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The new achikumbe elite: food systems transformation in the context of digital platforms use in agriculture in Malawi

M. Tauzie[1] · T. D. G. Hermans[1,2] · S. Whitfield[1]

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Abstract

The Malabo Declaration places the transformation of agriculture and food systems at the centre of regional and national policy priorities across Africa. Transformative change in the way that food is produced, processed and consumed is seen as not only necessary for addressing the complex challenges of food security and poverty alleviation, but also as a driver of new employment opportunities and economic development. As pointed out within the recent UN Food Systems Summit, essential elements of food system transformations include digital transitions and the empowerment of women and youth. However, there are few empirical examples demonstrating how these agendas come together to affect food system change. Here we focus on an enterprising group of young farmers referred to as Malawi's *new achikumbe elite*, who are urban based, educated and engaging in agriculture on a commercial basis. The aim is to characterise this emergent group of agriculturalists and to understand the role that they have within the transformation of Malawi-s agricultural sector. We explore how digital platforms are supporting the emergence of this new category of farmer and positioning young people as agents of change in food systems transformation. Based on interviews and ethnographic research with 32 young farmers between 2018 and 2022 combined with interviews with representatives of service providers and agricultural organisations, we argue that this group is characterised by a higher level of education, self-dependency and use of digital platforms, enabling them to adapt their context to sourcing production resources and engaging in commercial agriculture. We present evidence that digital platforms are supporting the new achikumbe elite (NAE) to engage flexibly with new commercial markets, contracts and access a wider range of training and advice. However, while digital platforms can offer more equitable access to information and market opportunities, they also represent potential avenues for food system transformations that are inequitable. As such, we argue that there is need for digital technologies to mitigate against potential inequalities.

Keywords Young farmers · Food systems transformation · Malawi · New achikumbe elite · Digital platforms

Abbreviations

AICC	African Institute of Corperate Citizenship
CISANET	Civil Society Agriculture Network
DARS	Department of Agriculture Research Services
HLPE	High Level Panel of Experts
FAO	Food and Agriculture Organisation of the United Nations
ICT	Information and Communication Technology
IFAD	International Fund for Agricultural Development
NAE	New Achikumbe elite
NGOs	Non-Government Organisations
UNFSS	United Nations Food Systems Summit
UNESCO	United Nations Educational, Scientific and Cultural Organisation
NSO	National Statistics Office of Malawi

✉ M. Tauzie
m.c.tauzie@leeds.ac.uk

T. D. G. Hermans
Thirze.hermans@wur.nl

S. Whitfield
s.whitfield@leeds.ac.uk

[1] Sustainability Research Institute, School of Earth and Environment, University of Leeds, Leeds, UK

[2] Wageningen Centre for Development Innovation, Wageningen University & Research, Wageningen, The Netherlands

Introduction

The Malabo Declaration is a commitment made in 2014 by Heads of State and Government of the African Union to achieve the agricultural vision of the continent through accelerated agricultural growth and transformation by 2025. It places the transformation of agriculture and food systems at the centre of regional and national policy priorities across Africa. Transformative change in the way that food is produced, processed and consumed is seen as not only necessary for addressing the complex challenges of food security and poverty alleviation, but also as a driver of new employment opportunities and economic development. Agriculture in Africa is described as having "untapped potential to create jobs, both directly and indirectly" (Brooks et al. 2013, p. 9). Hence policy-makers and development professionals promote agriculture more than any other sector as the 'saviour' of youth employment. However, low productivity, poor access to land, capital, extension services and the negative status associated with agriculture are some of the constraints faced by youth in agriculture (Canning et al. 2015; Geomans 2014; Kaneene et al. 2015).

The United Nations Food Systems Summit (UNFSS), held in 2021, recognised digital transitions and the empowerment of women and youth as key to shaping a transformed future of food systems on the African continent.[1] On the one hand, digital technologies may help to overcome some of these constraints by making agricultural production more efficient and adaptable through asset enhancement (Duncombe 2014), and connect producers to markets. But they can also make agriculture more attractive to youth, who as digital natives have a comparative advantage in being able to engage with these digital innovations (May et al. 2007; Rehman et al. 2022). However, there are few empirical examples that explore the relationship between digital transformation and youth empowerment and how these might interact to affect food system change.

Here we focus on an enterprising group of young farmers referred to as the new achikumbe[2] elite, who are urban based, educated and engaging in agriculture on a commercial basis. The aim is to explore how digital platforms are supporting the emergence of this new category of farmer and positioning young people as agents of change in food systems transformation. Based on interviews with young farmers and digital service providers, we address the following three research questions:

(1) who are the new achikumbe elite?
(2) what is the role of digital platforms in shaping the practices, capabilities and characteristics of the new achikumbe elite?; and
(3) how are digital platforms positioning the new achikumbe elite as agents for transforming food systems in Malawi?

Background

Food systems transformation

Food systems transformation is the fundamental change in structural, functional, relational and cognitive aspects of socio-technical dimensions of the food systems, which lead to new patterns of interaction and outcomes (Scoones et al. 2020; Whitfield et al. 2021). This may be brought about through meticulously planned interventions by policy actors (Schot & Steinmueller 2018), emerge from large scale political and social mobilization (Stirling 2015); or be triggered by external biophysical factors such as climate change (Kates et al. 2012). Following Scoones et al. (2020), we adopt the concepts of systemic and emancipatory perspectives on agricultural transformation without making judgement of which transformation is desirable over the other. Systemic perspectives focus on the intentional changes in technologies, behaviours and institutions to steer complex systems towards normative goals. Contrary, an emancipatory perspective places emphasis on fostering human agency, creating social attributes, and capacities that empower individuals and communities to take action to desired futures (Scoones et al. 2020).

Understanding the systemic and emancipatory perspectives directs us to identifying, on the one hand, the institutional, technological and behavioural leverage points within agriculture and food systems, and on the other hand, the agency that individuals have within these systems. These two perspectives are compatible as well, for example we might expect that the emancipatory transformations that individuals undergo might be a catalyst for systemic change. Similarly, new technologies, institutions and markets might provide new, transformative and empowering opportunities for individuals. Although there are also risks that transformation further marginalises the vulnerable, reinforces the status quo and does not account for social differentiation (Blythe et al. 2018). Therefore, the benefits of transformation cannot be assumed to be universal for all groups as "transformative action often involve trade-offs that disproportionately affect the already marginalised or vulnerable

[1] Under solution cluster 1.1.2 a. one of the 59 solution clusters that were compiled from an input of various stakeholders on the game changing propositions that can be employed in order to achieve the 5 UN Food Summit action tracks; https://foodsystems.community/game-changing-propositions/

[2] Chichewa term to mean modern farmer.

groups" (p. 1214). Ignoring the implications of social differentiation threatens the main tenants of emancipatory transformation; the discovery of radically alternative futures (Castree 2015; Swyngedouw 2010).

As such, the simultaneous adoption of both systemic and emancipatory lenses turns our attention to the interconnected nature of how new actors, capabilities, technologies and market opportunities co-evolve in shaping food system transformation (Drimie et al. 2018; Moore et al. 2018).

Youth in African agricultural and food systems

The UN Food summit 2021 outcomes (Caprile 2021) emphasized the role of youth in food systems transformation both through their engagement in the process as well as their priorities being strongly reflected in the outcomes and recommendations. This emphasizes integrating youth, food systems and innovations as a cross cutting issue.

Studies of youth in African agriculture and food systems largely come from a starting point of seeking to understand the barriers and opportunities for greater youth engagement in agriculture. It is recognised that young people possess qualities and skills such as innovativeness and risk taking (characteristics and capabilities) that are suitable for a successful engagement with agriculture and for contributing actively to the transition towards more sustainable food systems, (Ginwright and James 2002). Sumberg et al. (2015) argue that for the agriculture sector to provide attractive employment for youth, there needs to be public and private support for creating 'promotive' (enhancing incomes and capabilities) and 'transformative' (addressing social inequalities) employment. However, youth related policies and development interventions have largely fallen short of achieving this (Okali and Sumberg 2012; Anyidoho et al. 2012a, b); and inadequately address some of the fundamental issues around secure land tenure and resource access (Ameyaw and Maiga 2014). The majority of this African literature is focused on rural youth, and there are few studies that seek to understand the burgeoning role of urban based, high educated youth active in agriculture (Geza et al. 2022).

