

Food Security in Ethiopia: Review of Research, 2005-2016

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ABSTRACT

A significant amount of research has been conducted on food security in Ethiopia, yet few reviews and syntheses are available. This paper reviews the research indexed on the Web of Science platform from 2005 until 2016 on food security in Ethiopia. It presents a summary of research, analyzes trends and outlines knowledge gaps as well as potential areas for future research. For improved readability, the review categorized and synthesized research into eight thematic research areas: (1) climate change and rainfall, (2) food science and technical agricultural studies, (3) inequalities, (4) individual-level studies, (5) large-scale land acquisitions and land grabs, (6) natural resource management and water, (7) social services and policy, and (8) vulnerability assessments and methods. The results suggest that while important research is being done, there is a greater need to expand our research on inequalities, to engage with new manifestations of food insecurity, to critically reflect on our measures and metrics of food security, and to engage in interdisciplinary approaches. Regular reviews and syntheses of the literature are required to better enable researchers to build upon existing knowledge to identify key knowledge gaps and new research directions.

Keywords: Food Security, Ethiopia, Review, Synthesis

INTRODUCTION

The most commonly used definition of food security is that of the FAO (2003: 28), which defines food security as “when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.” Ensuring food security in Ethiopia is one of the country’s greatest challenges. That nearly one in five Ethiopians required food support during the 2015/16 drought demonstrates a high level of food insecurity as well as a large segment of the population who vulnerable to becoming food-insecure (Cochrane, 2017). It is commonly argued that Ethiopia has made little progress in advancing food security, or that its policies and initiatives are unlikely to achieve this goal (Cafer et al., 2015; Khairo et al., 2005; Lavers, 2013). Undoubtedly, there are serious and significant challenges related to strengthening food security in Ethiopia, but it is also worth recognizing that amid rapid population growth, climatic and land pressures, commodity price spikes and other challenges, significant progress has been

made. Improvements in responding to extreme food insecurity events have occurred (Cochrane, 2017); aggregate yields have increased substantially (CSA, 2004; 2016); some policies have been effective, such as land certification and water harvesting schemes (van der Veen and Tagel, 2011); some extension activities have been relatively successful, such as the introduction of improved crop varieties (Tsedeke et al., 2015); and, there is increasing adoption of some agricultural inputs, such as fertilizer (Taffesse, Dorosh and Gemessa, 2012).

The number of publications on food security in Ethiopia has rapidly increased in the last decade, aligning with the launch and implementation of the Productive Safety Net Program (PSNP; Cochrane and Zerihun, 2018). Yet, few systematic reviews of the literature on food security, with a specific focus on Ethiopia, are available. This is an area Cochrane and Teferi (2017) outline as a key knowledge gap. Reviews, syntheses and summaries of available research can support future research by acting as a resource as well as point out critical knowledge gaps. This paper contributes to food security research in Ethiopia by reviewing and synthesizing the research that was

published from 2005 until 2016. In so doing, the article highlights key research findings that have emerged during this time period. All of the literature focuses upon food security and Ethiopia, as per the inclusion criteria. In order to structure the results and review process, these findings are structured around eight thematic research areas, which include: (1) climate change and rainfall, (2) food science and technical agricultural studies, (3) inequalities, (4) individual-level studies, (5) large-scale land acquisitions and land grabs, (6) natural resource management and water, (7) social services and policy, and (8) vulnerability assessments and methods. A concluding discussion outlines high-level trends and under-researched areas of food security in Ethiopia.

METHODS

Systematic reviews are greatly influenced by the methods utilized in identifying and analyzing the materials involved. For example, a search of this period (2005-2016) for “food security” and Ethiopia using the Web of Science results in 387 publications while the same search on Google Scholar identifies 27,500 publications (Cochrane and Zerihun, 2018). For the purpose of this study, a narrow set of peer-reviewed articles indexed on the Web of Science were included. Using the Web of Science poses limitations, as it represents only a segment of the available research, however an objective of this review is to ensure the findings are all peer-reviewed. Google Scholar has the advantage of being more inclusive, such as including journals published by Ethiopian universities that are not indexed on the Web of Science and also that it identifies publications that are not peer-reviewed, such as reports and theses. Cognizant of these limitations – and therefore the need for future systematic reviews taking different approaches – the inclusion criteria set for this study only includes publications indexed on the Web of Science platform.

