P-ISSN: 2709-6254	Journal of Development and Social Sciences	Oct-Dec 2025, Vol. 6, No. 4
O-ISSN:2709-6262	https://doi.org/10.47205/jdss.2025(6-IV)27	[325-341]

Journal of Development and Social Sciences
www.jdss.org.pk

RESEARCH PAPER

Livelihood Adaptation Strategies and Poverty Reduction in District Batikot- Nangarhar, Afghanistan

[1]Mohammad Nazar and [2]Amjad Ali

1. PhD Scholar Department of Agricultural & Applied Economics, Faculty of Rural Social Sciences, The University of Agriculture, Peshawar, KP, Pakistan,
2. Assistant Professor Department of Agricultural & Applied Economics, Faculty of Rural Social Sciences, The University of Agriculture, Peshawar, KP, Pakistan,

Corresponding Author: nazar170109011@gmail.com

ABSTRACT

This study aims to examine household livelihood strategies in Batikot District, Nangarhar, and assess the factors influencing strategy choice and associated poverty levels. Livelihood diversification is crucial for poverty reduction in developing countries like Afghanistan. Limited on-farm opportunities have pushed households toward mixed strategies. Understanding these patterns supports evidence-based policy. Quantitative design was applied with primary data from 100 households in Charday and Farm villages. Four livelihood strategy groups were identified. A multinomial logistic regression model assessed determinants of strategy choice. Poverty levels were measured using the US$3 per capita per day threshold. Younger and educated household heads, earners, market access, remittances, and organizational affiliation increased diversification beyond on-farm only. Seventy-one percent of households adopted off-farm or non-farm activities. Poverty incidence was highest among pure on-farm households (78%) and lowest among diversified households (15%). Diversification by improving education, market access, and rural infrastructure could possibly reduce poverty in study area.

KEYWORDS Livelihood Strategy, Off-Farm, Non-Farm, Households, Diversification, Logistic Regression Analysis, Poverty, District Batikot, Afghanistan

Introduction

Livelihood is an umbrella concept, encompass the capabilities, assets, activities and institutional mediations required for a means of living. It is a central component in people's lives all around the world, greatly influenced by household's accessibility to productive resources. Availability and combinations of asset, activities and mediators collectively determine household welfare and livelihood resilience (Chambers and Conway 1991, Ravindran & Thomas, 2000). Livelihood can be viewed as both monetary and non-monetary income streams from diverse sources (Ahmed & Lipton, 1997). In development studies, the concept of sustainable livelihoods has gained prominence because of its holistic approach to poverty reduction and resource management (Scoones, 1998; Tao & Wall, 2009). Sustainable livelihood integration into development policies serves as a practical strategy to reduce poverty, ensure resource sustainability and build household capacities (Krantz, 2001; Pandey et al., 2018). Poverty being a major global concern is characterized by limited access to resources, economic growth, living standard, sanitation and hygienic environment. Traditionally, poverty has been measured by reported income or consumption, widely used as preferred indicators of living standards.

Income approach, is commonly applied in developed countries while consumption approach is preferred because of challenges associated with accurate measurement of income in developing countries. According to Vyas and Kumaranayake 2006, Sahn and Stifel 2003, data collection in these contexts is limited by financial and time constraints. Poverty is closely linked to a household's income, asset base and other economic activities that

collectively shape livelihood choice and outcomes (Thorbecke, 2015). Mostly, poor population in low-income countries rely on subsistence agraiculture and natural resources for their livelihood (World Bank, 2015). Low agricultural productivity and limited access to non-farm income opportunities further increase vulnerability of poor and marginalized households (Rigg, 2006, Dixon et al., 2001). Households often engage in a mix of combine income-generating and social activities to construct a diversified livelihood portfolio and to improve their well-being (Davis et al., 2010). The nexus of poverty and livelihood strategies in developing countries, have been widely studied by researchers through various approaches, focusing on its implication for poverty reduction (Ellis, 1998: Barret et al., 2001).

Afghanistan is a land locked country in southwestern Asia, that shares borders with China, Pakistan, Iran, Tajikistan, Uzbekistan and Turkmenistan. It occupies land area of 264,000 square miles having extensive mountains range, deserts and plain regions across the country. It has semiarid dry environment with hot summer, cold winter, freezing at dawn but reaches up to 30°C in after noon and great variation in precipitation as well. (FAO, 2007). Hilly topography and reliance on rain fed agriculture make it particularly vulnerable to climatic fluctuations and changes (Aich *et al*., 2017; UNEP, 2016). Afghanistan's water supply relies mostly on snowfall and glacial runoff from the Hindu Kush Mountain range. Climate change combined with decades of violence and limited institutional capability, make the country vulnerable (Ahmadzai & McKinna, 2018; Habib *et al*., 2021). Average Gross domestic products (GDP) volume is around 126.79 billion US$. Major exporting partners include Pakistan (55 %) along with India (11.8 %) and Iran (2.4 %). Import to Afghanistan mainly comes from China (15.4 %), Japan (12 %) and Pakistan (17.2 %) (UNSD, 2008). Estimated population is 31.6 million, breaking down as 16.1 million male and 15.5 million female plus refuges in Pakistan and Iran. In total 31.6 million populations, 8 million is urban while 23 million are rural dwellers. 70 percent (%) individuals are under the age of 30 years. National literacy rate is 38.2 % overall, while it is 52 % for male and 24 % for female (Statistical year Book, 2018-2019). 70% population living in rural areas derive their income and livelihood from agriculture related activities. It contributes 22 % to the GDP of the country. Small holders who managed 1–10-hectare areas dominate the agriculture sector. Small holders are characterized by family focused motives, use of family members for production, favoring of the farm household system and using part of produce for daily family consumption (Thorbecke, 1998; Ellis, 1998). vulnerability, drought, increase in temperature, decrease in precipitation and climate change are potential challenges in Afghanistan by (Sultani et al., 2012; Fang et al., 2014). Reduction in water availability and mismanagement in its use, unsustainable food production, rainfall variability and heat stress lowers crop productivity and affect livelihood. Agriculture sector has potential to improve lives of disadvantaged groups, especially women in the country. It has role in food security and value addition in livestock products like milk, eggs, poultry and meat. (Leao et al., 2018), (World Bank Agricultural Sector Review for Afghanistan, 2014).