Youth capabilities and characteristics

Through a groundswell of research in recent decades, youth have been defined and understood from varying perspectives. The most common classification is by upper and lower limit age boundaries as used by national governmental bodies and international organisations; for example the Malawi National Youth Council define youth as those aged 14–25 (National Youth Council 2013), UNESCO categorises youth as those aged 18–24, and in the African Youth Charter, youth are those aged 15–35. Agrarian literature classifies young farmers with varying age ranges extending between 15 and 35 years (Chipenda and Tom 2020; Sumberg and Hunt 2019; Anyidoho et al. 2012a, b). The lack of consistency in definition by age within youth and agrarian literature cautions how evidence is cited in support of arguments about young people in farming.

However, the HLPE (2021) report on promoting youth engagement and employment, adopts a relational term defined by their position in intergenerational relations across the life course. For statistical and econometric analysis, youth classification by age allows disaggregation of data reinforcing its continued use in policy discourse particularly in Africa (Sumberg & Hunt 2019; National Youth Council 2013). However, it does not account for other socio-economic factors or relational aspects that are relevant beyond classification by age (White & Wyn 1997; Durham 2000; Sumberg and Hunt 2019).

A generational perspective (Hopkins and Pain 2007; Huijsmans 2016) focuses on understanding youth as a social group in relation to other social groups. A generation, as argued by Mannheim (1952), share more than the birth date and biological age to include shared formative experiences, perspectives and identities that position them uniquely in relation to other generations. For instance, the generation of 'digital natives', or 'net generation' born between 1980 and 1994, characterised as living with technology and having a familiarity with ICT from an early age. For this generation, technology has had a fundamental influence over social networks and socialization.

Taking a generational perspective, we consider the characteristics and capabilities that shape the boundaries of this socially constructed group. Characteristics refers to young people's assigned attributes such as their entrepreneurship, motivations and other cross cutting factors such as gender, education status and age. On the other hand, capabilities refer to the attained productional attributes such as the information at their disposal, capital assets held and accessed, and social networks. Certain capabilities have become characteristics of this group, for instance their use and access to technology (e.g. 'digital natives') can be understood as both a capability as well as a characteristic. Such a perspective is also compatible with the notion that youth is, in part, a transitional phase, one in which the capabilities and characteristics of individuals are formed and changed (Harris 2004; Lehmann 2004; Richards 1956).

Lastly, intersectional perspective which posits that each individual's life is shaped by individual circumstance and relationships both structural and contextual such as gender, class, education, mental ability and wealth (Glover and Sumberg 2020). Young people can therefore assume cross-cutting and overlapping identities, relations other than *youth by age*. These identities determine the nature of life opportunities that they can take advantage of. As an example, Sumberg and Hunt (2019) prioritizes *gender and family*

wealth as key determining factors and *ethnicity and education* as differentiating factors to the opportunities that youth can avail themselves.

In this paper, our interest is to understand the intersections of youth's own characteristics and capabilities within given contexts to influence their choices through agriculture/food systems production. The expectation is that young people exercise agency and hence are more open to agricultural technology and commercially focused agriculture (Betcherman and Khan 2015; FAO et al. 2014), thereby demonstrating their entrepreneurial orientation and motivations. On the contrary, their ability to operationalise the skills and motivations depends largely on their production capacities such as production assets and knowledge as well as social networks. Although our approach focuses on the characteristics and capabilities in understanding youth, we acknowledge, as in transitional perspective that *youth* is not a static condition. As youth engage with the food systems, their own state progresses/transforms such as their relationship/position within the food systems transformation changes as well.

Digital platforms

Digital technologies have been transforming the global agricultural sector, with developments in mobile technologies, remote-sensing, precision agriculture, and models etc. Within the context of the Malawian agricultural sector, the access to digital communication platforms (e.g. social media or mobile apps) in combination with the increase of smart phone usage, has created a new transformation for market and information access (Lohento and Ajilore 2015). Digital platforms enhance the efficiency of agricultural labour through providing more equitable access (urban and rural farmers) to information on farming methods, and real-life market data. However, challenges still persist due to costs of internet and limited infrastructure (Duncombe 2014; Mabiso and Benfica 2020).

The information shared via mobile devices, now available to most farmers, covers market prices, weather, transport, and agricultural techniques via voice, text messages, radio, apps, social media and the internet. Moreover, digital access via phones or other internet devices means farmers can access this information on demand in every stage of agricultural production. The mobile internet access provides new search technology which has various advantages in terms of geographic coverages, usage and cost (Aker and Mbiti 2010). Such services have been proven to significantly enhance the economic transformation of sub-Saharan Africa, through mobile banking and social media (Aker 2010; Aker and Mbiti 2010; Baye et al. 2006).

Agricultural development initiatives from government or NGOs predominantly focus on rural farmers dependent on extension services. The digital access to agricultural markets and learning provides an opportunity to reimagine farming as a modern business making it attractive to young farmers (Irungu et al. 2015). It has the potential to enhance young farmers' agency thereby supporting emancipatory food system transformation. However, the increased digital connectivity between people also raises issues of information quality and reliability.

To this end, Klerkx et al. (2019) emphasize that there is a lack of work on the social science side of digital agriculture, under which digital platforms fall. In particular, they identified 4 themes which are weakly developed, one of them being the digitally enabled agricultural transition pathways. Here our empirical case studies on the use of digital platforms by young farmers and their impact on the food system transformation in Malawi provides a contribution to understanding possible digital transition pathways. We therefore present in Fig. 1 the role of digital platforms in the agency of young farmers (characteristics and capabilities) in food system transformation. We conceive of a dynamic interrelationship between the transformations that young people experience in their own situations—changes in their characteristics and capabilities, in which digital platforms play an important role—and broader transformation of the food system. Unlike systems approaches to transformation that place emphasis on relations across scales and geographies, emancipatory focuses more on processes and capacities. Under this approach, Stirling (2015) argues opportunities for transformation are understood within individual smaller actions that over time, collectively change the status of the system. It thrives on understanding networks that address power dynamics and link emerging new actors, processes and structures that challenge present realities to create new pathways (Drimie et al. 2018; Moore et al. 2018). These systemic and emancipatory changes simultaneously act to shape livelihood activities and outcomes of young people in agriculture.

Context of study: Malawi's new achikumbe elite

Malawi is an agrarian led economy with a youthful population (aged between 10 and 35) of 47 percent (NSO 2019). As an agricultural economy, maize is the predominant subsistence commodity and tobacco the key commercial crop grown by smallholder farmers, while estate farming commonly produces cash crops such as tea, cotton, sugarcane and tobacco. Despite agriculture being a key sector, employing the majority of the working population as well as being the main contributor to forex earnings, the sector remains extractive and hence both production and productivity remains low (Swarts and Aliber 2013). The Malawi vision 2063 prioritises modernisation of agriculture and recognises agriculture as one of the major sectors to drive export and economic growth (National Planning Commission 2020).