The literature search process included time parameters (2005-2016) and utilized two keywords (“food security” and “Ethiopia”). The search period was selected to align with the launch of the PSNP (2005) and ran up until the most recent complete year (2016), so as to ensure replicability of the study process. This paper is not about the PSNP, but rather its establishment is used as a marker in time when food security research expanded in Ethiopia. This process was used by Cochrane and Zerihun (2018) to analyze the trends of food security research in Ethiopia, wherein they identified a rise of publications focusing on food security in Ethiopia during this time period (without seeing a similar rise in related topics).

Using these criteria, the Web of Science search resulted in 387 publications. After conducting a qualitative review of abstracts, it was found that there was a

significant number (120 articles, 31%) of false positives in the results. A false positive was deemed to be a publication that was not primarily about Ethiopia, but may have entered the results if the paper mentioned Ethiopia or referenced works done there. For example, a publication about food security in China may reference Ethiopia, without having conducted any research in Ethiopia, and was therefore excluded. Alternatively, all publications that were primarily about Ethiopia and made even minor reference to food security were retained in the set of literature analyzed. As a result, this systematic review is based upon a subset of 267 publications related to food security in Ethiopia.

All of the papers were reviewed and categorized within a set of thematic research areas, such as food science, natural resource management and climate change. The themes were determined as part of the process and expanded as the literature was assessed. The thematic research areas serve as an organizing framework to review and synthesize the literature. This paper adopts the style of ‘progress reports’ used by the journal *Progress in Human Geography*, which is a combination of a literature review and a critical assessment. Progress reports review the developments of the literature as well as highlight key findings and emergent research directions. As a result, not all of the findings of the 267 papers from the search are included in this review, nor are all papers equally emphasized. Each thematic area provides insight from the available literature as well as critical reflections, such as identifying areas that have been subject to limited research. An attempt is also made to provide reflections on the clustering of methodologies for specific thematic areas of study.

FINDINGS

The results of the literature search are categorized into eight thematic research areas, which are presented alphabetically, not by the amount of literature published or importance. While some key findings are mentioned, the objective is not simply to summarize results, but also to explore other trends, such as methodological approaches and research questions. As might be expected, many of the studies were conducted in specific geographic locations of Ethiopia, or with particular sub-populations. In order to avoid unjustified generalization in summarizing and synthesizing the research, when findings of this nature are mentioned the context is included. However, when studies address broader issues, the contextual details are not emphasized. As a result of the search criteria used, all of the research focused primarily on food security in Ethiopia. The thematic sections that follow are sub-research areas within the broader set of literature on food security in Ethiopia. The thematic research areas include: (1) climate change and rainfall, (2) food science and technical agricultural studies, (3)

inequalities, (4) individual-level studies, (5) large-scale land acquisitions and land grabs, (6) natural resource management and water, (7) social services and policy, and (8) vulnerability assessments and methods. These are each outlined in what follows.

Climate Change & Rainfall

Ethiopia is one of the country's most vulnerable to climate change, particularly shifts in rainfall as the smallholder farmer majority rely upon rain-fed agricultural practices. Abera et al. (2011) utilize panel data to show the key role of rainfall variability in influencing household food security, and that the most vulnerable households encounter these periods most acutely. Households that adapt to the changing climate have better food production (Di Falco et al., 2011). However, few studies have explored how the enablers of adaptation, such as access to credit, are linked with socio-economic status and political affiliation. In this regard, the climate change adaptation literature would benefit from better engagement with variables of inequality so as to highlight more systemic barriers and challenges that individuals, households and communities experience.