Afghanistan has experienced decades of conflict and political instability; although due to aid inflows after 2000, poverty headcount reached a low of about 33 per cent in 2007, however, because of economic slowdown from 2012 poverty increased to an estimated 55 per cent in 2016 (World Bank, 2018). With increase in poverty, severe development challenges and deteriorated economic situation pushed 19 million Afghans, almost half of the population, to food insecurity (WFP, 2022). (Floreani, L_opez-Acevedo, & Rama, 2021). According to FAO (2019) 14.3 million Afghans live below the poverty line, mostly resides in rural areas and have reliance on the agriculture sector for their livelihood. In developing world, households rely on diverse livelihood activities to manage risks, improve outcomes and reduce poverty. Poverty is a multidimensional challenge, especially in least-developed countries. Dependence on low-yield farming and limited off-farm income yield poverty and exacerbates vulnerability (Walelign et al., 2016). Households geographical and socioeconomic characteristics and asset ownerships are critical in determining poverty status and livelihood potential (Qureshi & Arif, 2001; Chaudhry, 2009). In current study

these indicators are relevant because of overlapping constraints in Afghanistan such as limited education, poor health, and minimal access to productive assets. According to Barrett et al., (2001) diversifying livelihood into non-farm sectors has showed positive influence on poverty reduction outcomes. Understanding household livelihood strategies is essential for reducing poverty in least developing countries such as Afghanistan**.** This study is context specific and role to assess livelihood strategies pursued by households as well as to identify factors that shape household's choice of suitable strategies in study area. Different characteristics might be associated with poverty, although their influence tends to be differed country wise. Generally, people remain poor in regions that are geographically isolated, have limited natural resource base and experience harsh climatic conditions.

According to (Nielsen et al., 2013) livelihood adaptation strategies in context of poverty reduction has been rarely explored in Afghanistan. Being an academic initiative, the study would contribute to enriching the existing knowledge related to livelihood adaptation strategies and diversification. Additionally, the study aligns with objectives of sustainable development goals No. 1 "No Poverty" set by United Nations. The study aims to provide insight into livelihood diversification and role of various factors in adopting a specific livelihood strategy in fragile context like Afghanistan.

Poverty-livelihood nexus as well as efforts to achieve the international poverty reduction goals have been studied by several scholars through using different analytical approaches (Rigg, 2006). Khatiwada et al. (2017) for example, explored livelihood strategies and their implication for poverty reduction in rural communities of central Nepal. They pointed that understanding livelihood strategies is key to poverty reduction in such geographies. They stressed targeted policies based on effectiveness of different livelihood strategies. In developing countries as a whole, low agricultural productivity marginalization of smallholder farmers and infrastructure limitations are shared challenges, therefore, diversification into off-farm and non-farm is getting increasingly common, thus current study would provide insight into planning for considering this trend in building effective resilient livelihood strategies. The paper aims: to assess livelihood strategies adopted by households in study area; to determine poverty status associated with each strategy; to investigate determinants of livelihood strategy choice in study area and to put forward recommendations for poverty reduction based on findings of the study.

Literature Review

Review of relevant literature help to understand the conceptual framework of Livelihood adaptation strategies and their implications for poverty reduction. Literature, also provide evidence and case studies from developing countries such as Afghanistan. Chambers and Conway (19920), Scoones (1998) and Ellis (2000) introduced and elaborate the concept of sustainable livelihood framework. They also emphasized that diversification is a core livelihood strategy for risk reduction, income smoothing and access to opportunities. There are evidence that because of limited agricultural returns, environmental stress and market imperfections, households diversify into off-farm and non-farm activities. It is associated with welfare improvement, depending on assets, social networks and market access. The study is critical in context of Afghanistan, because challenges like instability, displacement and climatic shocks shape the households livelihood choices.

Niazi et al., (2024) conducted study in Helmand province has pointed that income diversification reduces food insecurity and enhance resilience. Ahmadzai and Morrissey (2024) reported that crop diversification improves consumption outcomes and reduces vulnerability. He further highlighted that diversification is a key mechanism through which Afghan households could cope with economic and environmental instability. Miani et al., (2023) explored livelihood adaptation strategies in Ghazni, Afghanistan. He found that household assets, education and access to institutions shape the livelihood choices. It was also highlighted

that constraints such as poor infrastructure, limited market access and lack of extension services restrict upward livelihood mobility.

FAO's Alternative Livelihoods Project (2017–2020) demonstrated that infrastructure improvements, market linkages and skills development enhance the viability of non-farm enterprises. Their assessments argued that returnees in Nangarhar require targeted support, including vocational training and access to markets, for integration into local economies. UNDP (2022–2024) also stressed the importance of community-based resilience programs that strengthen human capital and physical infrastructure.

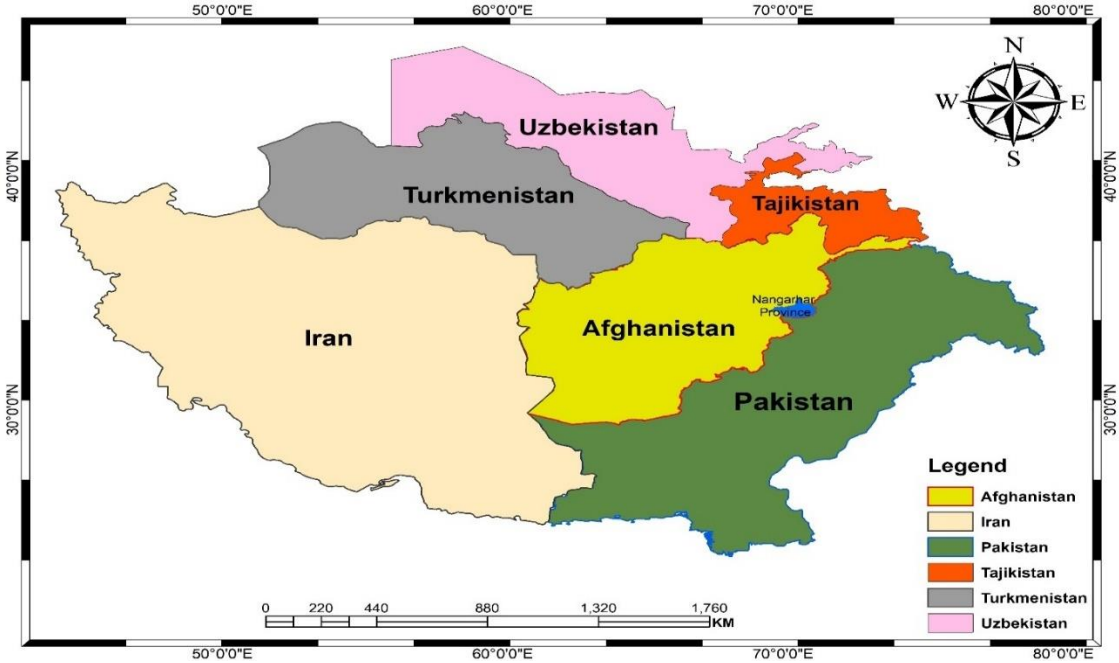
Yizengaw et al., (2015) have conducted study in Ethiopia on determinants of livelihood diversification strategies. They revealed that land size, livestock holding size , sex of household head, mass media, market distance, annual household income and urban linkages are significant determinants of livelihood strategy choice in study area. The results suggest that agricultural intensification and diversification to on-farm and off-farm need to be strengthen for household livelihood security.

