAU summit Roll Back Malaria	• MOH begins enforcement of sugar fortification mandate • NFNC establishes Sugar Fortification Technical Committee • Zambia Sugar complains that Kalungwisihi Sugar's fortificant does not comply with fortification regulations
2001		• CIP launches its Vitamin A for Africa (VITAA) partnership among sweet potato breeders in Eastern and Southern Africa	• widespread smuggling of unfortified sugar from surrounding countries accounts for 10% to 25% of national consumption • ZNFU and Zambia Sugar protest lack of controls on sugar imports
2001		• Ilovo, a South African company, purchases Zambia Sugar	
2003		• UNICEF and other donors support VAD survey	• national survey on VAD (MOST,UNICEF,CDC, NFNC 2005) • ZARI releases 2 light orange sweet potato varieties • Kafue Sugar enters sugar market as 3rd producer with 7% market share
2004		• Global Alliance for Improving Nutrition (GAIN) provides training, equipment and premix for maize meal fortification	• NFNC requests GAIN support to design maize meal fortification • large maize millers test fortification and agree to cooperate
2006	• Maize meal fortification fails: government veto player intervenes	• British Foods buys controlling interest in Ilovo, and hence in Zambia Sugar	• CCPC investigates complaints of high sugar prices by large sugar users

		• GAIN comes to Zambia to help NFNC promote maize meal fortification with vitamin mineral multi-mix	• ZABS works with fortification task force and industry to prepares standards for maize meal fortification • Office of the President orders MOH and ZABS to stop preparing maize meal fortification standards
2007		• HarvestPlus approaches ZARI about breeding vitamin A rich maize	• ZARI begins breeding for vitamin A traits in maize, using varieties supplied by CIMMYT through HarvestPlus
2008			• sugar prices spike by 150%, triggering widespread public awareness of high domestic sugar prices
2009	• Sugar fortification reform effort fails: government veto players refuse parliamentary review request		• Parliamentary Committee on Economic and Labour Affairs calls for policy change (dropping vitamin A fortification mandate) to improve sugar market competition • NFNC defends fortification policy (Lusaka Times 2009)
2010		• ODI study of oligopoly in Zambian sugar market concludes that oligopoly combined with lack of import competition enables excessively high domestic sugar prices (Ellis et al. 2010)	
2011			• ZARI submits 4 varieties of bio-fortified sweet potatoes for SCCI review
2012		• ACF regional study concludes that Zambia Sugar exerts monopoly power to raise sugar prices (Chisanga et al. 2014)	• ZARI releases 3 varieties of bio-fortified "orange" maize • UNZA study concludes that sugar fortification mandate constitutes a non-tariff barrier, reduces competition and enables local sugar oligopoly to charge high prices for sugar (Kalinda and Chisanga 2012)
2013		• UNICEF hires fortification consultant to explore maize meal fortification for a third time • given prior concerns, the consultant recommends voluntary fortification	• President's Office phones ZARI to ask if orange maize is GMO
2014			• IAPRI study concludes that sugar fortification limits imports, enabling local sugar producers to charge excessively high prices (Chisanga et al. 2014)

2014			• CUTS study examines reasons for Zambia's high sugar prices (CUTS 2014) • CCPC indicates that lack of competition leads to excessively high sugar prices (Chanda 2014) • NFNC convenes breakfast briefing session to discuss sugar pricing and VAD; defends sugar fortification policy to the press (Chanda 2014)
2015			• ZARI releases 4 varieties of orange fleshed sweet potatoes

Source: Adapted from Haggblade et al. (2016).

b. Sugar fortification mandate (1998)