Beyond assessing specific adaptation interventions, there are few studies that evaluate climate variability and crop production. The available research shows adverse impacts on production are correlated with climate variability (Arragaw and Woldeamlak, 2016), however the scales of data from the Central Statistics Agency on production and the limited number of weather stations of the National Meteorological Authority pose limitations for studies beyond the local level. The result is that few generalizations can be made. Due to the type of available data, there is a greater reliance upon models to assess potential impacts, with Belay et al. (2015) suggesting maize yields could decrease by 20% by the 2050s. Evangelista et al. (2013) model crop-specific (cereals) scenarios to shed light on the potential impacts on production in light of projected climate change, suggesting that there will be declining spatial trends in cereal production, combined with shifting areas of viability for the cereals. Thus, declines in production as well as declines of in suitable land areas are expected. Strengthening food security for smallholder farmers will therefore require adaptation planning for planting seasons, crop choices, and mechanisms to address the resulting challenges and variability (including expected increases of extreme weather events).

Food Science & Technical Agricultural Research

The largest number of publications identified in this systematic review was categorized as addressing issues of food science or were technically-oriented agricultural studies. The diverse set of studies within this thematic

research area range from assessing soil erosion (Derege et al., 2012) to the effectiveness of pest management practices (Melaku and Habtamu, 2015). These technical studies contribute to the broader understanding of the factors that directly affect food security, particularly for smallholder farmers. Many of these technical studies, however, only made cursory reference to food security. This set of literature was also very specific - a particular soil type, crop variety, during one year of piloting, et cetera - and therefore these will not be a focus in this review. Rather, the aim of what follows is to synthesize the research with more direct linkages to food security, as well as generalizable learning, such as practices affecting yields.

A major area of investment and research within the food science and technically-oriented studies are on alternative practices to improve the sustainability of agricultural outputs, soil health and livelihoods. For example, Hailemariam et al. (2013) argued that the adoption of multiple sustainable practices results in the greatest improvement of maize yields, as opposed to singular intervention adoptions. Other studies analyzed specific components of packages or interventions. For example, a long-term assessment of soil and water conservation projects (specifically fanya juu terraces and grass strips) showed positive impacts on yields, income and food security (Enyew et al., 2013). However, Menale, et. al (2008) caution against generalizations as they showed how results can be influenced by agro-ecology: that stone bunds are beneficial in drier areas, but have limited impact in higher rainfall areas. Sime et al. (2015) compared different tillage and mulching practices in the Central Rift Valley, finding that conventional methods had better agro-ecological and economic outcomes than those promoted under conservation agriculture. Jaleta et al. (2016) suggest otherwise. Rather than advocating new technologies and tools, Nyssen et al. (2011) assessed the traditional plow methods (specifically, *marasha*), and then explored how traditional tools and practices can act as the starting point for shifts toward greater sustainability and food security.

Inequalities

Food security is not experienced in the same ways, at the same times or by the same people, nor do all people benefit from changes where potential gains might be obtained. For example, during times when commodity prices are high the relatively wealthy are able to enhance their status, while rural smallholder farmers do not obtain similar benefits as they produce minimal amounts for market sale (Hadley et al., 2011). Similarly, Matz et al. (2015) showed how price shocks are experienced differently within and between rural and urban areas, and are responded to differently based on economic status - and that producers (farmers) were not benefiting from high prices, as might have been

assumed. Research on the manifestation of inequalities in food security primarily revolved around location (rural-urban), economic status and gender. Given the importance of other expressions of social differentiation in Ethiopia – ethnicity, language, regional-state, religion, political stance, amongst others – it appears the research community has only begun to grapple with the relationship between diverse inequalities and food security.