Material and Methods

Study Area, Sampling and Data Collection

As shown in Figure. 1 district Bati Kot share boarders with Momand dara, Lalpur, Goshta, Kama, Rodat and Shinwar. Its geography and climate are suitable for growing a variety of crops and agricultural diversity of the area. Subsistence farming remain the primary livelihood strategy, while casual labor, remittances and small-scale trade serves as secondary sources of income. Seasonal migration and informal labor are increasingly common strategies to manage vulnerability in the district.

Challenges related to infrastructure, modern farming techniques and irrigation systems decrease productivity and returns to households. Irrigation commonly relies on surface and the traditional Karez (Qanat) system. Water losses due to unlined canals, sedimentation and seasonal drying are persistent challenges for equitable water distribution. Major and active fruits and vegetable markets include Ghondi Bazar, Wazir Bazar and Shewa local Market. Ghondi and Wazir bazars functions as central hubs for fresh produce, groceries, daily essential and seasonal fruits and vegetable trade (Wahidi, 2024).



District Batikot and randomly selected villages for data collection

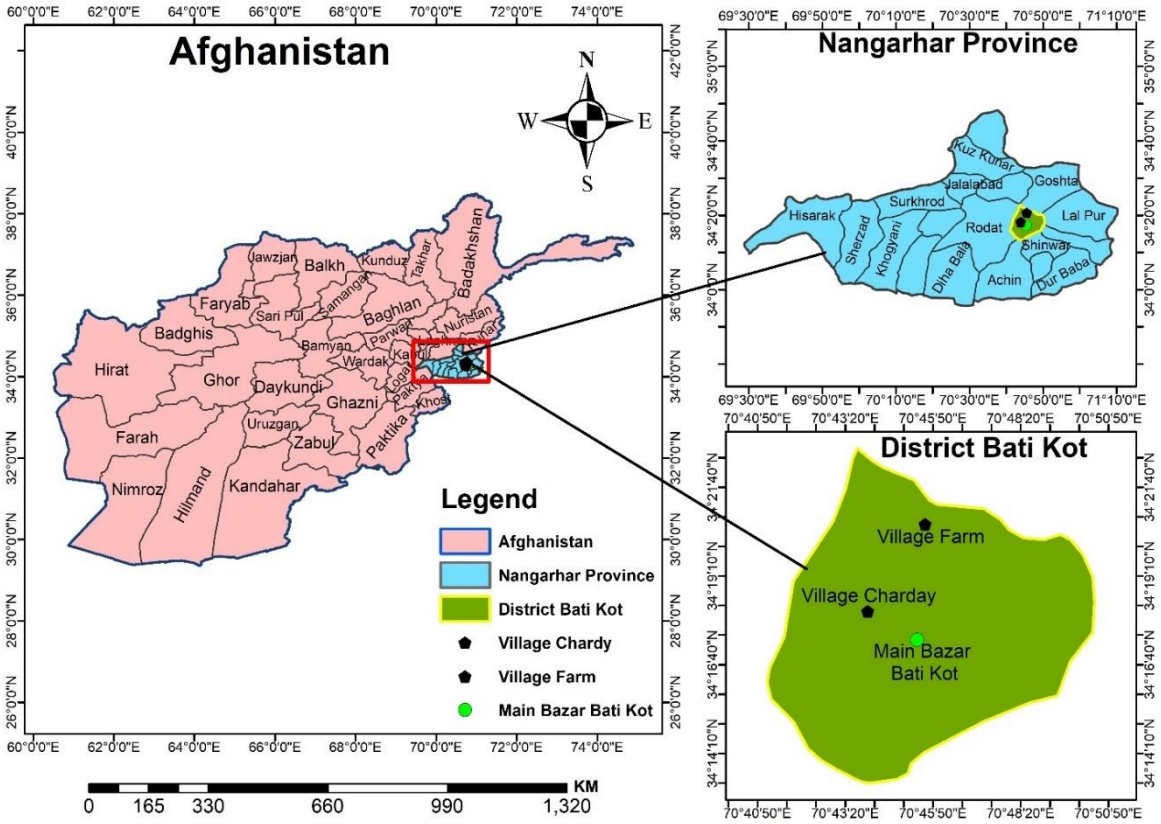


Figure-1 Map showing Overall Afghanistan and study area district Batikot

Sampling and Data Collection

Afghanistan's statistics yearbooks, Ministry of Agriculture, Irrigation, and Livestock (MAIL), National Statistics and Information Authority (NSIA), United States Department of Agriculture (USDA), Food and Agriculture Organization of the United Nations (FAO STAT) and World Bank are potential sources of secondary data related to Afghanistan. Similarly, published research articles like Ahmadzai et al., (2019), Poole et al., (2022), Samim et al., (2020) also serve secondary source of relevant data. However, present analysis is based on primary data which was collected by a cross sectional survey through a structured interview schedule, prepared and pre-tested to check relevance and reliability on account of objectives of the study. Same method has also been applied by (Samiappan et al., 2025). Following Alemu (2012) primary data was collected in Batakot district and the questions were designed aiming dichotomies response, multiple choice question and open-ended questions. Cochran formula was followed for selection of sample size which need to have a confidence level of 95%. A sample size of 100 households was fixed, ensuring equal distribution of households in two villages (Charday, Farm village). Each household's head was interviewed in person and 50 were randomly selected from each village.

Theoretical Orientation and Conceptual Framework

According to Robert and Conway (1980) livelihood is an umbrella concept in research and development related planning that carry two main objectives, first it links ways through which people manage living for themselves within the context in which they operate. Second, it attends to the process that shape these endeavors along with activities of institutions and individuals that are external to the communities under consideration, but intervene in the way people try to make a living. In literature, Sustainable Livelihood Framework (SLF) proposed by United Kingdom, Department for International Development

(DFID) have been widely applied. This framework is relevant in studying how households build strategies while considering interplay of assets, vulnerabilities and institutional factors. SLF is considered suitable for diagnosing interactions and outcomes of strategies in diverse socio-economic systems.