The NFNC subsequently sought alternate options for vitamin A fortification (Serlemitsos and Fusco 2001). In October 1996, the NFNC Fortification Task Force (FTF) visited Zambia Sugar, which was then Zambia's sole sugar producer and struggling to regain profitability after being recently privatized. To help move these discussions forward, USAID brought in a fortification consultant and financed a five-member Zambian team to visit Guatemala to study sugar fortification efforts there. Zambia Sugar imposed several conditions before, ultimately, agreeing to implement a sugar fortification mandate. From donors, they requested funding for initial equipment purchases, one year supply of fortificants, staff training and public education campaigns. From the GRZ, they demanded a ban on imports of unfortified sugar, which at the time accounted for between 10% and 25% of national sugar consumption. Since no countries in the region fortified sugar at the time, this requirement effectively banned the sale of imported sugar in Zambia (Serlemitsos and Fusco 2001). Following these agreements, in December 1998, the Minister of Health (MoH) issued Statutory Instrument 155 mandating fortification of all household sugar sold in Zambia.

The early implementation years proved tense and contentious. Some of the equipment promised by donors failed to arrive on time. Given the severe cash-flow problems associated with privatization, Zambia Sugar requested an additional $1 million from USAID to cover the cost of fortificants, a request which USAID rejected citing their prior provision of equipment, chemicals, training and support for protectionist regulation (Serelemitsos and Fusco 2001:11). Zambia Sugar likewise claimed that the donors failed to provide adequate publicity for the new fortified sugar. Most importantly, the company complained about continued widespread smuggling of unfortified sugar imports into Zambia from surrounding countries. GRZ responded with stricter border controls, while USAID's micronutrient program (MOST) provided training for health inspectors and testing laboratories.

Although testing of fortification levels in retail and household sugar samples has proven erratic since the imposition of the vitamin A mandate, the few tests conducted have all found a majority of samples tested falling below the mandated fortification level of 10 mg/kg (Serlemitsos and

Fusco 2001, NFNC 2003, Haggblade et al. 2016).[27] The most extensive of these testing efforts, the national VAD survey of 2003, found only 18% of household sugar samples above the minimum required 10 mg/kg (NFNC 2005).

Nonetheless, Zambia Sugar's quality control team indicates that they test every batch of sugar hourly at their mill to ensure that all shipments from the mill meet regulation vitamin A levels. While Vitamin A fortificants in sugar are relatively stable under most conditions, they can differ from the point of the mill to the point of consumption. The major reasons for differing levels is due to poor mixing at the mill. As a result, our stakeholder interviews and most major reviews of Zambia's vitamin A sugar fortification policy express concern about low fortification levels in household sugar and weaknesses in the monitoring system. These concerns have triggered reflection among public health specialists and motivated reform efforts, such as those initiated by Parliament in 2009 (see item d below).

c. Aborted efforts to fortify maize meal (2006)

In the face of lingering high levels of VAD documented by Zambia's 2003 monitoring survey, NFNC resumed its efforts to fortify maize meal, the country's staple food (NFNC 2003). Given their prior failure to gain industry support for maize meal fortification, NFNC enlisted outside support from the Global Alliance for Improving Nutrition (GAIN). In 2004, GAIN agreed to help design, test and market a maize meal fortification standard for Zambia. GAIN provided funding for equipment and premix stocks for 30 millers as well as technical support and training. The project brought back the same consultant who had worked successfully on sugar fortification to work with the local maize industry. Domestically, NFNC launched a Food Fortification Alliance, including key ministries as well as large maize millers, despite their initial objections. Sensory trials coupled with GAIN's financial and technical support ultimately led the large millers to cooperate (Madamombe 2007). As required by law, Zambia's Bureau of Standards (ZABS) established a standards review committee, including the millers, to formally set fortification requirements. The ZABS technical committee completed its review and prepared the proposed standards and testing procedures for public review and final adoption.