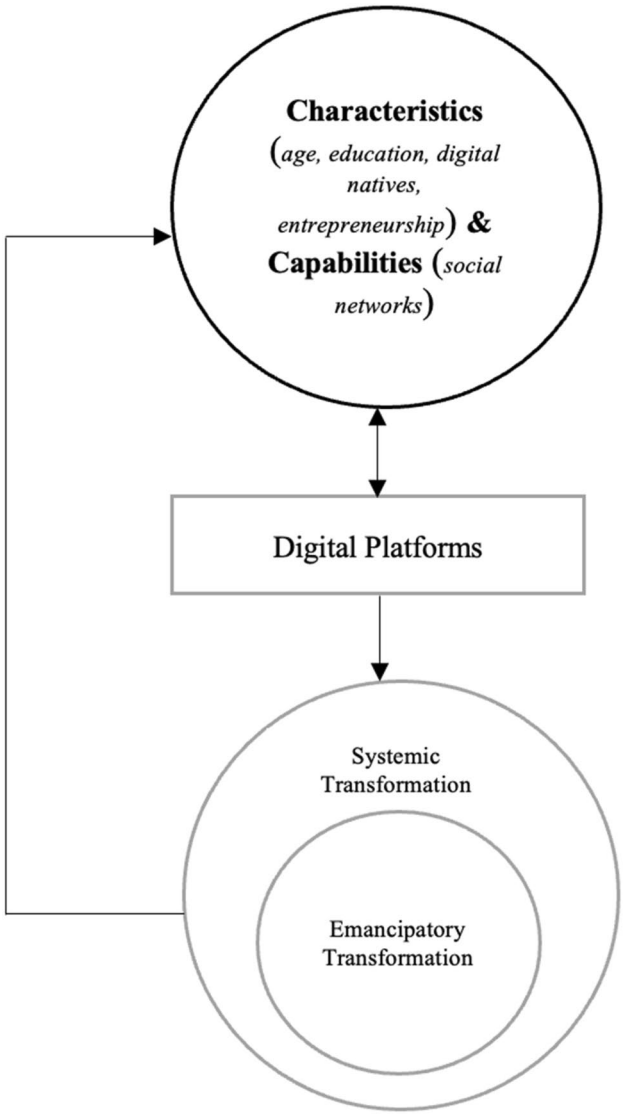

Fig. 1 Conceptual Framework showing the interconnection between the achikumbe elite, digital platforms and transformation

Achikumbe in Malawi, is a term that is associated with a class of elite farmers that president Kamuzu selected as champions that would help transition Malawian agriculture to capitalist/ modern agriculture (Anseeuw et al. 2016; Cammack et al. 2010). To enable this transition, he provided his achikumbe class of farmers with access to modern extension service, production methods, links to profitable markets.

We adapt the concept of achikumbe; modern farmer and refer to the young people currently entering or engaging in agriculture in Malawi as the new achikumbe elite (Tauzie 2021). For the young farmers in this study, we refer to them as the new achikumbe elite; 'new' achikumbe because they represent a different group of farmers, young and with unique characteristics and capabilities, who are commercially driven. Although some of these young farmers inherit pieces of land in their home villages, due to their migration to (peri) urban areas for formal jobs, they tend to rely on renting and buying customary land through informal land markets for their agricultural ventures, as opposed to using their inherited land which is usually too far for practical use. The farms in use range from 0.4 hectares to 50 hectares. As a result, access to land remains key to their scaling efforts and continued engagement into agriculture. They pursue effective and modern extension services because their main goal is to increase productivity and profitability.

These new achikumbe elite farmers are entering and engaging in agriculture on commercial basis to support their livelihood. The young farmers are re-imagining their skills, qualifications, innovations, networks and identities to successfully fulfil the potential in the agricultural sector. The agricultural sector is acknowledged and recognised for its profitability potential due to increasing demand for food in urban food markets, yet inadequate supply.

The majority of recent studies on youth and agrarian livelihoods explore rural youth aspirations for agrarian livelihoods (Nandi et al. 2022; LaRue et al. 2021; Daum 2019; Metelerkamp et al. 2019; White 2020). In summary, the findings show that rural youth aspire for "secure, salaried, white or blue-collar jobs while putting farming futures far down the list" (White 2020, p. 10). Elias et al. (2018) found female rural youth had a high aversion to future agrarian livelihoods than their male counterpart. Ben White (2019) in his survey with 10,000 rural youth aged 18–35 across twenty-one African countries found farming is an option for youth if land and inputs are available and farming is partially commercial and combined with other income sources. He makes a strong assertion that there needs to be a new generation of would-be smallholder farmers if there is to be a farming style that has the interest of smallholder farmers livelihoods and an ecological benefit to that of corporate benefits (White 2020).

Earlier studies have explored types of young farmers closely related to the new achikumbe elite in Africa. In Kenya Muthoni writes about their presence and refers to their engagement in agriculture as a *side hustle* (Mwaura 2017). Irungu et al. (2015) also discusses an emerging trend where educated young people, *Mkulima Young Champions* are turning to agriculture on a commercial basis to support their livelihood. Like Mwaura, he adds the aspect of using mobile phones and internet as a means of accessing information about agricultural markets and production methods. These youth use social media such as Facebook to link directly with their customers. Mwila and Leshan (2015) write about urban young farmers involved in some form of part time or weekend farming in Zambia. They describe the *weekend farmers* as missing from research and attribute it to the dichotomy in developing countries where "if it is rural then agriculture, if urban then industrial" (Mwila and Leshan 2015, p. 122). Recently, Abay et al. (2021) in their study on

Table 1 Summary Profiles of the achikumbe elite farmers interviewed

Main Participants interviewed		Total
Male		23
Female		8
Age range:	20–25	–
	26–35	29
	36–40	2
Farming status	Part time	7
	Full time	24

rural and peri urban youth in six African countries (Ethiopia, Niger, Nigeria, Tanzania, Uganda, and Zambia), underline the importance of supporting youth mobility between peri-urban food systems and jobs as part of rural–urban continuum. White (2020) and Huijsmans et al. (2021), although not specifically focused on urban farmers, study the *returnees,* a term used to describe those who left but later returned to rural agriculture after a period of out-migration.

Methodology

The study uses data that was collected in two time periods in 2018 and 2022 in Malawi. By returning and resampling over this 4-year period, there is an opportunity to observe/detect any nascent systemic or emancipatory transformation and how things are changing in terms of technology use amongst these group of farmers. A similar ethnographic research design was used for the two data collection phases that utilised an online survey, focus group discussions, interviews and key informant interviews. We targeted young people aged between 20 and 40, to recruit those who had at least completed four years of secondary education as a minimum. Two researchers and a research assistant were involved in conducting the interviews. Due to the level of education of the participants, all interviews were conducted in English.

The first data collection took place in central (Kasungu and Lilongwe) and southern region (Zomba and Blantyre) while the second phase focused on Lilongwe city. The questionnaire survey was designed to capture demographics information such as age, gender and other information on type of farming involved in, years of experience in agriculture and types of digital platforms used. The semi-structured interview questions focused on collecting the detailed information on the farmers experiences with farming, decision making, and role of digital platforms used as well as future plans. Table 1 below provide summary statistics of the main participants interviewed through the two phases.

In order to purposively target the participants, a total of 142 valid responses from young people aged between 20 and 40 years were collected through the Facebook online survey. Four focus group discussions were organised from these data and conducted in groups of 12–15 members each. A total of 21 in-depth interviews were collected in the four geographical areas.

In the second phase, 12 Organisations' representatives actively working in agriculture sector based in the Lilongwe were interviewed. Of these two were in public sector and 8 classified as non-governmental organisation while the other two, Viamo and SeedCo. as private sector. For the organisations, the questionnaires entailed the organisation activities, digital platforms, agricultural institutional support and future. These organisations were involved with working directly with farmers in providing support through capacity building and production of modern agriculture knowledge. Table 2 below presents the list and a brief description of the organisations.

Focus group and interview transcripts were coded according to the research question themes which provided the first order codes: characteristics of new achikumbe elite; Types of digital platforms; Role of digital platforms in use; personal values. Within the first codes inductive approach was used to generate second order codes. This coding was done using NVIVO software.