Often intra-household differences go unnoted because studies focus on the household-level, whereas individual-level studies can highlight these key differences (Cafer et al., 2015; Quisumbing, 2013). For example, the response to food insecurity within a household is gendered, with girls experiencing more severe food insecurity than boys (Hadley et al., 2008a; Tefera et al., 2011a) and having less dietary diversity than boys (Tefera et al., 2013). Gendered differentials have also been shown in service provision and response to services. For example, agricultural extension services are strongly biased toward men, which reduces women's access to inputs, information and technologies (O'Brien et al., 2016; Tewodaj, 2013), which leads to low production and greater vulnerability to food insecurity. As another example, the impact of microfinance on capacity to overcome food insecurity showed different results depending upon the gender of the borrower, with female clients being significantly less likely to be food aid recipients (Doocy et al., 2005). As outlined above, there is a need to adapt to a changing climate, but there are also gendered impacts of these changes. For example, Hailemariam et al. (2013) found that the adoption of sustainable practices increased the workload of women, highlighting how the burden of these, often labor intensive, technologies or innovations are not equally borne. Lastly, in seeking to advance gender equality, it is clear that legal shifts alone will not foster the required changes. Consider land inheritance: while the case for equality of inheritance is evident (Kumar and Quisumbing, 2012), and legal changes have occurred, limited shifts in practice have taken place to-date (Sosina and Holden, 2014), suggesting socio-cultural norms need to be engaged with in order for transformative change to materialize.

Individually-Focused Studies

Many of the food security studies in Ethiopia focused upon individuals (or individual assessments of group behavior), which attempted to address the 'adoption problem', whereby significant investment is made into assessing new crops, varieties, technologies or methods, some of which are strongly promoted by agricultural extension, yet farmer uptake remains low. This is most commonly the adoption of improved varieties (Abebe et al., 2013; Bekele et al., 2014; Solomon et al., 2012). Typical studies of this nature are survey-based and correlate household characteristics with adoption rates.

This approach is also applied to the 'adaptation problem' in the climate change literature (Di Falco and Veronesi 2014; Tagel and van der Veen 2013). It appears there is a need for more in-depth, qualitative studies in this area; the variables are largely descriptive (i.e. greater wealth and assets equates with greater food security). It remains unclear if we have identified the right questions that would enable an improved understanding of the apparent 'adoption problem' and 'adaptation problem'. Far too often in the literature there is an assumption that farmers do not understand good agricultural practice, and therefore need to be convinced to change their behaviour. Infrequently have researchers recognized and acknowledged the expertise and purposeful decision making of smallholder farmers.

There are studies that have recognized traditional knowledge about trait choices and intentional cultivation of diverse cultivars (Hailemichael and Sopade, 2011; Kebu, 2011; Temesgen et al., 2014; Zerihun et al., 2014). These more ethnographically-oriented studies are beginning to influence food security research, but are cited far fewer than the survey-based studies. Additionally, few of the individually-focused food security studies explore what can be learned from examples of wide-spread uptake, such as maize (Tsedeke et al., 2015). Further, there are few studies that explore the influences upon individual choices beyond the individual, such as the role and quality of institutions or infrastructure, which can have a strong influence on opportunities in relation to smallholder food security (Ng'ang'a et al., 2016).

Divergent technical results (e.g. about tilling systems), uncertainty about adoption or adaptation choices and multiple manifestations of inequality imply that food security exists within a complex system. Research that is reflective of that complexity has begun to emerge in Ethiopian food security studies. For example, Rebeka et al. (2014) showed that sorghum trait preferences vary based on agro-ecology, cropping system and extent of invasive species – choice is not simply a matter of yield or drought tolerance. Notenbaert et al. (2013) showed similarly, regarding the fodder traits of maize. Akalu et al. (2013) demonstrated that what are, and are not, profitable conservation technologies vary, and as such researchers ought to avoid broad generalizations. Much more work is required to understand how all these factors interrelate in real-life decision making that affect food security. Inspiration for how these fields of research might be connected could draw from frameworks such as that of Giliolo and Baumgartner (2007), which integrates environment, health and food security within an ecosocial system or nexus approaches utilized by Karlberg et al. (2015).