At the last minute, in late 2006, the President's Office intervened, instructing MoH and ZABS to stop all work on the maize meal fortification standards. Stakeholders we interviewed in both the public and private sector cited three sets of objections raised by political leaders against introducing mandatory maize meal fortification standards in 2006. First, politicians worried about the potential risk of poisoning given that fortificants would be imported from outside of Zambia. Secondly, they feared that mandatory standards would prevent emergency imports of maize meal from outside of Zambia during drought years. Thirdly, they raised concerns about rumors of a possible impact on human fertility. In short, the maize meal fortification proposal became highly politicized. Even today, Zambia's nutrition and milling communities remain puzzled about why their political leaders intervened to stop this proposed mandate while continuing to endorse other forms of mandatory vitamin A fortification with imported fortificants.

[27] Haggblade et al. (2016, p.33) report available test results conducted by the Food and Drugs Control Laboratory (FDCL) in 1998, by USAID's MOST project in 2000, by the vitamin A deficiency survey (VAD) team in 2003, and by FDCL in 2006 and 2011.

d. Failed sugar fortification reform (2009)

Beginning in 2006, consumer groups began complaining about Zambia's high sugar prices. Initially, several large commercial sugar users (confectionary and brewing companies) complained to Zambia's Competition and Consumer Protection Commission (CCPC) about Zambia's rising sugar prices (Chanda 2014; Ellis et al. 2010). A second major complaint emerged following a doubling of sugar prices in 2008 after large-scale flooding in the cane fields (Chisanga et al. 2014b). More recently, in 2014, high sugar prices again made the news following publication of a sugar market scoping study by the Consumer Unity Trust Society (CUTS 2014, Chanda 2014).

In response to consumer concerns about high sugar prices, a series of empirical studies has examined Zambia's sugar industry and possible explanations for Zambia's high domestic sugar price. These studies generally agree that Zambia's domestic sugar prices frequently exceed those in neighboring countries (Chisanga et al 2014; CUTS 2014; Ellis et al. 2010). Evidence also suggests that the cost of fortification, at only 1% of production costs, cannot explain the price differential (Serlemitsos and Fusco 2001).

Disagreement centers on other possible explanations for Zambia's high sugar prices. On the one hand, Zambia Sugar maintains that high sugar prices stem from the high cost of doing business in Zambia, where they face high value-added taxes and high labor and electricity costs. In contrast, most independent research concludes that high sugar prices result from the monopolistic structure of Zambia's domestic sugar industry coupled with an absence of price competition from imports (Chisanga et al. 2014a, 2014b; Ellis et al. 2010). Structurally, Zambia's sugar industry resembles a classic monopoly since Zambia Sugar holds a 92 percent market share and exports 60 percent of national production (Kalinda and Chisanga 2014). One study summarizes the situation as follows: "Zambia Sugar has embraced fortification, which has also served to control the influx of cheap imported sugar to the Zambian market …. millers, wholesalers and retailers are probably overpricing sugar in the domestic market despite having comparative advantage and surplus production" (Chisanga et al. 2014b: 19-20).

In 2009, Zambia's parliament responded to repeated consumer complaints. Their Committee on Economic and Labour Affairs requested that MOH consider changes to government's vitamin A fortification policy in order to foster competition in Zambia's sugar industry and lower prices. Despite the concerns raised by consumer advocates and parliament, the NFNC has continued to staunchly defend the vitamin A fortification mandate in public statements (Lusaka Times 2009, Chanda 2014). However, in private, many nutrition and public health specialists we consulted expressed concern about the efficacy of the sugar fortification mandate, given the low reported vitamin A levels in household sugar and possible exclusion of vulnerable groups as a result of Zambia's high sugar prices. A regional study by ODI summarizes this tension as follows:

> The government argues that a large part of the Zambian population suffers from vitamin A deficiency, and since sugar is a staple commodity, it is a good medium through which to provide vitamin A to the people. However, many stakeholders outside the Government and the sugar industry consider fortification to be a mechanism for protecting the Zambian sugar market from foreign competition. (Ellis et al. 2010: 5).

Throughout these ongoing debates, powerful vested interests allied with Zambia Sugar lobbied successfully to stifle reform efforts. Ultimately, MOH and NFNC rejected Parliament's request, asserting that they would continue to enforce the vitamin A sugar fortification mandate in light of persistently high levels of VAD (Lusaka Times 2009).