Human activities and institutions that influence them closely interlinked and their interaction determine the system capacity to adopt and cope with different challenges. Livelihood sustainability depends on how efficiently these actors manage and utilize available resources. According to Chambers and Conway (1992) a sustainable and resilient livelihood is one that can withstand shocks while enhancing people's capabilities and asset base. Numerous studies, including Barrett et al., 2001 and Ansoms and McKay (2010), have applied the Sustainable Livelihood Analysis Framework (SLF) which encompass five key components: the vulnerability context, the assets pentagon, mediating institutions, livelihood strategies and livelihood outcomes. These factors shape the livelihood of the people. Livelihood diversification is considered to be a strategy to increase household welfare and food Security, there are evidence that it can increase incomes and reduce poverty (Asfaw, Scognamillo, Caprera, Sitko, & Ignaciuk, 2019). Furthermore, it supports consumption smoothing, reduce volatility and vulnerability to shocks and mitigate risk (Antonelli et al., 2022). In this connection (Sibhatu & Qaim, 2018a, 2018b) were of the view that crop diversification effect dietary diversity and substitute own-produced food for market purchase. Ahmadzai and Morrissey (2025) have conducted study on Crop diversification, household welfare and conflict in Afghanistan during 2011-2017, reported that crop diversification increase household consumption and food spending but it is too low in Afghanistan. However, their comparison of 2012 and 2017 shows that crop diversification has been gradually increased.

During pilot study, it was found that despite challenges and low-productivity, agriculture sector still dominates the local economy and has positive role in poverty reduction and food insecurity. World Bank (2014) and Kakar et al., (2019) have also reported similar findings in their studies, but how to increase productivity and households' welfare are long-standing challenges. Poverty is a critical issue that is stagnating the development of Afghanistan, one possible option is diversification of livelihood strategies. The following four adaptation strategies included in the study were considered based on extensive field observations and households' involvement during the pilot study and a review of previous literature. In line with these, following Khatiwada *et al.* (2017) three aspects of the framework: livelihood assets, livelihood strategy and outcome for realizing objectives of the study as given in figure 2. Livelihood outcomes are the gains from livelihood strategies pursued by households. It varies across strategies and households. In current study higher income and poverty reduction are indicators of livelihood and welfare outcome. In livelihood related studies, Afghanistan provides an interesting case because of pervasive small-scale subsistence farming, inadequate infrastructure, limited market access, low crop productivity, poverty and ongoing instability.

Analysis Framework

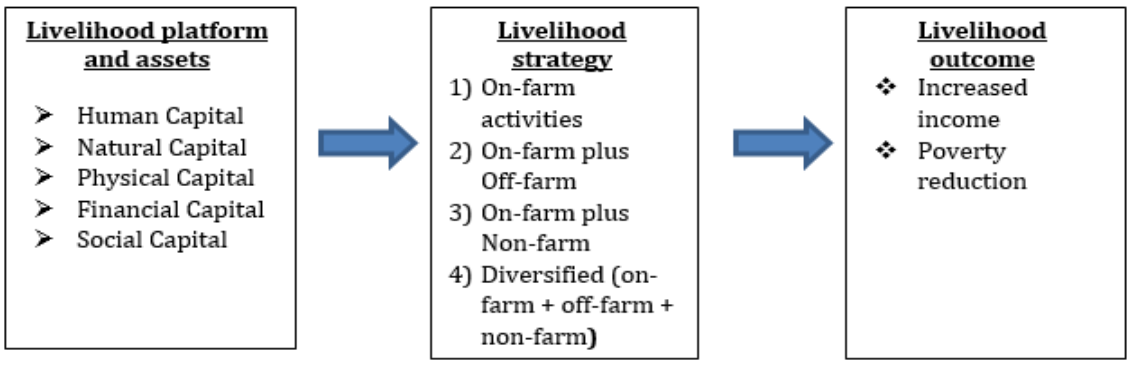


Figure.2 Conceptual framework adopted from Sultani et al., (2011),. Carney, (1998) and Khatiwada et al., (2017)

In context of objectives of current study different models have been tried by researchers to probe into factors influencing household choices for livelihood strategies. However, according to Gujarati (2004) specifying a regression model for data analysis has relevance with validity of its assumptions and outcome variable measurement scale. The outcome variable may be binary, categorical or continuous. According to Wooldridge (2002), for binary outcome logistic regression works while for categorical data ordinal regression is more applicable. According to Okello *et al*. (2012) Logit and Probit models could be applied when probability of an outcomes depends on a set of variables, that are supported by literature to have influence on the outcome. In current study it is probability of choosing a livelihood strategy and its determinants.

Logit and Probit models give identical conclusion regarding factors and probability for opting to a specific choice. However, logistic distribution yields slight fatter tail than probit one. According to Siraj, M (2019) logit model can be applied as a binary, ordinal, nominal and multinomial form. Depends on response these models are applied to data analysis accordingly. Adugna (2005) argued when the dependent variable takes or carry more than two values, in categorical form, researchers have applied multinomial logistic regression model extensively. Multinomial logistic regression is robust to violation of assumption like multi-variate normality, equal variance, co-variance across groups, linear association between dependent and independent variables and normal distribution of error term. It is also easily interpretable.

A general multinomial logistic model in light of objectives of the study to estimate probability of choosing a livelihood strategy will be as follow: -

$$P_{ij} = \frac{e\ xi\beta i}{\sum_{j=1}^{j=4} e\ xi\beta i} \quad (1)$$

Where i = (1,2……N) respondents or households that will be interviewed for data

j = Livelihood strategy i.e

1. On-farm activities
2. On-farm + Off-farm
3. On-farm + Non-farm
4. Diversified (on-farm + off-farm + Non-farm)

P_{ij} = Probability of i^{th} household that will choose j^{th} livelihood strategy

xi = Variables that influence probability of choosing jth livelihood strategy

βi = parameters of variables considered in the model

In current study on-farm was considered base or reference category for assessing effect of explanatory variables on likelihood of a specific livelihood strategy choice. Probability for base livelihood strategy is as under:-

$$\text{Prob. (Yi} = \frac{1}{Xi}) = P_{ij} = {}^{1}\Big/_{1 + \sum_{j=2}^{j} e\ xi\beta i}$$

