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### Original research article

# Livelihood diversification under severe food insecurity scenario among smallholder farmers in Kadida Gamela District, Southern Ethiopia



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#### ABSTRACT

This cross-sectional study assessed the magnitude of Livelihood Diversification (LD) and the effects of some socio-demographic factors in severe food insecurity among smallholder farmers in Kadida Gamela district, Southern Ethiopia. Data were collected from 200 households, using simple random sampling. We used the Barger–Parker Diversity Index (activity based) and the Simpson index to measure the level of livelihood diversification and the Ordinal Least Square (OLS) to examine key determinants of LD. The majority (65%) of households witnessed engaging in 2–3 livelihood sources. However, the overall level of diversification, compared to potential available opportunities, was found to be low. The results of the regression analysis indicated that the education level of the head of the household, access to credit, participation in a food for work programme and the land size owned by households were the key predictors of livelihood diversification. Finally, the study highlighted the importance of continued commitment on the part of policy-makers and local administrators to support the development of non-farm and off-farm livelihood sources through availing credit services, skill training and, above all, educating the community.

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#### Introduction

The concept of livelihood diversification is commonly understood as attempts by individuals and households to find new ways to raise incomes and reduce environmental risk [1]. It includes both on-farm and off-farm activities which are

undertaken to generate income additional to that of the main household agricultural activities [2].

The rural households adopt diversified livelihoods due to risk spreading, consumption smoothing, labour allocation, credit market failures, and to cope with shocks over time [3]. According to Ellis [3], rural households in different parts of the world engaged in multiple activities and rely on diversified

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income portfolios. In Sub-Saharan Africa, a range of 30–50% reliance on non-farm income sources is common, but it may attain 80–90% in Southern Africa. Authors such as Bryceson [4] describe LD in Sub-Saharan Africa as a sign of failure of agriculture diversification and as an active process of deagrarianization.

While there are several benefits of livelihood diversification (i.e. both survival and asset building), researchers most often report its contribution to household food security among smallholder farmers in Africa and Asia. A study conducted in seven African countries including Ethiopia, Nigeria, Zaire, Tanzania, Kenya, Uganda and Mozambique revealed that one-half of Africa's households were "food insecure" [5]. Those earning between 1.25 USD and 2 USD a day remain more vulnerable, as they are only covering their most basic expenses and are subject to the risk of slipping under the 1.25 USD line, should face an adverse income shock [6]. In this regard, African farmers need to diversify their livelihood strategies through on-farm and off-farm activities [7]. Similarly, Bryceson [8] argues that rural non-agricultural employment is of increasing importance in Sub-Saharan Africa.

The very small number of studies conducted in Ethiopia documented the contribution of livelihood diversification to small holder farmers [9-11]. Carswell [11] described the historical depth of livelihood diversification in highland Wolaita (Southern Ethiopia) and the huge contribution to improvement in household income. A study conducted by Adugna [9] among pastoralists indicates that households have diverse income sources. A study conducted by Adugna and Wagayehu [12] on determinants of livelihood strategies in southern Ethiopia reported that 64.1% of income came from agriculture, followed by non-farm (22.8%) and off-farm (13.1%). On the other hand, Adugna [13], who studied the dynamics of income diversification in Ethiopia, also found that participation in off-farm activities has poverty reduction effects. Although poverty rate declined across the board for all farmers, those who earned off-farm income saw their poverty rate decline by a higher proportion. A recent study conducted in a district in Northern Ethiopia concluded that land size, livestock holding size, sex of the head of the household, mass media, market distance, total annual household income, and urban linkage significantly determined the level of livelihood diversification [14]. Based on a small sample of households selected from Northern Ethiopia, Kebede et al. [15] found a range of predictors of LD which include gender, land size, family size, technology adoption (seed and fertilizer), membership in a development group and farmer organization, schooling and farming experience.

Despite its huge benefits in the context of high household food insecurity, promoting livelihood diversification in the rural livelihoods has often been given less attention by policy makers who have chosen to focus on agriculture [11,15]. Woldehanna [16] argues that the role of the rural non-farm sector is the least understood component of the rural economy, and its role in the broad development process and poverty reduction is not well known. This knowledge gap has been reflected in the policies of developing countries like Ethiopia where there is no adequate development policy that identifies and includes the rural non-farm economy. Therefore, the present study examines the livelihood diversification

strategies practiced in severe food insecurity scenarios in Kedida Gamela district of Southern Ethiopia.

#### The study area and context

The Southern Nations, Nationalities, and Peoples Regional State (SNNPRS) is one of the regional states under the Federal Democratic Republic of Ethiopia. The region is divided into 14 zones and 1 city administration and 4 special districts [17]. According to the last National Population Census [18], the population of the region was 15.3 million (20% of the country's population) and 92% of this population lived in rural areas and the remaining 8% lived in urban areas. The economy of the region is predominantly agriculture-based, which is the major source of employment, export earnings and livelihood. About 1.3 million people were living in severe food shortage and were supported by safety net programmes in the year 2011/12 to ensure households' food security [19]. The number of households needing food dramatically increased in the last 4 years, especially following the severe famine and hunger of the year 2015/16 in many regions of the country.

Kadida Gamela Woreda (KGW) is found in SNNPRS, Kambata Tembaro Zone Administration According to BOFED [19], the estimated total population size of the district was 103,168 (51,463 males and 51,705 females). The total area is 176 km<sup>2</sup> with an estimated population density of 570 persons per km<sup>2</sup>. The district has 17 rural villages/kebeles and the total number of households is 13,967 (11,708 male and 2259 female headed) [20].

About 50% of farm households own land size of less than 0.5 ha and nearly 32% hold between half and one hectare [20]. Moreover, a significant number of households are under sustained food insecurity and farm-land constraints. An increasing number of people moved to resettlement areas within the region or migrated somewhere else, while many others are still vulnerable to food insecurity. Most vulnerable households are supported from year to year by the government food security programmes.

#### Materials and methods

This cross-sectional study was conducted based on data collected from a district in Southern Ethiopia. A sample size of 200 households, including 10% contingency, was initially determined. The sampling process began with the purposive sampling of three villages/kebeles (referred to as subdistricts) based on their agro-ecology, distance, population density and level of food insecurity. The selected three kebeles represented 17.6% of the total villages in the district. At the second stage, respondents from each selected kebele were drawn by using a combination of simple random sampling and the Population Proportional Size (PPS) rule. As a result, from the total number of households (2711), 76 (38%) from Azedebo, 68 (34%) from Fulasa Deketa and 56 (28%) from Langute Chafe were selected.

Data were collected by 9 well-trained data collectors using a household survey questionnaire. The questionnaire consisted of a complete set of information on households' background characteristics, livelihood activities, assets,

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