Results

Characteristics and capabilities of the new achikumbe elite

Education was found as a key characteristic and improved (transformed) their capabilities. The new achikumbe elite use education as a connection link to other capital assets such as land, finance and social networks. Salary savings were used for buying inputs including buying/renting land. The majority of the farmers indicated engaging in agriculture part time due to having limited investments to acquire desired profitability that can sustain their livelihoods solely from farming. Others indicated that they intended to continue farming as a means of diversifying their income sources. This finding resonates with White's (2020, p. 115) who mentioned that "farming emerges as a possible option where land and inputs are available, and farming is commercially oriented and combined with other income sources in pluriactive livelihoods". The analysis showed that those with high investments were involved in contract farming. Contract farming involved primarily seed multiplication of maize, soya beans and groundnuts with provisions of inputs, extension service support and markets (e.g., farmers are allowed to sell to other buyers if offered better prices). Those on non- contract farming relied on unstructured urban food markets to sell their harvest. Their level of investment represents more their capacity to invest than the potential

Table 2 Organizations interviewed

Name of Organization	Brief description
National Smallholder Farmers Association of Malawi[a] (NASFAM)	Largest smallholder owned membership organisation in Malawi aimed at improving the livelihoods of smallholder farmers
Action Aid[b] (Malawi)	An international non-governmental organisation working against poverty and social injustice
Department of Agriculture Extension Services[c] (DAES)	A department within Ministry of Agriculture and Food Security responsible for developing extension approaches and systems for extension delivery
Department of Agriculture Research Services (DARS)	A department within Ministry of Agriculture and Food Security responsible for conducting agricultural research to generate cutting edge technologies
African Institute of Corporate Citizenship[d] (AICC)	A non-governmental organisation whose mandate is to develop the role of businesses in developing sustainable communities
Civil Society Agriculture Network[e] (CISANET)	A grouping of civil society organisations that facilitates the engagement of civil societies working in agriculture sector with the government over policy issues affecting the sector
Malawi _Care International[f]	An international organisation that tackles the underlying causes of poverty and social injustice in order to deliver lasting change in the lives of poor vulnerable people
SEEDCO[g]	A leading certified seed company authorised to market seed varieties developed by itself, government and other associated seed breeders in over 15 African countries including Malawi
Access Agriculture[h]	A non-profit organisation that supports organic farming and agroecology
AgriBiz[i]	A LUANAR university led creative space aimed at supporting development and growth of agribusinesses in Malawi and beyond
VIAMO[j]	Global social enterprise that specialises in mobile engagement and ICT for development
HEIFER International[k]	Promotes climate smart agriculture

[a]https://www.nasfam.org
[b]https://malawi.actionaid.org
[c]https://agriculture.gov.mw/index.php/departments/agricultural-extension-services
[d]http://mail.aiccafrica.org/index.php/home
[e]http://www.cisanetmalawi.org
[f]https://www.careinternational.org.uk/countries/malawi
[g]https://www.seedcogroup.com/country/malawi
[h]https://www.accessagriculture.org
[i]https://www.luanar.ac.mw/agribiz/about.php
[j]https://viamo.io
[k]https://www.heifer.org/about-us/where-we-work/malawi.html

of the market, thereby implying challenges with accessing financial support services.

Informal customary land markets were preferred over formal land markets which were considered unaffordable since land sales with title deed were more expensive. *"…buying customary land from the locals is much cheaper…with no papers (title deed) …but once it is registered it becomes too expensive to buy*" (Phindu male, 35 years). Despite that some of these achikumbe elite had inherited pieces of land in their home villages, these were unusable due to long distance and supervision costs. So, while education created a link to land through land markets, it was also found to unlink social land transfers as employment opportunities took the elite achikumbe farmers to urban areas. The interviews also revealed that access to resources and decision making had a gendered aspect. The presence of male spouses in the narratives of the female participants were very apparent compared to male participants. The female participants interviewed shared that their husbands played a role in helping getting access to land through informal markets. This is based on their social relations or income. The female farmers involved their spouses in decision making regarding how much land to use as well as what crops to grow. Thus, despite the relatively (higher levels of education indicating that) differences in characteristics between the new achikumbe elite and rural based farmers, they shared similar gender aspects in access to productive resources and decision making. This was not the case with married male participants who neither

mentioned nor indicated how their spouses were involved in their day-to-day farming activities, or decisions. The contract seed farmers who need large investments and supervision were all male except for one.

Social networks for the new achikumbe elite comprised mainly of their connections developed during school or work as most had moved away from their home communities. Use of digital platforms strengthened the social connections beyond the physical geographical barriers of their own new and current neighbourhoods: "*Once my chickens are ready for sale, I just post a WhatsApp status and Facebook… that's how I sell mostly to my friends and extended networks*" (Takondwa, female, 35). These new social networks formed the primary markets and knowledge sources for their agricultural ventures, supporting their engagement in agriculture. Education is empowering for the new achikumbe elite as it gives them agency to make own agricultural investment choices in response of market opportunities found within and through their networks. Thus, education and digital platforms are improving the capabilities and forming part of defining characteristics of the new achikumbe elite.

Here we present three stories of emancipatory and structural transformation that are being catalysed by the emergence of new digital platforms and are evident in the experiences of the new achikumbe elite in Malawi. Collectively these describe: (1) the opportunities that the new achikumbe elite are taking to enter into new supply chains and production contracts; (2) the more rapid and direct connection to markets and consumers by the Achikumbe Elite through digital platforms; and (3) the new information sources and social networks that the new achikumbe elite are engaging with and that change the nature of agricultural extension service. These cases have been selected to illustrate the dominant themes that emerged from the interviews although we recognise that these are not necessarily the only pathways through which digital information services may catalyse transformative change.

Case 1: changing the outlook on agriculture: risks, opportunities & investments

> *"… The idea is to make the money, reinvest and grow. The ultimate goal is to have your own farm, your own machinery, your own irrigation system. Then, you can sit down and just do the farming." (Latha, male, 34).*

As the above quotation illustrates, for the new achikumbe elite, ownership of sufficient production resources including agricultural knowledge is a critical component that determines their level of engagement and the viability of agriculture. Young professionals entering into agriculture are motivated by the new market opportunities in agriculture under contract farming. Digital platforms play an essential role in offering real time information about these markets. This is encouraging more experimentation with alternative crops and production systems. Digital platforms such as Google, Facebook and WhatsApp are facilitating access to multiple sources of information on agricultural markets, production and contract farming, making it attractive for the new achikumbe elite. Latha, a statistician working in the public sector ventured into contract seed farming on 40 hectares in his first year of farming in 2019. His own social network and the Facebook pages he started following and WhatsApp groups on contract seed farming became key resources for accessing new market opportunities beyond his immediate social circle.

These farmers rely on their high level of education, and own income savings to determine the level of production and market engagement.

> …they decided to give us 10 hectares of maize and 10 hectares of ground nuts… In fact, along the way I discovered that I still have resources, but they couldn't increase the hectares because I was the first timer. I had joined Facebook and WhatsApp since I had interest in seed farming, I joined seed farming groups and followed the pages. Some members shared information on more basic seed buyers for beans and Soya. So, I added 10 of my own beans and 10 of my own soya. So, it was like we did 40 hectares of 4 different crops. (Latha, male, 34).

The high level of investments that are made by these contract seed farmers also reflect the positive potential outlook that these young new achikumbe elite farmers hold about contract seed farming as a legitimate entrepreneurial venture. Maize, beans, soya and groundnuts were the common seed types that were being contracted. With strict production processes, relatively high investments and assured markets, agricultural production knowledge from planting to after harvest care are critical to their success. But limited public extension service support implies that digital platforms are the best source for ensuring that their investments are profitable by accessing critical knowledge and alternative profitable markets. For example, Mateyu has a Bachelor of Science degree in agriculture, but also relies on Facebook, YouTube and WhatsApp to get more and up to date agricultural production information in his pursuit for efficiency and increasing profitability in his own 32-hectare groundnuts contract farming.

> The other thing is that internet helps me a lot…… Because as a farmer you have to search more… say how soya bean farmers are doing it in Tanzania so we go on YouTube and Facebook and find those cultivating soya…They describe their process…we are also

> able to see…. Internet also assists a lot. (Mateyu, male, 27)

Throughout the interviews, what was common and evident was their intention to increase their scale of production and become full time contract seed farmers pending availability of resources.

> I need to have like a seed multiplication company because seed here in Malawi there is a lot of fake seed… definitely I need to be in full time farming… (Lekereni, male, 39).