Marginal effect of explanatory variables on probability of choosing a specific livelihood strategy was estimated as follow:

$$ME_i = \frac{\partial \text{Pij}}{\partial xi} \qquad (2)$$

In equation 2, ∂ represent change in a variable and p stands for probability

Model specification

The survey identified four mutually exclusive livelihood diversification strategies: on-farm, off-farm, non-farm and diversified that combine on-farm, off-farm and non-farm. On-farm activities mainly consisted crop production and animal rearing. Off-farm activities referred to labor work outside the household own farm. Daily wagers or work at another farmer's land in exchange for cash or a share harvest. Non-farm activities in study area included vending's, freelancing, construction work, decoration services, plumbing, electrical work, carpentry and petty trade (grain, fruit and vegetable trade), small ruminants and remittances inflows. These strategies were used as the dependent variable. It is assumed that household's choice of livelihood strategy is influenced by demographic characteristics, asset ownership and geographical factors. Based on literature and contextual understanding of eastern Afghanistan eleven explanatory variable were selected for analysis. According to Tesfaye et al., (2011) and Iiyama et al., (2008), grouping households into different livelihood strategy categories based on income share, helps policy makers for targeted interventions. In order to determine the effect of institutional factors and respondent's socio-economic characteristics on household choice for livelihood strategies in eastern Afghanistan following model was tried:

$$\text{LSC} = \beta_0 + \beta_{1\ \text{AG}} + \beta_{2\ \text{Edu}} + \beta_{3\ \text{Hsz}} + \beta_{4\ \text{FS}} + \beta_{5\ \text{LSN}} + \beta_{6\ \text{EM}} + \beta_{7\ \text{SKl}} + \beta_{8\ \text{GA}} + \beta_{9\ \text{RMT}} + \beta_{10\ \text{ATR}} + \beta_{11\ \text{ATM}} + Ei$$

Where:

LSC = Dependent variable "Livelihood strategy choice" had four possible values in current study like:

Livelihood Strategy	**Code**
On-farm only	d_0
On-farm + Off-farm	d_1
On-farm + Non-farm	d_2
On-farm + Off-farm + Non-farm	d_3

AG = Age of household head in years

EdU = Years of Education of the household's head
HSZ = Household size
FS = Farm size (Kanals)
LSN = Livestock, Dummy (1 if possess, otherwise 0)
EM = Number of Earners in family
SKL = Skill (1 if having skill, otherwise 0)
GA = Group Affiliation (1 if having group affiliation, otherwise 0)
RMT = Foreign Remittances (1 if having foreign remittances, otherwise 0)
ATR = Access to Road (Kilometer)
ATM = Access to Market (kilometer)
E_i = Residual Error Term

Results and Discussion

Socio-economic characteristics of respondents

The descriptive statistics of the sample respondents' demographic and socioeconomic characteristics are given in table 1. The average age was approximately 42 years, ranging from minimum 18 to maximum 67, with average education of 7.19 years. Respondents average experience of 14.67 years indicates that agriculture was a primary occupation in the study area. Average land holding was 19.352 kanals up to maximum of 31.2 kanals. Average land holding shows that respondents are small-holders. Average distance to the district main market was reported 7.41kilometer (Km), while distance to the nearby road was 3.56 kilometer. Out of total, 75 respondents responded that they have affiliation with concerned departments and experts for getting guidance. Rearing of Livestock by 94 respondents affirms that it serves as a cash asset in Afghanistan, similarly, relevant skill and remittances earning were reported by 90 and 65 respondents respectively.

Table 1
Descriptive of Socio-economic characteristics

Variable	Mean	Standard Deviation	Minimum	Maximum
Age	41.92	11.945	18	67
Education	7.19	3.592	1	15
Experience	14.67	6.151	4	30
Family size	9.38	3.443	1	16
Land Holding size (Kanal)	19.352	6.135	8	31.2
Home to Road Distance	3.56	2.401	0	13
Home to Market Distance	7.41	2.408	3	13
Affiliation		Yes = 75	No = 25	
Livestock		Yes = 94	No = 6	
Remittances		Yes = 65	No = 35	
Skill		Yes = 90	No = 10	

Source: Survey data , 2024

Econometric Model estimates on Determinants of livelihood diversification

In current study multinomial logistic regression was applied for data analysis. On-farm was considered as a reference category for assessing the effects of determinants on likelihood of a specific livelihood strategy choice relative to agriculture activities. The results of regression analysis are presented in table 2. The results of positive and significant impact for head's age 30 – 40 years (β = 3.808, P = 0.02), education (β = 0.491, P = 0.001), remittances (β = 5.040, P = 0.002) and access to market (β = 0.389, P = 0.023) in choosing on-farm plus off-farm strategy against on-farm. Influence of human capital including

education on adoption of higher returning livelihood strategy have been highlighted in literature by (Sarwary et al., 2023; Aliyar et al., 2022; Gautam et al., 2016). Higher education enables respondents to access information, modern technology, avail opportunities, high living standard and capable entrepreneurs (Wallenborn, 2009). Access to market effect was positive, studies conducted by Nepal and Thapa (2009) support the results, they pointed that large land holders, closer to market center are likely to grow diversify crops, keep goats and sheep and poultry farming with opportunity to easily sale-out their produce.

Marginal effect shows that how a unit change in the determinant changes the probability of adopting a particular livelihood strategy by households, holding other factors constant. Its magnitude shows the size of this probability change. Marginal effects for age category (30-40 years), education, remittances and access to market were noted 0.28, 0.35, 0.27, 0.21 which illustrate that a one unit change in these variables increase the probability of choosing non-farm wage by 28%, 35%, 27% and 21% in study area.

On the other hand, significant negative influence of household size ((β = -0.59, P = 0.005), agriculture land holding (β = -0.345, P = 0.062), possession of livestock (β = -13.995, P = 0.0031), skill (β = -3.789, P = 0.052) and group affiliation (β = -13.995, P = 0.0031) was noted on likelihood of choosing on-farm plus off-farm strategy against on-farm only. Large land holding shows negative effect in choosing off - farm wage strategy, in this connection Khatiwada et al., (2017) were of the views that subsistence farming on small land holding might not sustain the livelihood of households, they are compelling to opt for off-farm and other income generating activities. Marginal effect for household size, agricultural land holding, livestock possession and group affiliation was noted 0.19, 0.03, 0.23 and 0.013, which shows that each additional family member reduce the probability of choosing off-farm wage employment by 19%, similarly, acquiring additional agricultural land, livestock and involvement in similar activities reduce the probability by 3, 23 and 1.3 % respectively.