Figure 3 uses a circle of influence graphic to map the shifting positions of stakeholders involved in policy debates over mandatory vitamin A fortification of sugar. Unlike input e-vouchers, where opposition became smaller over time, changing research and information has generated growing opposition to sugar as the vehicle for vitamin A fortification. Nonetheless, with many powerful advocates still in support, including the sugar industry, MoH, NFNC, and key donors, modification of this policy mandate has proven impossible.

7. Analyzing the Robustness of the KM Hypotheses

Our comparative case studies allow for testing the KM hypotheses across policy domains and reform cycles. Table 6 summarizes the eight reform episodes relevant to ISPs and vitamin A fortification.[28] If the hypothesized variable significantly influenced an outcome, we use a positive sign to indicate that the variable facilitated reform as intended, a negative sign if it hindered the intended policy reform, and a naught sign if the variable exerted no clear influence on the policy process.[29]

At the agenda setting stage, regardless of policy domain a recognized relevant problem and powerful advocates are always key, while focusing events are more idiosyncratic in importance. For FSP and FISP, the relevant problem related to declining soil fertility, low productivity and persistently low usage of inorganic fertilizer by smallholders. High leakage and program costs under FISP, in turn, prompted the e-voucher pilot. While President Mwanawasa was the initial advocate for FSP, subsequent reforms were pushed by researchers, donors, civil society, and MoFNP. In 2002 and 2009, severe drought as well as the food and fertilizer price crisis, respectively, were the focusing events that mobilized attention to input subsidies while a technological breakthrough helped push e-voucher reform on the agenda in 2013 and 2015.

[28] A detailed summary of the published documentation and interview evidence applied in testing each of the KM hypotheses are available on request from the authors.

[29] To allow for replicability across country case studies, Resnick et al. (2015) specifies how the variables in the KM can be operationalized and what sources of data are useful to do so. Even after the variables are operationalized, it is important that the same interpretation of the data is possible across different analysts. This is why the detailed hypothesis testing tables are so important because they require researchers to document which sources of evidence and/or which interviewees confirm that a particular variable was present or not in a case study.