Case 2: direct supply and demand value chains

> *"Sometimes you don't know about marketing like where to sell crops but because of these [digital online] groups you can share potential markets for these crops hence you sell your crops at good prices than selling them anywhere else like the vendors…" (Melifa, female, 32).*

This point made by Melifa shows that being commercially driven, digital access to available profitable markets for these young farmers is one of the drivers for engaging in agriculture. It also highlights how digital platforms create more direct supply chains. Apart from contract seed farmers, other young professionals found opportunities in urban food markets. Whilst supply to the urban markets was primarily dominated by rural production, these new achikumbe farmers took advantage of the growing demand of food and started producing food crops demanded by the urban residents, such as vegetables, maize, potatoes, tomatoes and livestock. Facebook and WhatsApp have been the primary platforms of reaching their customers. Using such platforms includes advertising or contacting buyers who have posted on Facebook pages such as S*trictly Agricultural Produce Business Malawi; Malawi Agricultural Commodity Exchange, Nsika wa Zakumunda (market for farm produce)*. Other markets are accessed through information of potential buyers posted on the specialised WhatsApp groups such as *Tomato farmers*, *Pig farming and marketing*, and central region banana producers' group. Posts on personal WhatsApp, Twitter and Facebook statuses are some strategies that these young farmers commonly use to engage with and access the markets. Although less common, specialised Apps, such as *e-dimba-app* that provides real time marketing information, are also being adopted to access existing markets directly.

While some of the farmers interviewed have formal qualifications (e.g., bachelor's degree) in agriculture related areas and have been involved in farming for over 5 years, digital platforms still play an important role of providing access to agricultural production as well as in marketing strategies. Social networks formed and maintained through the digital platforms such as WhatsApp group remain crucial in shaping the types of farming that these new achikumbe elite decide to undertake. Pitani (35) has been involved in farming for over 10 years:

> I grow Irish potatoes. After reading on our WhatsApp group how buyers from central region [local customers] were having to rely on Irish potatoes from Ntcheu [southern region] I decided to fill the market gap, … and now I want to go into piggery, someone shared information of production and marketing strategies, I think part of my land would be sufficient to have them. (Pitani, male, 35)

Despite maize being a commonly grown food crop in Malawi, the Achikumbe elite farmers have diversified their food crop portfolio based on demand observed on these digital platforms. Crops grown and livestock kept included sweet potatoes, bananas, horticulture vegetables, poultry, and piggery. The diversification based on demand enables them to go full-time. For example, Madalo (Female, 35) quit her CEO position in a non-governmental organisation to concentrate on her farming enterprise full time. She grows various crops and also manufactures tea bags and herbs spices which are sold across local supermarkets such as *Chipiku* and Sana in Malawi. These young farmers share varied experiences with agriculture: renting land to meet an immediate demand, diversifying the crops grown to improve their income generation, and also recovering from losses due to shortage of rainfall or pests and diseases attacks. The digital platforms provided them with access to information through networks on available land to rent, accessing information on demanded crops as well as knowledge on how to deal with pests, which shows how digital platforms support their resilience.

Case 3: digital platform changing agricultural extension service

> … we produce digital content for extension, so we produce videos that are aimed at facilitating south to south learning amongst farmers. …we will produce all these videos on various [agricultural themes] things, our actual speciality is producing these videos in local languages… (Representative Access Agriculture)

As the above quotation illustrates, equitable access to agricultural knowledge/information is recognised and targeted by non-governmental organisations as a means of improving positive agricultural outcomes. The representative of Access Agriculture in Malawi describes the main role that Access Agriculture plays in agricultural extension services in Malawi. The main extension service provider in Malawi has been the government, which allocates trained extension

service workers in rural areas to provide support to farmers within a given catchment area. But in the past two decades the coming of non-governmental organisation and private sector has introduced non-governmental extension service workers to provide support to targeted program beneficiaries or contracted farmers. Non-governmental extension services are driving innovation in the use of digital platforms for reaching wider audiences. Access Agriculture is an international non-profit organisation operating in Africa, East Asia and Latin America. It specialises in south-to-south knowledge sharing using videos made in local language to support sustainable agriculture, natural resource management and markets in developing countries. So far, in Malawi,

> …we have over hundred and twenty videos in Chichewa on our website and smart projector… on cereals, roots tubers and bananas and different types of vegetables, on legumes, fruits and nuts just the whole lot of other crops, livestock, aquaculture, sustainable land management…. (Representative Access Agriculture).

Farmers can access these videos freely on their website or organise themselves and request a representative to come to their area to show them through the mobile smart projectors for a fee.

Apart from Access Agriculture, Viamo is global social enterprise that specialises in mobile engagement and ICT for development. Amongst its services, it is involved with producing agriculture extension support through use of mobile phone, a service called 3–2–1. Farmers dial the number on their phone and follow the prompts to access whatever agricultural production or marketing information that they are looking for. Viamo is a private firm that partners with other government agencies, international and local non-governmental organisations, donors and businesses to produce tailor made agriculture extension support for their beneficiaries.

> …We have messages for almost every crop. We can talk of the major ones like maize, cassava, soya beans and beans… like bananas and tomatoes. Further, we have message for goats, cows, and chickens. We have taken step by step of how each product is produced [Representative for 3-2-1/Viamo]

Like Access Agriculture and Viamo, other organisations are also working around developing or using digital platforms to provide advisory services such as Heifer international, Agri digital-hub, Nasfam, Farm Radio Trust, DARS, CISANET and AICC. There is a range of digital platforms which are used such as Applications (e.g., *e-dimba),* mainstream social media platforms such as WhatsApp and Facebook, mobile SMS, radio and television. The concentration of these non-governmental organisations in use of and embracing digital platforms is two-fold. It represents an opportune entry point for online information regulation by both the private and public sector. Secondly, the preferred use general platforms such as WhatsApp and Facebook groups has created concern about mis-information, due to a lack of regulation.

> …If agricultural organisations like ministry of agriculture could be regulating the information that is shared on these social media groups, it could improve the reliability and reduce the misinformation that is out here… everyone is posting whatever information they want…people are losing money because of lies (unreliable information) (Dingase, female, 35).

For other organisations like Care Malawi and Action Aid, the use of digital platforms is yet to be fully integrated in their operations as many of their target beneficiaries are rural communities hence still rely on use of traditional methods to reach them. However, for the Achikumbe elite these digital platforms are the main source of information. Overall, eight of the ten organisation interviews articulated how use of digital platforms is efficient in reaching and making the agricultural information communication easily accessible compared to having to rely on infrequent physical visits of extension officers.

Discussion

The new achikumbe elite forms a group of young, educated farmers who are well versed in the use of digital platforms, and are interested in agriculture as a business. Their motivation and use of digital platforms place them in a unique position to be agents of food system transformation. Digital platforms have enabled them to engage flexibly in new commercial markets and contracts, to change value chains, to access real time data, increase social networks, and quickly learn new agricultural practices. Although this may be a catalyst for emancipatory transformation and the building of individual capabilities, digital platforms are more likely to be used by farmers with pre-existing capabilities, and so may act to exacerbate existing inequalities. Here we first discuss the *role of digital platforms in shaping the practices, capabilities and characteristics of the new achikumbe elite* and secondly how the new Achikumbe Elite drives food system transformation.

The role of digital platforms in shaping the practices, capabilities and characteristics of the new achikumbe elite

Our analysis suggests that digital technologies, in the form of digital platforms, are supporting the emergence of the new achikumbe elite. The digital platforms are enabling

flexible engagement in new commercial markets and contracts, changing value chains and access real time data for these farmers. In terms of identity of the new achikumbe elite, as presented in the results section, their characteristics and capabilities empower their engagement in agriculture. Digital technologies and the digital literacy of educated youth offers a way for these young people to re-learn and re-discover agriculture, which is contrary to the more predominant narrative of rural youth losing interest in agriculture or being pushed out because of land, resources, or limited profitability.

As the new achikumbe elite engage with the agricultural sector, thereby transforming the food systems in their own subtle way, they are also themselves being transformed through this interaction. For the new achikumbe elite, participating in agriculture is an entrepreneurial undertaking with a potential lucrative business venture. Here, digital platforms play a critical role in filling knowledge and information gaps that inform business decisions. Besides the role of digital platforms in accessing production, market information and learning needs, it also plays a role in building social networks and social capital. This corresponds with the findings by Sife et al. (2010) and Jagun et al. (2008) that users of mobile phones enhance their pre-existing social and economic networks. The development of digital platforms and the characteristics, capabilities and activities of the achikumbe elite are closely interrelated and are co-evolving over time. Such that the use of these digital platforms is itself arguable one of the defining characteristics of the achikumbe elite.