Non-significant effect was found for household age groups 41-50 years and above 50. Similarly, effect of earning individuals and access to road was also found non-significant. Similarly, household's head aged 30-40 years (β = 3.605, P = 0.04), 41-50 years (β = 4.791, P = 0.013), education (β = 0.961, P = 0.001), located close to the road (β = 0.937, P = 0.032) and access to market (β = 0.899, P = 0.031) were found positive and significant, that illustrate the likelihood of adopting on-farm + non-farm livelihood strategy against agricultural activities. Agricultural land holding (β = -0.42, P = 0.032) and possession of agricultural related skill (β = - 0.387, P = 0.072) exhibit negative and significant effect on choosing non-farm livelihood against agriculture activities/on-farm only. Furthermore, household head age above 50, household size, holding livestock and membership or affiliation for guidance with any group were found positive but non-significant in choosing non-farm as a livelihood strategy.

While comparing the diversified livelihood strategy with on-farm, household head having age up to 40 years (β = 0.468, P = 0.02), bigger family size (β = 0.512, P = 0.082), more educated heads (β = 0.731, P = 0.002), having maximum group affiliation (β = 0.692, P = 0.04), having more earners (β = 0.521, P = 0.002), access to road (β = 0.235, P = 0.042) and district main market (β = 0.873, P = 0.02) might prefer to choose diversified livelihood strategy. Negative and significant association of increased land holding (β = -0.647, P = 0.002) was noted in adoption of diversified livelihood strategy against basic agricultural activities. Effect and association of age groups above 41 years, livestock holding and basic agriculture related skill were found non-significant in adoption of diversified livelihood strategy in study area with reference to basic. Remittances' effect was found positive and significant for all three prominent livelihood strategies against reference category.

Findings reveal that education, household size, remittances and market access are key determinants shaping household livelihood choices that would guide the policy makers for targeted intervention in study area to reduce poverty.

Table 2
Multinomial logistic regression estimates of households' choice of livelihood diversification strategies.

Explanatory Variable	On-farm + Off-farm			On-farm + Non-farm			On-farm + Off-farm + Non-farm		
	Co-efficient	Std Error	Marginal effect	Co-efficient	Std Error	Marginal effect	Co-efficient	Std Error	Marginal effect
Head's Age (years)									
2 (30-40)	3.808**	2.003	0.282	3.605**	1.546	0.05	0.468**	0.209	0.22
3 (41-50)	4.402	3.267	0.008	4.791**	2.107	0.23	0.792	3.521	0.002
4 (>50)	5.251	4.537	0.004	3.996	4.515	0.003	-0.538	4.904	0.000
Household's size (Number of individuals)	-0.59**	0.301	-0.19	0.477	0.304	0.001	0.512*	0.205	0.14
Household Head's Education (in years)	0.491**	0.201	0.35	0.961*	0.251	0.270	0.731**	0.323	0.21
Agri. Land Holding (in kanals)	-0.345*	0.187	-0.03	-0.421**	0.188	-0.06	-0.647**	0.203	-0.03
Possession of Livestock (1 if yes, 0 other wise)	-13.995**	6.481	-0.23	0.73	0.98	0.003	-14.772	2619.980	-0.001
Possession of skill (1 if yes, 0 other wise)	-3.789**	1.771	-0.23	- 0.387**	0.188	-0.14	0.397	5.962	0.002
Group Affiliation (1 if yes, 0 other wise)	-13.7*	7.324	-0.013	15.105	996.324	0.002	0.692**	0.324	0.130
Earning individuals (Number)	-0.378	0.531	-0.05	0.382***	0.137	0.034	0.521**	0.218	0.33
Remittances (1 if yes, 0 other wise)	5.040**	2.210	0.27	3.750**	2.218	0.36	4.970**	2.345	0.141
Access to Road (in Kilometer	0.562	0.409	0.004	0.937**	0.414	0.03	0.235*	0.101	0.220
Access to Market (in Kilometer)	0.389**	0.138	0.21	0.899**	0.271	0.14	0.873**	0.335	0.070
Constant	33.915	2803.034		36.848	2803.034		36.258	2803.036	

Log likelihood = -77.945775 ,

LR chi2(42) = 98.20,

Probability > Chi2 = 0.000

Pseudo R2 = 0.3865

Significant at = *** 99%, ** 95% and * 90 %

Source: Author's calculation from Survey data, 2024

Livelihood strategy, Household mean monthly expenditure and implication for poverty reduction

A key methodological consideration in poverty analysis is the selection of best suitable poverty line. In June 2025, World Bank replaced the earlier threshold of $ 2.15 to $ 3.00 using the 2021 purchasing power parity (PPP) estimates for low-income economies, which was used a bench mark for current study. In developing countries, consumption is considered more reliable indicator for welfare. This is because, respondents are more willing to disclose their consumption rather than their income, and measuring income particularly for self-employed individuals is often less accurate. Consumption is less variable while income is subject to seasonal variability. Finally, consumption is considered as a measure of welfare achievement while income is interpreted as a measure of welfare opportunity. Household consumption is used and considered as a welfare indicator.

Floreani et al., (2021) pointed that farming and self-employment are far more common than wage employment in Afghanistan. Unreliability of self-reported income, difficulties in measuring seasonal and self-employment earning and inadequate data on

crop revenue at the household level makes household consumption expenditure a preferred indicator for assessing poverty level. Among the major four prevalent livelihood strategies in study area, diversified was found the most remunerative in terms of the highest mean monthly expenditure followed by business/enterprise and non-farm wage while subsistence agri-production and animal husbandry was the least. Analysis showed that in business/ enterprise and diversified livelihood strategies, likelihood of higher income and potential to alleviate poverty is high compare to others in study area. Significantly lower percentage (15 and 18) of households belonging to diversified and business/Enterprise livelihood strategies lies under the currently updated poverty line of $3 reflects the effectiveness of these strategies in Afghanistan and particularly in Batikot district. During survey, it was realized that diversification of livelihood activities to market-oriented jobs both formal and informal, business and remittances has direct link with increase in purchasing power of households, an important factor in alleviating the absolute poverty. Similar, findings have also been reported by khatiwada et al., 2017 in their studies.

During survey, the dominancy of non-formal, seasonal, unmanaged low-paid labor market and households' trend toward self-employed and market-oriented activities was noted. It was also noted that returning Afghan migrants from Iran and Pakistan are getting involved in low paid jobs. Unskilled out-migrants are also low-paid and are ineffective in reducing poverty comparatively. Studies conducted related to out-migration have reported similar findings. Subsistence agriculture production and animal husbandry, was found less profitable in term of contribution to poverty reduction, although it was an easily available choice to households in study area.