Large-Scale Land Acquisitions and Land Grabs

Ethiopia has been one of the focal nations of attention in the global debate about Large-Scale Land Acquisitions (LSLAs) and land grabs. The evidence from Ethiopia, however, tells a range of stories reflective of diverse interactions between investors, communities and the government. Maru and Rutten (2015) find the impacts to be negative, particularly when the deals take place in areas where there are competing claims to land resources. Yet, that case study appears to also be a failed investment that only lasted a few years, so the negative outcome may be a reflection of the study site selection. Bamlaku et al. (2015) use a case study in Oromia to show that investments create only temporary or marginal employment, and can increase food insecurity in the surrounding community. From another perspective, Dereje et al. (2016) and Maru et al. (2016) find the practices of large-scale agriculture are not sustainable, and pose challenges for long-term soil health. Other research suggested that it is not foreign investment per se that is the problem, but the nature of the contracts and modalities of engagement. For example, research on contract biofuel production shows positive impacts on food security (Martha and Swinnen, 2013; Riera and Swinnen, 2016). Cotula et al. (2011: S111), in a multi-country study that included Ethiopia, emphasized the role of national governments in securing contracts that benefit the nation and its people; concluding that “properly structuring agricultural investments may mean that some opportunities are missed, but also that benefits from opportunities seized are maximized to their full potential.” In 2013, the Government of Ethiopia made significant adjustments to the land leasing process, moving toward better structured agreements, although monitoring and regulation remain weak (Daniel et al., 2017).

Natural Resource Management & Water

Studies focused on natural resource management and water were common in the food security literature for Ethiopia. Given the predominance of rain-fed agriculture, there is a significant focus on irrigation and water management. For smallholder farmers, gaining access to irrigation or other water harvesting technologies can be transformative and can play a significant role in strengthening food security (Hunnes, 2015; van der Veen and Tagel, 2011). However, these interventions also have complex impacts on watersheds, sediment flows, flooding and downstream systems (Yewhalaw et al., 2014; Yihun et al., 2016). Multiple studies on dam and irrigation schemes in Tigray have been conducted, outlining the impacts and implementation challenges (Eyasu et al., 2016; Gebremedhin et al., 2016; Kifle and van Steenberg, 2015; Woldegebrail et al., 2015). Few irrigation studies took place in other regions, and fewer still explicitly link these activities to impacts upon food security. As the Government of Ethiopia views irrigation as a key

opportunity for improving agricultural production and reducing vulnerability related to variable rainfall (MoWIE, 2017), there is an opportunity for research of this sort to inform design, management and future decision-making.

Of all the thematic areas, there were unique interdisciplinary efforts made within the natural resource management and water realms. For example, Solomon (2015) provides a review of the relationships between forests, water and food security in the northwestern highlands. Amongst the findings - echoing sentiments from individual level studies - is the need for new approaches in the measurement of food security related factors, such as different indicators and alternative processes for monitoring change. Yewhalaw et al. (2014) offered a comprehensive, multi-perspective review of water resource developments in Ethiopia, exploring the potential benefits and negative impacts of balancing the need for hydroelectric generation, irrigation, economic development and flood control as well as resulting environmental and social changes. Mastewal (2016) provided detailed qualitative data regarding governance challenges within irrigation schemes, some of which include insufficient capacity to manage the schemes and a lack of clear accountability systems. While Solomon et al. (2016) outline the potential for unintended health consequences of irrigation schemes, particularly the spread of malaria.

Social Services & Policy

Effective policy combined with well-timed, appropriate and targeted services are critical for addressing food insecurity, particularly as climate change increases vulnerability on the individual scale and has cumulative national impacts on economic growth (Arndt et al., 2011). The climatic pressures could be worsened by population growth and land-use changes (Diress et al., 2010). Ethiopia has decades of experience with emergency relief efforts, most of which are not captured within the time frame of this study. However, analyzing the experience of drought in the pre-PSNP period, Gilligan and Hodinott (2007) demonstrate that timely and targeted emergency food aid can have positive impacts well beyond the emergency period, while Little (2008) find that food aid did not lend toward the emergence of dependency behavior. The latter of these points (on dependency), however, was primarily because distributions were uncertain and poorly timed. Outside of the publications identified by Web of Science, there is emerging research that suggests when services are stable, and when government trust is high, behaviors may in fact change (Oren 2013). Devereux (2009) also analyzes the pre-PSNP period finding three key factors contributing to extreme food insecurity situations - production failure, exchange failure, and response failure.