However, while digital technology can offer more equitable access to information and market opportunities, they are arguably most accessible to those with pre-existing capabilities. This aligns with World Bank's (2019) and Cole and Fernando's (2021) findings that digital technologies which require specific skills, may only provide benefits to farmers positioned to benefit from them, thereby potentially widening the inequality in food systems. The achikumbe elite are characterised as well-educated, digital natives that are better endowed in assets, relative to the poorest rural households. We observe that this group is able to connect through social networks, access agricultural information and agricultural inputs, and are able to invest in land and agricultural technologies as well as absorb the risks associated with entering new markets and contracts. Many of the interviewees mentioned that they have social contacts from their education, who now work in research institutes, government or private businesses in the agricultural sector. This enables them to cross check information on new practices with experts and innovators, thus decrease risk taking and according to Smidt and Jakonya (2022) increase their capabilities to successfully engage in agriculture.

Therefore, there is reason to think critically about the extent to which digital platforms are a pathway to emancipatory transformation or whether in reality they are acting to further exacerbate existing inequalities. Even where organisations, such as VIAMO and Access Agriculture, are developing digital innovation in agricultural extension aimed at rural small-scale producers, these channels are being accessed and utilised by the achikumbe elite. The NAE are engaging in agriculture by adapting their existing contexts. They are (re)investing non-agriculture incomes and adapting their skills.

New achikumbe elite driving food systems transformation

The digital information driven agricultural enterprises of the achikumbe elite are contributing to the commercialisation of Malawian agriculture, as well as to the shortening of value chains and crop diversification to meet the urban demand. It is, however, too early to evaluate the potential of such enterprises for impacting food system transformation at scale. Regardless of the extent of these digital platform driven process of transformation, however, it is important to be attentive to its latent risks (Blythe et al. 2018). While digital platforms can help to democratise access to information, access and opportunities in the digital space are unlikely to be equitable. There is also a risk that these spaces become captured by corporate agendas or the politically motivated mis-information agendas. Alignment of the effective governance of digital platforms with principles of equity and responsible innovation are therefore crucial for effective emancipatory and food systems transformation.

In the context of Malawi, the National Agriculture Policy (2002) emphasizes commercialisation as a way of sustaining growth in agriculture sector, while transitioning farmers to non-traditional high value agricultural value chains. From our case studies we draw out three main arguments about the potential of the new achikumbe elite to drive food systems transformation. Firstly, the new achikumbe elite are embracing diversification in production and entering into new commodity value chains, such as bananas and horticultural products. Their motivation for diversification is driven by the commercial market, which they can access in real time through the digital platforms. Digital platforms support farmers' effective and timely decision-making process and ultimately as found by Ingram and Maye (2020), improves the knowledge of individual enterprises through sharing and learning of data from multiple enterprises. The current market's demand for horticultural products (e.g., vegetables) and livestock, driven by diet transitions among urban customers, is guiding the achikumbe elite's agricultural plans. To this end, the achikumbe elite have a significant role to play if the agricultural production changes towards non-traditional high

value products. This role and market adaptivity/flexibility is underpinned by their motivational drive which is business and commercially focused. The Malawian government's vision for the agricultural sector is highly compatible with the entrepreneurial efforts of the achikumbe elite. Therefore, there is a strong case for investing in the capabilities of entrepreneurial farmers and in digital platforms in order to catalyse the Malawi government's vision for transformative agricultural change.

Secondly, the new achikumbe elite are shortening the traditional food supply chains and improving food availability on the market. They are farming in close proximity to urban food markets and marketing their products locally. While the data analysed did not provide direct and conscious farming decisions that the new achikumbe elite pursued on the grounds of environmental sustainability, the short supply chains created may also contribute to positive environmental outcomes and more resilient food systems (De Fazio 2016; Canfora 2016), which is itself central to Malawian Government's National Resilience Strategy.

Finally, the new achikumbe elite illustrate an alternative model that can be used to feed the growing urban cities in Africa. Between 2 and 5 percent of the population of 12,108,505 Malawians are young people based in urban areas and involved in agriculture (NSO 2019). The new achikumbe elite are resourceful and productive hence producing more on small pieces of land which responds to the challenge of limited access to land due to competing demands of land in urban areas. The achikumbe elite are a similar phenomenon to the emergence of urban middle-class farmers and the rural farmers recognised in the literature (Abay et al. 2021). The new achikumbe elite are young, farm in more entrepreneurial way and are responsive to markets, but with a high dependency on digital technologies. As time progresses, this dependency on digital technologies may also become a significant part of the 'new rural elites'. The analysis on the influence of the NAE on food system transformation may therefore show similarities with the potential of the 'urban middle-class farmers' or the 'new rural elites'.

The new achikumbe elite model of agricultural production could be considered as the possible future of farming that responds to the question of how to feed and produce for growing African cities. The sorts of transformations being discussed are indicative of how information sharing is changing and how farmers might be engaging differently with and in the food systems. We should however think critically of the transformative potential of these changes; whether they are a significant departure from the status quo and addressing inequities in the food systems or whether they are reinforcing some of those dynamics and status quo. Both of these can be happening in parallel; can be transformative in some respects but can also be reinforcing the status quo in some respects.

It is too early, to evaluate the transformative impacts of the achikumbe elite as they are an emerging group whose impact is not yet realised. Although there might be pragmatic benefits to supporting emancipatory transformation, for example because there is reason to believe building the capabilities of an emergent achikumbe elite will accelerate the commercialisation of agriculture in Malawi, there is also a tension here. Building individual capabilities and information services ideally, and perhaps inevitably, opens up space for alternative visions, knowledges and practices to be shared and communicated. In addition, it builds the agency of individuals to pursue change in accordance with those visions and knowledges. We might see, for example, digital platforms used to alternative, localised food systems or agro-ecological principles, rather than purely for furthering commercial agricultural opportunities and investments. An emancipatory approach to transformation cannot be premised completely on an expectation of certain systemic outcomes.

Regardless of the directions of food system transformation that result from investment in digital innovation and platforms, attention to social equity will be important. There are risks associated with the emergence of the achikumbe elite in Malawi, that this continues to exacerbate inequalities between 'elites' and the majority of resource poor rural households in terms of their access to markets, information and technologies. At the same time, while digital platforms can help to democratise access to information it also potentially opens doors to corporate capture of information channels and the sharing and proliferation of misinformation and corporate agenda-driven campaigns. The new achikumbe elite relied primarily on the informal social media groups that were formed by their own peers. The main challenge was lack of regulation on the information that is shared in these groups. There was a general preference for there to be means of validating the information shared. One of the practical means of doing this was having reliable institutions and organisations being the regulators and in charge of these groups to make sure only validated information is shared. Since, public sector institutions are slow to respond to the progress of social media as means of disbursing information, non-state organisations who have already started adapting to use of digital platforms can monopolise/gate keep valuable information. Ensuring equity in agricultural transformation driven by digital innovation will necessitate that this innovation is well-governed in accordance with responsible innovation principles.

The limitations of this study are reflected in the challenges of extrapolating out from change at the level of a small number of individuals to wider systemic change. Secondly, most of the digital technologies themselves under study are still at early stages of development, and so it is possible to see the direction that things are moving in but

not possible to necessarily predict or evaluate the extent to which they are transformative (or equitable).

The research contributes an alternative narrative in which educated youth are seen as an important resource for innovation and investment in agriculture to supply growing urban food markets whilst also presenting a new production of new ideological framings of agriculture livelihoods and youth.

Promoting and enabling the emergence of the new achikumbe elite can help to generate the transformative change in agriculture that the Malawian government wants to see, but that in doing so there is need to support the upskilling and access to education and technology more universally so as not to further marginalise rural poor and exacerbate inequalities. Therefore, the policy implications for emancipatory transformation calls for skills development accessible and equitable for young farmers.

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References

Abay, K.A., W. Asnake, H. Ayalew, and J. Chamberlin. 2021. Landscapes of opportunity: Patterns of young people's engagement with the rural economy in Sub Saharan Africa. *The Journal of Development Studies* 57 (4): 594–613.