Table. 3
Livelihood strategy, mean monthly expenditure and poverty

Survey district	Strategy	Mean Monthly Expenditure (AF)	Respondent below poverty line
District Batikot	On-farm activities	47932.23	78%
	On-farm + Off-farm	58223.05	28%
	On-farm + Non-farm	61204.68	18%
	On-farm + Off-farm + Non-farm	62912.14	15%

Where AF represent Afghani Currency (1US$ = 69.85 AF as on July 06, 2025) Source: Authors' calculation from survey data, 2024

Conclusion

The study assesses main livelihood strategies adopted by households in district Batikot, in context of its relevance to poverty reduction and the factors that influence the adaptation of these livelihood strategies. The results also suggest that households commonly diversify into off-farm and non-farm activities. The results further suggested 78% households involved in on-farm only are below the poverty line, while it decreases for off-farm (28%), non-farm (18%) and diversified (15%). The analysis revealed that factors; young age (up to 40 years), education, land holding, skill, affiliation, remittances and proximity to roads and market significantly influence the adoption of more profitable livelihood strategies compared to reliance on on-farm activities alone. Results illustrated that physical and natural capital were positively associated with maintaining the on-farm livelihood strategy. Conversely, human, social, and financial capital were positively correlated with non-agricultural livelihood strategies. Findings, indicated that adaptation of a specific livelihood strategy is largely determined by the nature and availability of the livelihood capitals to households.

Off-farm, non-farm and remittances-oriented trend in study area might decrease dependence on agriculture sector, that face challenges like climate change, land degradation and urbanization. Literature suggests that distraction from agriculture may pose challenges such as reduced food self-sufficiency, lower productivity, increased unemployment and

poverty. Because of slow policy and structural transformation, agricultural related activities and enterprises are expected to remain a primary strategy for poverty reduction for at least the coming decades.

Recommendations

Based on findigs, the following recommendations are suggested to support the divesifiation of traditional livelihoods into more profitable activities:

- Implement targeted interventions for strengthening human capital through education and practical training
- Investment in essential infrastructure, road networks to enhance mobility and access
- Expend access to maket centers inrder to facilitate better opportunities for commercial activities.

References

Ahmadzai, H., & Morrissey, O. (2024). *Climate shocks, household food security and welfare in Afghanistan* (No. 24/04). CREDIT Research Paper.

Ahmadzai, M. K., Eliw, M., & Zhou, D. (2019). Descriptive and Econometric Analysis of Wheat Production in Afghanistan (A Case Study in Paktia Province). *South Asian J. Soc. Stud. Econ, 5, 1-10.*

Aich, V., Akhundzadah, N. A., Knuerr, A., Khoshbeen, A. J., Hattermann, F., Paeth, H., ... & Paton, E. N. (2017). Climate change in Afghanistan deduced from reanalysis and coordinated regional climate downscaling experiment (CORDEX)—South Asia simulations. *Climate, 5(2), 38.*

Alemu, Z. G. (2012). Livelihood strategies in rural South Africa: Implications for poverty reduction.*2-24*

Aliyar, Q., Zulfiqar, F., Datta, A., Kuwornu, J. K., & Shrestha, S. (2022). Drought perception and field-level adaptation strategies of farming households in drought-prone areas of Afghanistan. *International Journal of Disaster Risk Reduction, 72, 102862.*

Ansoms, A., & McKay, A. (2010). A quantitative analysis of poverty and livelihood profiles: The case of rural Rwanda. *Food Policy, 35(6), 584-598.*

Antonelli, M., Donelli, D., Carlone, L., Maggini, V., Firenzuoli, F., & Bedeschi, E. (2022). Effects of forest bathing (shinrin-yoku) on individual well-being: An umbrella review. *International Journal of Environmental Health Research, 32(8), 1842-1867.*

Barrett, C. B., Bezuneh, M., Clay, D. C., & Reardon, T. (2001). Heterogeneous Contraints, Incentives, and Income Diversification Strategies in Rural Africa. *Department of Applied Economics and Management Cornell University, Ithaca, New York 14853-7801 USA*

Barrett, C. B., Reardon, T., & Webb, P. (2001). Nonfarm income diversification and household livelihood strategies in rural Africa: concepts, dynamics, and policy implications. *Food policy, 26(4), 315-331.*

Brown, D. R., Stephens, E. C., Ouma, J. O., Murithi, F. M., & Barrett, C. B. (2006). Livelihood strategies in the rural Kenyan highlands. *African Journal of agricultural and Resource economics, 1(1), 21-36.*

Carney, D. (Ed.). (1998). Sustainable rural livelihoods: what contribution can we make? Papers presented at the Department for International Development's Natural Resources *Advisers' Conference, July 1998 (pp. vii+-213).*

Chambers, R., & Conway, G. (1991). Sustainable livelihood-chambers and conway1991. pdf.

Chaudhry, I. S., Malik, S., & ul Hassan, A. (2009). The impact of socioeconomic and demographic variables on poverty. *The Lahore Journal of Economics 14 : 1 (Summer 2009): pp. 39-68*

Davis, B., Winters, P., Carletto, G., Covarrubias, K., Quiñones, E. J., Zezza, A., ... & DiGiuseppe, S. (2010). A cross-country comparison of rural income generating activities. *World development, 38(1), 48-63.*

Dixon, J. A., Gibbon, D. P., & Gulliver, A. (2001). *Farming systems and poverty: improving farmers' livelihoods in a changing world*. Food & Agriculture Org.

Ellis, F. (1998). Household strategies and rural livelihood diversification. *The journal of development studies, 35(1), 1-38.*

Ellis, F. (2000). *Rural livelihoods and diversity in developing countries. Oxford university press.*

Floreani, V. A., López-Acevedo, G., & Rama, M. (2021). Conflict and poverty in Afghanistan's transition. *The Journal of Development Studies, 57(10), 1776-1790.*

FAO. (2017–2020). Alternative Livelihoods Project Reports . Food and Agriculture Organization.

Gartaula, H., Niehof, A., & Visser, L. (2012). Shifting perceptions of food security and land in the context of labour out-migration in rural Nepal. *Food Security, 4(2), 181-194.Group:* Washington, DC, USA.