Figure 3. Vitamin A Fortification of Sugar, Changing Circles of Influence

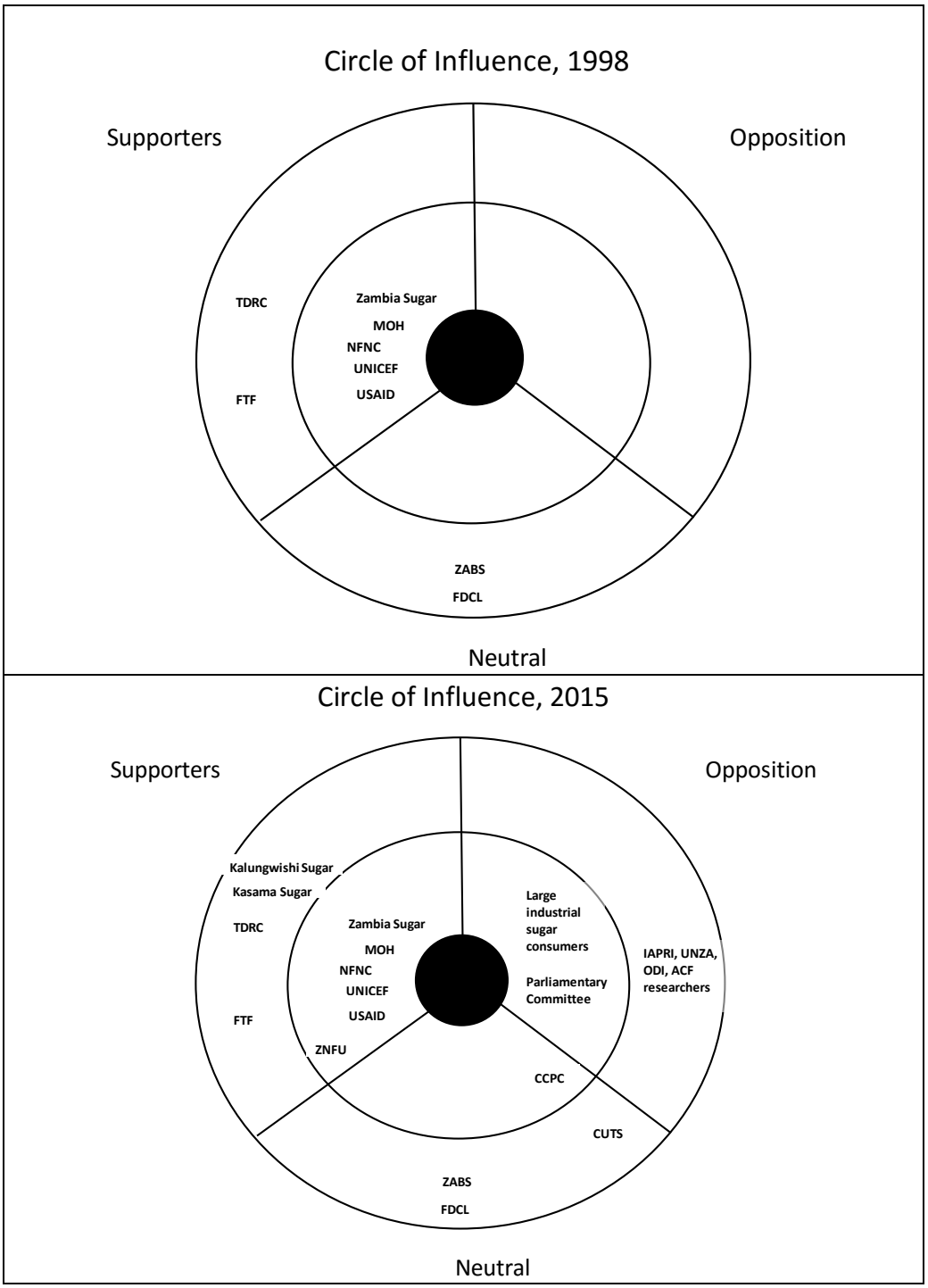


Table 6: Hypothesis Testing Table for Zambia Cases

Policy Stages	Determinants of Policy Change	Input Subsidy Design Modalities				Vitamin A Fortification Proposals			
		FSP	*FISP*	*E-voucher scratchcard*	*E-voucher Visa card*	*Maize meal*	*Sugar*	*Maize meal*	*Sugar*
		2002	2009	2013	2015	1996	1998	2006	2009
		Imple-mented	Imple-mented	Stalled	Imple-mented	Vetoed	Imple-mented	Vetoed	Reform stalled
Agenda setting	1. Recognized, relevant problem	+	+	+	+	+	+	+	+
	2. Focusing event	+	+	+	+	+			+
	3. Powerful advocacy coalitions	+	+	+	+	+	+	+	+
Design	4. Knowledge & research		+	+	+	+	+	+	+
	5. Norms, biases, ideology and beliefs	+	+	-	+			-	
	6. Cost-benefit calculations	+	+	-	+	-	+	+	
Adoption	7. Powerful opponents vs. proponents	+	+	-	0	-	+		-
	8. Government veto players	+	+		+		+	-	
	9. Propitious timing	+			+				
Implement ation	10. Requisite budget	+	+		+		-		
	11. Institutional capacity	-	-		+		-		
	12.Implementing stage veto players	-	-				+		
	13. Commitment of policy champions	+	+		+		+		
Evaluation & Reform	14. Changing information and beliefs	-	-		+		-		
	15. Changing material conditions	-	-		+		-		
	16. Institutional shifts	-	0				-		

Source: Authors' compilation. Adapted from Resnick and Mason (2016) and Haggblade et al. (2016).