Aker, J.C. 2010. Information from markets near and far: Mobile phones and agricultural markets in Niger. *American Economic Journal: Applied Economics* 2 (3): 46–59.

Aker, J.C., and I.M. Mbiti. 2010. Mobile phones and economic development in Africa. *Journal of Economic Perspectives* 24 (3): 207–232.

Ameyaw, D. S., & E. Maiga. 2014. *Current Status of Youth in Agriculture in Sub-Saharan Africa*. Nairobi. Retrieved from http://www.youtheconomicopportunities.org/sites/default/files/uploads/resource/africa-agriculture-status-report--2015 (1).pdf

Anseeuw, W., T. Jayne, R. Kachule, and J. Kotsopoulos. 2016. The quiet rise of medium-scale farms in Malawi. *Land*. https://doi.org/10.3390/land5030019.

Anyidoho, N. A., H. Kayuni, J. Ndungu, J. Leavy, M. Sall, G. Tadele, & J. Sumberg. 2012a. *Young People and Policy Narratives in sub-Saharan Africa* 1. Retrieved from www.future-agricultures.org

Anyidoho, N. A., J. Leavy, & K. Asenso-Okyere. 2012b. *Young people's aspirations in agriculture: A case study of Ghana's cocoa sector*. In International Conference on the Future of the Agrifood Sector, University of Ghana, Accra, Ghana.

Baye, M.R., J. Morgan, and P. Scholten. 2006. Information, search, and price dispersion. *Handbook on Economics and Information Systems* 1: 323–375.

Betcherman, G., & T. Khan. 2015. *Youth employment in Sub-Saharan Africa: Taking stock of the evidence and knowledge gaps*. Ottawa: The MasterCard Foundation and International Development Research Centre.

Blythe, J., J. Silver, L. Evans, D. Armitage, N.J. Bennett, M.L. Moore, T.H. Morrison, and K. Brown. 2018. The dark side of transformation: Latent risks in contemporary sustainability discourse. *Antipode* 50 (5): 1206–1223.

Brooks, K., S. Zorya, A. Gautam, & A. Goyal. 2013. *Agriculture as a Sector of Opportunity for Young People*. Washington DC. Retrieved from http://econ.worldbank.

Cammack, D., T. Kelsall, & D. Booth. 2010. *Developmental patrimonialism? The case of Malawi*. Retrieved from www.odi.org.uk

Canfora, I. 2016. Is the short food supply chain an efficient solution for sustainability in food market? *Agriculture and Agricultural Science Procedia* 8: 402–407.

Canning, D., S. Raja, & A. S. Yazbeck. 2015. *Africa's Demographic Transition: Dividend or Disaster?* Washington, DC: World Bank. Retrieved from https://openknowledge.worldbank.org/bitstream/handle/10986/22036/AfrDemographicTransitionOVERVIEW.pdf

Caprile, A. 2021. *United Nations Food Systems Summit 2021—Process, challenges and the way forward*. Brussels: European Parliamentary Research Service.

Castree, N. 2015. Changing the Anthropo(s)cene: Geographers, global environmental change, and the politics of knowledge. *Dialogues in Human Geography* 5 (3): 301–316.

Chipenda, C., and T. Tom. 2020. The generational questions after land reform in Zimbabwe: A social reproduction perspective. *African Journal of Economic and Management Studies* 11 (3): 403–425.

Cole, S.A., and A.N. Fernando. 2021. Mobile'izing agricultural advice technology adoption diffusion and sustainability. *The Economic Journal* 131 (633): 192–219.

Daum, T. 2019. Of bulls and bulbs: Aspirations, opinions and perceptions of rural adolescents and youth in Zambia. *Development in Practice* 29 (7): 882–897. https://doi.org/10.1080/09614524.2019.1646209.

De Fazio, M. 2016. Agriculture and sustainability of the welfare: The role of the short supply chain. *Agriculture and Agricultural Science Procedia* 8: 461–466.

Drimie, S., R. Hamann, A.P. Manderson, and N. Mlondobozi. 2018. Creating transformative spaces for dialogue and action: Reflecting on the experience of the Southern Africa food lab. *Ecology and Society*. https://doi.org/10.5751/ES-10177-230302.

Duncombe, R. 2014. Understanding the impact of mobile phones on livelihoods in developing countries. *Development Policy Review* 32 (5): 567–588. https://doi.org/10.1111/dpr.12073.

Durham, D. 2000. Youth and the social imagination in Africa: Introduction to parts 1 and 2. *Anthropological Quarterly* 73 (3): 113–120.

Elias, M., N. Mudege, D.E. Lopez, D. Najjar, V. Kandiwa, J. Luis, J. Yila, A. Tegbaru, G. Ibrahim, L. Badstube, E. Njuguna-Mungai, and A. Bentaibi. 2018. Gendered aspirations and occupations among rural youth, in agriculture and beyond: A cross-regional perspective. *Journal of Gender, Agriculture and Food Security.* 3 (1): 82–107. https://doi.org/10.19268/JGAFS.312018.4.

FAO, CTA, IFAD. 2014 *Youth and agriculture; Key challenges and Concrete Solutions*, FAO, Rome

Geomans, C. 2014. *Youth and Agriculture: Key Challenges and Concrete Solutions*. FAO and IFAD. Retrieved from http://www.fao.org/3/a-i3947e.pdf

Geza, W., M.S.C. Ngidi, R. Slotow, and T. Mabhaudhi. 2022. The dynamics of youth employment and empowerment in agriculture and rural development in South Africa: A scoping review. *Sustainability* 14 (9): 5041.

Ginwright, S., and T. James. 2002. From assets to agents to change: Social justice, organizing, and youth development. In *New Directions for Youth Development*, ed. Johanna Wyn and Rob White, 51–71. England: Routledge.

Glover, D., and J. Sumberg. 2020. Youth and food systems transformation. *Frontiers in Sustainable Food Systems*. https://doi.org/10.3389/fsufs.2020.00101.

Harris, A. 2004. *Future girl : Young women in the twenty-first century*. England: Routledge.

HLPE. 2021. *Promoting Youth Engagement and Employment in Agriculture and Food Systems*. Rome. Retrieved from www.fao.org

Hopkins, P., and R. Pain. 2007. Geographies of age: Thinking relationally. *Area* 39 (3): 287–294. https://doi.org/10.1111/j.1475-4762.2007.00750.x.

Huijsmans, R. 2016. Generationing Development: An Introduction. In *Generationing Development: A Relational Approach to Children, Youth and Development*, ed. R. Huijsmans, 1–31. London: Palgrave Macmillan.

Huijsmans, R., A. Ambarwati, C. Chazali, and M. Vijayabaskar. 2021. Farming, gender and aspirations across young people's life course: Attempting to keep things open while becoming a farmer. *The European Journal of Development Research* 33: 71–88.

Ingram, J., and D. Maye. 2020. What are the implications of digitalisation for agricultural knowledge? *Frontiers in Sustainable Food Systems* 4: 66.

Irungu, K.R.G., D. Mbugua, and J. Muia. 2015. Information and communication technologies (ICTs) attract youth into profitable agriculture in Kenya. *East African Agricultural and Forestry Journal* 81 (1): 24–33. https://doi.org/10.1080/00128325.2015.1040645.

Jagun, A., R. Heeks, and J. Whalley. 2008. The impact of mobile telephony on developing country micro-enterprise: A Nigerian case study. *Information Technologies & International Development* 4: 47–65.

Kaneene, J.B., S. Haggblade, and D.L. Tschirley. 2015. Special issue introduction: Sub-Saharan Africa's agri-food system in transition. *Journal of Agribusiness in Developing and Emerging Economies* 5 (2): 94–101. https://doi.org/10.1108/JADEE-02-2015-0012.

Kates, R.W., W.R. Travis, and T.J. Wilbanks. 2012. Transformational adaptation when incremental adaptations to climate change are insufficient. *Proceedings of the National Academy of Sciences of the United States of America* 109 (19): 7156–7161. https://doi.org/10.1073/pnas.1115521109.