The PSNP was among the most studied programs during this period. Despite a set of positive research (Bethelhem et al., 2015; Porter and Goyal, 2016), the diverse impacts of the PSNP are beginning to emerge. For example, the PSNP is not enabling households to equally accrue all forms of assets; positive impacts were seen on tree holdings but not on livestock, the latter argued to be linked to credit access (Andersson et al., 2011). Due to the time investment required (as participation in the public works programs), PSNP participants are less likely to invest in soil erosion control measures, but are more likely to invest in fertilizer (Zenebe and Kessler, 2015; Yonas and Broussard, 2013). The dominant modality of the PSNP, a food for work scheme, has shown to be far less effective than other food security support packages for the most vulnerable members of society, but offers greater benefits for those with relatively better economic status (Fredu et al., 2010). Some qualitative studies highlight that the implementation of the PSNP serves alternative agendas and is not operating as designed (Bishop and Hilhorst, 2010; Cochrane and Tamiru, 2016). Devereux and Ulrichs (2015) also pointed out that the design of target-based and graduation-driven programs, like the PSNP, run the risk of becoming politicized as a means to demonstrate progress and success.

Another set of challenges for the PSNP relate to scale and resources. As demonstrated in the drought of 2015/16, there were many households vulnerable to food insecurity which were not included in the PSNP. Ayalneh (2012) noted that it is not only the food insecure that should be the focus of attention, but also large numbers of people who are vulnerable to becoming food-insecure. Lavers (2013) questions if any combination of programs, including and beyond the PSNP, can achieve food security. To this point, the greatest determinant of food security is household location and geographic setting, as opposed to participating in the PSNP or having weather insurance (Hunnes, 2015), highlighting that these programs are not transformative nor are they enabling masses to become food-secure. To an extent, the government recognizes the limits and limitations of its programs, but must make difficult choices in a context wherein there is limited resources, financing and capacity to meet the social and development objectives of the country (NCP, 2016).

Vulnerability Assessments & Methods

Numerous local-level and regional studies have been conducted on vulnerability to food insecurity, the findings of which are often highly context-specific. Many studies attempted to offer generalizable findings by identifying correlations between levels of food insecurity with sets of variables (land size, livestock holdings, family size, income, educational attainment,

et cetera), which showed that better-off households experience less food insecurity. Assessments of this nature are regularly conducted, but appear to add little to our knowledge of food security beyond describing well-established trends. However, some unique research questions have entered into the food security discourse in Ethiopia. Examples of this include studies on the relationships between food security and water insecurity (Hadley and Freeman, 2016; Stevenson et al., 2016), school absenteeism (Tefera et al., 2011b), neurologic disorders (El-Sayed et al., 2010) mental distress and disorders (Hadley et al., 2008b; Mulusew et al., 2015) and adherence to antiretroviral therapy (Negassie et al., 2013). As outlined above, there is a need to diversify the questions posed, such as exploring the role of social networks, political affiliations and social conditions that relate to vulnerabilities and food security status.