Gautam, Y., & Andersen, P. (2016). Rural livelihood diversification and household well-being: Insights from Humla, Nepal. *Journal of rural studies, 44, 239-249.*

Habib, N., Alauddin, M., & Cramb, R. (2022). What defines livelihood vulnerability to climate change in rain-fed, rural regions? A qualitative study of men's and women's vulnerability to climate change in Pakistan's Punjab. *Cogent Social Sciences, 8(1), 2054152.*

Huber, F. K., Yang, Y., Weckerle, C. S., & Seeland, K. (2014). Diversification of livelihoods in a society in transition: A case study of Tibetan communities in Southwest China. *Society & Natural Resources, 27(7), 706-723.*

Iiyama, M., Kariuki, P., Kristjanson, P., Kaitibie, S., & Maitima, J. (2008). Livelihood diversification strategies, incomes and soil management strategies: a case study from Kerio Valley, Kenya. Journal of International Development: *The Journal of the Development Studies Association, 20(3), 380-397.*

Jawid, A., & Khadjavi, M. (2019). Adaptation to climate change in Afghanistan: Evidence on the impact of external interventions. *Economic Analysis and Policy, 64, 64-82.*

Kakar, K., Xuan, T. D., Haqani, M. I., Rayee, R., Wafa, I. K., Abdiani, S., & Tran, H. D. (2019). Current situation and sustainable development of rice cultivation and production in Afghanistan. *Agriculture, 9(3), 49.*

Krantz, L. (2001). The sustainable livelihood approach to poverty reduction. SIDA. Division for Policy and Socio-Economic Analysis, *44, 1-38.*

Leao, I., Ahmed, M., & Kar, A. (2018). *Jobs from agriculture in Afghanistan.* World Bank Publications.

Maharjan, A., Bauer, S., & Knerr, B. (2013). International migration, remittances and subsistence farming: Evidence from Nepal. *International migration, 51, e249-e263.*

Massey, D. S., Axinn, W. G., & Ghimire, D. J. (2010). Environmental change and out-migration: Evidence from Nepal. *Population and environment, 32(2), 109-136.*

Miani, A. M., Dehkordi, M. K., Siamian, N., Lassois, L., Tan, R., & Azadi, H. (2023). Toward sustainable rural livelihoods approach: Application of grounded theory in Ghazni province, Afghanistan. *Applied Geography*, *154*, 102915

Nepal, R., & Thapa, G. B. (2009). Determinants of agricultural commercialization and mechanization in the hinterland of a city in Nepal. *Applied Geography, 29(3), 377-389.*

Niazi, R., Liu, A., Han, J., Hassan, S., Elham, H., & Osewe, M. (2025). Household Income Diversification and Food Insecurity: A Case Study of Afghanistan. *Foods*, *14*(12), 2048.

Oumer, A. M., & de Neergaard, A. (2011). Understanding livelihood strategy-poverty links: empirical evidence from central highlands of Ethiopia. *Environment, Development and Sustainability, 13(3), 547-564.*

Paudel Khatiwada, S., Deng, W., Paudel, B., Khatiwada, J. R., Zhang, J., & Su, Y. (2017). Household livelihood strategies and implication for poverty reduction in rural areas of central Nepal. *Sustainability, 9(4), 612.*

Poole, N., Sharma, R., Nemat, O. A., Trenchard, R., Scanlon, A., Davy, C., ... & Bentley, A. R. (2022). Sowing the wheat seeds of Afghanistan's future. *Plants, People, Planet, 4(5), 423-431.*

Qureshi, S. K., & Arif, G. M. (1999). *Profile of poverty in Pakistan, 1998-99.* PIDE.

Ravindran, D. S., & Thomas, T. H. (2000). Trees on farms, stores of wealth and rural livelihoods–insights and evidence from Karnataka, India. *The International Forestry Review, 182-190.*

Rigg, J. (2006). Land, farming, livelihoods, and poverty: Rethinking the links in the Rural South. *World development, 34(1), 180-202.*

Sahn, D. E., & Stifel, D. (2003). Exploring alternative measures of welfare in the absence of expenditure data. *Review of income and wealth, 49(4), 463-489.*

Samiappan, S., Sarwary, M., Venkatachalam, S., Shinwari, E., Sembanan, K., Poornalingam, J., ... & Kathiravan, S. (2025). *Determinants of Farmers' Strategies for Adaptation to Climate Change in Agricultural Production in Afghanistan*. World, 6(2), 59.

Samim, S. A., & Zhiquan, H. (2020). Assessment of Food security situation in Afghanistan. *SVU-International journal of agricultural sciences, 2(2), 356-377*.

Sarwary, M., Samiappan, S., Khan, G. D., & Moahid, M. (2023). Climate change and cereal crops productivity in Afghanistan: evidence based on panel regression model. *Sustainability, 15(14), 10963.*

Scoones, I. (1998). Sustainable rural livelihoods: a framework for analysis.

Sibhatu, K. T., & Qaim, M. (2018). Farm production diversity and dietary quality: linkages and measurement issues. *Food Security, 10(1), 47-59.*

Soltani, A., Angelsen, A., Eid, T., Naieni, M. S. N., & Shamekhi, T. (2012). Poverty, sustainability, and household livelihood strategies in Zagros, Iran. *Ecological Economics, 79, 60-70.*

Tao, T. C., & Wall, G. (2009). A livelihood approach to sustainability. *Asia Pacific Journal of Tourism Research, 14(2), 137-152.*

Tesfaye, Y., Roos, A., Campbell, B. M., & Bohlin, F. (2011). Livelihood strategies and the role of forest income in participatory-managed forests of Dodola area in the bale highlands, southern Ethiopia. *Forest policy and economics, 13(4), 258-265.*

Thorbecke, E. (2015). Multidimensional poverty: conceptual and measurement issues. In The many dimensions of poverty *(pp. 3-19). London: Palgrave Macmillan UK.*

UNDP Afghanistan. (2022–2024). *Community resilience and rural livelihoods reports.* UNDP Afghanistan.

Vyas, S., & Kumaranayake, L. (2006). Constructing socio-economic status indices: how to use principal components analysis. *Health policy and planning, 21(6), 459-468.*

Walelign, S. Z. (2016). Livelihood strategies, environmental dependency and rural poverty: The case of two villages in rural Mozambique. *Environment, Development and Sustainability, 18(2), 593-613.*

Wallenborn, M. (2009). Skills development for poverty reduction (SDPR): The case of Tajikistan. *International Journal of Educational Development, 29(6), 550-557.*

Woodridge, J. M. (2002). *Econometric analysis of cross sectional data and panel data. Cambridge.*

World Bank (2015). *Global Monitoring Report 2014/2015: Ending Poverty and Sharing Prosperity*, World Bank

Yizengaw, Y. S., Okoyo, E. N., & Beyene, F. (2015). Determinants of livelihood diversification strategies: The case of smallholder rural farm households in Debre Elias Woreda, East Gojjam Zone, Ethiopia. *African journal of agricultural research, 10(19), 1998-2013.*