Klerkx, L., E. Jakku, and P. Labarthe. 2019. A review of social science on digital agriculture, smart farming and agriculture 4.0: New contributions and a future research agenda. *NJAS-Wageningen Journal of Life Sciences* 90: 100315.

LaRue, K., T. Daum, and K. Mausch. 2021. Who wants to farm? Answers Depend on how you ask: a case study on youth aspirations in Kenya. *European Journal of Development Research* 33: 885–909. https://doi.org/10.1057/s41287-020-00352-2.

Lehmann, W. 2004. 'For some reason, I get a little scared': structure, agency, and risk in school-work transitions. *Journal of Youth Studies* 7 (4): 379–396. https://doi.org/10.1080/1367626042000315185.

Lohento, K., and O. Ajilore. 2015. *ICT and Youth in Agriculture.* In AGRA 2015 Africa Agriculture Status Report, Chapter 5. Published by Alliance for a Green Evolution in Africa (AGRA). pp 118–142.

Mabiso, A., and R.S. Benfica. 2020. The Narrative on rural youth and economic opportunities in Africa: Facts myths and gaps. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3567001.

Mannheim, K. 1952. *The Sociological Problem of Generations*. In P. Kegan (Ed.), *Essays on the Sociology of Knowlegde*. London: Routledge. Retrieved from http://mediaspace.newmuseum.org/ytjpressmaterials/PDFS/ARTICLES_ABOUT_THE_GENERATION/01_The_Sociological_Problem.pdf

May, J.; J. Karugia, M. Ndokweni. 2007. *Information and Communication Technologies and Agricultural Development in sub-Saharan Africa*. Available online: https://www.africaportal.org/publications/information-and-communication-technologies-and- agricultural-development-in-sub-saharan-africa-transformation-and-employment-generation/

Metelerkamp, L., S. Drimie, and R. Biggs. 2019. We're ready, the system's not–youth perspectives on agricultural careers in South Africa. *Agrekon* 58 (2): 154–179. https://doi.org/10.1080/03031853.2018.1564680.

Moore, M.L., P. Olsson, W. Nilsson, L. Rose, and F.R. Westley. 2018. Navigating emergence and system reflexivity as key transformative capacities: Experiences from a Global Fellowship program. *Ecology and Society*. https://doi.org/10.5751/ES-10166-230238.

Mwaura, G.M. 2017. The side-hustle: Diversified livelihoods of Kenyan educated young farmers. *IDS Bulletin*. https://doi.org/10.19088/1968-2017.126.

Mwila, M., and J. Leshan. 2015. Young weekend farmers in Lusaka, Zambia: Motivation and their role in agriculture. *Developing Country Studies* 5 (10): 122–130.

Nandi, R., C.M. Pratheepa, S. Nedumaran, N. Rao, and R. Rengalakshmi. 2022. Farm Parent and youth aspirations on the generational succession of farming: Evidence from South India. *Frontiers in Sustainable Food Systems.* 5: 804581. https://doi.org/10.3389/fsufs.2021.80458.

National Planning Commission. 2020. *Malawi's Vision: Malawi 2063*, Capital City Lilongwe Malawi

National Youth Council. 2013. *Republic of Malawi: National youth policy*. Lilongwe. Retrieved from https://www.youthpolicy.org/national/Malawi_1996_National_Youth_Policy.pdf

NSO. 2019. *2018 Malawi population and Housing Census Main Reporrt. Government of Malawi*. Zomba. https://doi.org/10.21475/ajcs.19.13.05

Okali, C., and J. Sumberg. 2012. Quick money and power: Tomatoes and livelihood building in rural brong ahafo Ghana. *IDS Bulletin* 43 (6): 44–57.

Rehman, A., T. Saba, M. Kashif, S.M. Fati, S.A. Bahaj, and H. Chaudhry. 2022. A revisit of internet of things technologies for monitoring and control strategies in smart agriculture. *Agronomy* 12: 127.

Richards, A. 1956. *Chisungu : A girl's initiation ceremony among the Bemba of Zambia (Illustrate)*. London: Routledge.

Schot, J., and E. Steinmueller. 2018. New directions for innovation studies: Missions and transformations. *Research Policy* 47 (9): 1583–1584. https://doi.org/10.1016/j.respol.2018.08.014.

Scoones, I., A. Stirling, D. Abrol, J. Atela, L. Charli-Joseph, H. Eakin, L. Yang, et al. 2020. Transformations to sustainability: Combining structural, systemic and enabling approaches. *Current Opinion in Environmental Sustainability* 42: 65–75. https://doi.org/10.1016/j.cosust.2019.12.004.

Sife, A., E. Kiondo, and J.G. Lymo-Macha. 2010. Contribution of mobile phones to rural livelihoods and poverty reduction in Morogoro region Tanzania. *The Electronic Journal of Information Systems in Developing Countries* 42 (2): 1–15.

Smidt, H.J., and O. Jokonya. 2022. Factors affecting digital technology adoption by small-scale farmers in agriculture value chains (AVCs) in South Africa. *Information Technology for Development* 28 (3): 558–584.

Stirling, A. 2015. Emancipating Transformations: From Controlling the "Transitions" to Cultural Prural Radical Progress. In *The Politics of Green Transformation*, ed. I. Scoones, M. Liach, and P. Newell, 54–67. England: Earthscan Routledge.

Sumberg, J., N.A. Anyidoho, M. Chasukwa, B. Chinsinga, J. Leavy, G. Tadele, S. Whitfield and J. Yaro. 2015. *Young people, agriculture, and employment in rural Africa.* In *African youth and the persistence of marginalization* 111–132. Routledge.

Sumberg, J., and S. Hunt. 2019. Are African rural youth innovative? Claims, evidence and implications. *Journal of Rural Studies* 69: 130–136.

Swarts, M., and S. Aliber. 2013. The Youth and agriculture problem: Implication for range land development. *African Journal of Range and Forage Science* 30 (2): 23–27.

Swyngedouw, E. 2010. Apocalypse forever? Post-political populism and the spectre of climate change. *Theory, Culture, and Society* 27 (2/3): 213–232.

Tauzie, M.(2021). *The New Achikumbe Elite and Agrarian Livelihoods in Malawi: contemporary players, contexts and land access in agriculture*. PhD Dissertation. Global Develop Institute, University of Manchester,(https://www.escholar.manchester.ac.uk/api/datastream?datastreamid=full-text.pdf&publicationpid=uk-ac-man-scw%3a330129

White, B. 2019. *Rural Youth Today and Tomorrow*, vol. 48. Rome: IFAD Research Series.

White, B. 2020. Rural Household pluriactivity and plurilocality: A source of resilience to climate breakdown. *IOP Conference Series: Earth and Environmental Science* 451: 012001. https://doi.org/10.1088/1755-1315/451/1/012001.

Whitfield, S., M. Apgar, C. Chabvuta, A. Challinor, K. Deering, A. Dougill, K. Vincent, et al. 2021. System Transformations Research. *Nature Food* 2: 383–385. https://doi.org/10.1038/s43016-021-00304-x.

World Bank. 2019. *World Development Report 2019: The Changing Nature of Work*. Washington, DC: World Bank. https://doi.org/10.1596/978-1-4648-1328-3.

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M. Tauzie Research interests are in youth agrarian livelihoods and food systems transformation. She is completed her PhD with University of Manchester, Global Development Institute (GDI) whose part of the thesis and field work data is included in this paper. She is working as Research Fellow of Food Systems and Climate Change at Sustainability Research Institute, University of Leeds.

T. D. G. Hermans Research interests are transformation, knowledge and innovation processes in food systems, particularly nature positive and climate resilient food system transformations. She works at Wageningen Centre for Development Innovation and a research fellow at the Forest and Nature Conservation Policy group at Wageningen University. Previously she was a research fellow on Agriculture and Climate Services at the University of Leeds, during which this work was conducted.

S. Whitfield Research interests are in the social and political dimensions of international development in the context of agriculture and food systems. He currently co-leads the Food Systems Transformation in Southern Africa for One Health (FoSTA Health), a three- and half-year programme evaluating the human, animal and environmental health implications of changes in agriculture, land use, supply chains and diets in southern Africa within Sustainability Research Institute, University of Leeds, UK.