At a broader level, there are important developments of methods for assessing food security. While there is no 'measure' for food security, there are many indicators employed to assess it. In evaluating nutrition in Ethiopia, for example, Watson et al. (2011) find that there is no consistency of the methods and indicators used, resulting in inconsistent results. Rather than suggest that all researchers should adopt a specific set of indicators (such as those used by the Government of Ethiopia or the FAO), greater research needs to assess the suitability of the diversity of existing indicators – what information is captured well, at which scale, within what timeframe, and so forth – so as to inform the development of future data collection tools, as Burg (2008) and Watson et al. (2011) have done. Indicators and methods greatly influence the results (Maxwell et al., 2014) and thus the use of alternative methodologies and approaches, such as comparative mind maps (Kraaijvanger et al., 2016) or traffic light systems (Dechasse et al., 2012), may provide unique insight that shifts the questions and metrics commonly utilized. Interdisciplinary work is introducing new methods to studies of food security, such as network analyses. For example, studies on social capital and networks highlight how these relationships can mitigate shocks (Tesfamicheal et al., 2016) and how different social networks play different roles and have unique impacts (Cavatassi et al., 2012). Much more research is needed to assess how these networks are embedded within relationships of class, religious and ethnic adherence, and political affiliation.

CONCLUSION

This review of the literature on food security in Ethiopia has showed that much progress is being made, and new research directions are being pursued. Much of the research remains within its disciplinary echo chamber, and more effort is needed to transfer across disciplines, particularly involving those outside of

academia, namely decision makers and practitioners. As emergency response continues to improve, and safety nets seek to protect the most vulnerable from extreme food insecurity, there is a need to focus on the new frontiers of food security research, which includes malnutrition and food quality issues related to the dietary transition. Far too many studies are limited to descriptive statistics of a simple set of variables, typically outlining numbers and percentages of individuals or households experiencing food insecurity. As highlighted by Cochrane and Teferi (2017), many studies are conducted on similar topics, without building upon, and contributing to, the collective research base. In addition to advancing the research questions posed, there are limitations in some of the literature, in that there is too much of a focus on data description and too little on explanation and drawing insight from the findings.

With regard to malnutrition, there are new studies exploring dietary diversity, seasonality and micronutrient deficiencies (Achenef et al., 2015; Bekele et al., 2014; Hirvonen et al., 2015; Sibhatu, et al., 2015; Tefera et al., 2013), but these have had minimal influence on policy and practice to-date. On the dietary transition, there are almost no studies exploring its implications in Ethiopia, particularly in urban environments, and the rising burden of non-communicable diseases. The focus remains primarily upon quantity, not quality. This needs to shift, particularly as segments of society deal with challenges not only of insufficient food, but too much food of poor quality.

It is noteworthy that only one study of the 267 publications identified in this review of food security research in Ethiopia began with the difficult reality of Ethiopian decision-makers: limitations of resources, financing and capacity. Based upon this, Tewodaj (2011) sought to assess which forms of public expenditure offered the greatest return to investment, specifically those related to rural welfare. Rather than the seed, technologies or methods studied in many of the agricultural and technical studies, which Tewodaj finds have a low return of investment, the findings

indicated that investments in public infrastructure, specifically roads (with more concentrated returns) and education (with broader returns) have higher rates of return. Research such as this is relevant to decision makers, as it recognizes the limitations of the government and makes relevant and appropriate recommendations. Far too often, recommendations are made without such grounding and are not influencing how decisions are made due to their lack of contextual appropriateness and feasibility.

Vast sums of time and resources are invested in research on food security in Ethiopia. A serious research challenge that exists for those within Ethiopian universities, institutions, organizations and government agencies is a lack of access to the research reviewed in this paper. Despite a rise of open access options and alternative means to share research, the majority of publications included in this review require subscriptions or payment for access, and are largely inaccessible in the country they are written about. As Cochrane and Teferi (2017) outline, there is a need for regular systematic reviews to enable a greater exchange of learning across disciplines and to inform future research – these reviews may also act as a means to partially overcome the barriers of access, if published in open access fora. Similarly, far too seldom is research communicated in ways that transcend academia, despite the general aim of supporting changes to individual food security, policies, programs and services. It is unrealistic to expect decision makers and practitioners to be reading these publications, not the least because they do not have access to most journal publications. While outlining effective practices are beyond the scope of this review, it is evident that researchers need to play a more proactive role in engaging with audiences beyond the research community.

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