Notes: A positive (+) sign indicates that the variable was present in the cases and played a role in the reform proceeding as intended. A negative (-) sign indicates that the variable was present but played a negative role in the reform proceeding as intended. A naught (0) indicates that while the variable was present, it did not affect the reform moving forward. Empty cells indicate that the variables was not present in the cases. Finally, grey boxes indicate that those variables were never relevant since the policy reform never proceeded to that stage of the process.

By contrast, a coalition of international and domestic public health advocates placed micro-nutrient fortification on the policy agenda in Zambia beginning in the early 1990s. A stream of research by WHO, TDRC, local university and donor-supported researchers further motivated political interest by highlighting the extent and durability of Zambia's VAD problem. Internationally, UNICEF's 1990 World Summit for Children focused world-wide attention on VAD and unleashed donor funding for VAD prevention efforts. While important at first drawing attention to VAD in 1996, focusing events proved less clearly identifiable in triggering subsequent attempts to fortify sugar in 1998 or maize meal in 2006.

In terms of policy design, international research and knowledge about micro-nutrient deficiencies, as well as the costs and benefits of various policy responses, guided policy formulation in Zambia. As a result, donors and the various micronutrient projects they fund have frequently served as key contributors to policy design. While research played no clear role in influencing the initial design of FSP in 2002, it was critical for driving program evaluation and reform. In both policy domains, diffusion of international best practice, reinforced by study tours to other implementing countries, played a role. Characteristic of being a "wicked problem" (see Ricker-Gilbert et al. 2013), ISPs are particularly subject to deep beliefs and biases of various actors. FSP included a sunset clause to appeal to donors' preference for governments offering an "enabling environment," the FISP reform partially was justified by appealing to political beliefs about the vote buying power of subsidies, and the Visa card promised to drive "catalytic" development. Beliefs about a lack of infrastructure thwarted initial attempts to push an e-voucher scratchcard. While less salient in the micronutrient cases, vitamin A fortification of maize meal was partially stymied by rumors about potential harm to human fertility.

In both policy arenas, donor support occurred either directly through UNICEF and USAID fortification efforts and funding for e-vouchers, or indirectly through HIPC debt relief and PRBS, and it often helped benefits of reform outweigh costs. In the three cases that proceeded past the design stage (e-voucher Visa card, sugar fortification in 1998 and maize fortification in 2006), promised donor support *ex-ante* helped quell hesitations about the costs versus benefits of policy change. Moreover, while donor resources were critical to the implementation of both the e-voucher Visa card and sugar fortification, delayed outflows in the latter case play undermined fortification implementation at the initial stages.

Differing outcomes in the sugar and maize meal fortification initiatives stem largely from the role played by various veto players in the public and private sector. While private millers squashed early efforts to fortify maize meal in 1996, political leaders blocked the second effort in 2006. The failure of parliament's request to reform the sugar fortification mandate in 2009 underlines the power of Zambia's strong presidency and the weakness of the legislature in both budgetary and policy matters. By contrast, the determined effort of key donors to support sugar fortification pushed this mandate over the finish line by supporting design, financing, implementation and monitoring. Indeed, in all cases, financing along with the commitment of policy champions was crucial to ensuring implementation occurred.

Both changing information and material conditions contribute to strong evaluations of the policies discussed here and a consideration of alternatives. Evidence was found of the failures of FSP, and FISP to raise agricultural productivity or strengthen the private sector, as well as

persistently high VAD levels and low fortification found in tests of sugar. This was coupled with a surge of sugar prices and the rising costs of FSP and FISP. Institutional shifts were less consistently important, with them playing a big role only in the FSP reforms in 2009.

8. Conclusions

This paper has presented the Kaleidoscope Model, a testable theory of the policy process built inductively from existing theoretical and empirical literature on policy processes. The findings suggest that the KM provides a comprehensive but manageable framework for understanding the proximate drivers of policy reform in developing countries. In the eight policy reform episodes presented here, the KM has proved both manageable and consistent in delineating the set of key variables necessary for identifying entry points and opportunities for policy change.[30]
The Zambian case studies suggest several distinctive features of policy formation in the developing world. First, the private sector increasingly plays a critical role. Government delivery of subsidized agricultural inputs increasingly is moving towards distribution through private agro-dealers under the e-voucher while delivery of vitamin A supplements through government clinics is giving way to private sector delivery of fortified foods.[31] In both cases, high costs of government delivery and limited impact motivated more private sector engagement. Private sector implementing agents often influenced debates early in the policy process and in some cases exercised effective veto power at the implementation stage. Analytically, this suggests that traditional, government-centric models of the policy process in the developing world will need to consider the increasingly expansive role of non-government entities in the policy process.

Secondly, donors continue to play an extensive role in shaping the structure and outcomes of developing country policy systems. The case studies document donor influence on policy outcomes through multiple conduits, including by raising public awareness of specific problems, financing major global initiatives and conferences which serve as focusing events, influencing design options, and shaping cost-benefit calculations. Through research they fund, donors become active agenda setters, designers and monitors of policy outcomes. In some cases, donors can even become de facto veto players when implementation requires significant and consistent donor funding or donor-funded technical assistance.

As the development community transitions towards the Sustainable Development Goals, achieving meaningful and timely policy impact on poverty and nutrition objectives will be even more highly valued. In this context, the Kaleidoscope Model offers a promising lens through which practitioners and researchers can assess when and where food security policy reforms are most feasible given a country's underlying political, economic, and institutional characteristics.

[30] Along with these case studies, additional diagnostic efforts in four other African countries have occurred, Please see Babu et al. (2016), Hendriks et al. (2016), Mather and Nyangi (2016), and Resnick and Mather (2016), all available at: http://fsg.afre.msu.edu/fsp/

[31] The same is also true for iron supplementation in Zambia.

Appendix 1: Institutional Affiliations of Interviewees

Category	Agricultural Input Subsidies	Vitamin A Fortification

Government	• Ministry of Agriculture and Livestock (MAL)
	  ○ *Deputy Ministry*
	  ○ *Policy and Planning Department*
	  ○ *FISP Implementation Office*
	  ○ *District Agricultural Coordinator Office, Lusaka District*
	• Ministry of Finance and National Planning (MoFNP)
	  ○ *Economic Forecasting and Modeling Unit*
	• Parliamentary Agricultural Committee
		• Ministry of Health (MOH)
		• Ministry of Community Development, Mother and Child Health (MCDMCH)
		• National Food and Nutrition Commission (NFNC)
		• Food and Drugs Control Laboratory (FDCL)
		• Zambia Bureau of Standards (ZABS)

Research & Advocacy	• Indaba Agricultural Policy Research Institute (IAPRI) • Agricultural Consultative Forum (ACF)	• Indaba Agricultural Policy Research Institute (IAPRI) • University of Zambia (UNZA) • Tropical Diseases Research Centre (TDRC) • Zambia Agricultural Research Institute (ZARI)
Civil Society	• Civil Society for Poverty Reduction (CSPR) • Zambian National Farmers' Union (ZNFU) • National Union of Small Scale Farmers of Zambia (NUSSFZ)	• CARE International • Civil Society Scaling Up Nutrition (CSO-SUN) • Nutrition Association of Zambia (NAZ) • Competition and Consumer Protection Commission (CCPC) • Consumer Union Trust Society International (CUTS)
Private Sector	• Grain Traders' Association of Zambia • Zambian Fertilizers' Association • Omnia Fertilizer Zambia	• Zambia Sugar • Miller's Association of Zambia (MAZ) • Individual millers
Donors	• USAID • Royal Norwegian Embassy • Food and Agriculture Organization • European Union • World Bank	• USAID • UNICEF

Source: Authors' compilation

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