

Impact of Agricultural Inputs on Indigenous Livelihoods: Evidence from Rural Makawanpur Pravin Bastola¹

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Abstract

Agricultural subsidy programs and agricultural input support initiatives are seen effective in transforming rural livelihoods, particularly among the indigenous and marginalized households. Using a quantitative, non-experimental, descriptive research design this study examines the efficiency of agricultural input support on indigenous livelihoods in Raksirang Rural Municipality, Makawanpur District, Bagmati Province, Nepal. Agricultural input support has made a positive contribution to the improvement of households, although the change in income is not uniform across households. Primary data was collected in 2025, with the sample of 180 households from the population of 330 households using stratified random sampling method. Where necessary, secondary data and information are from published journal articles, other literary articles and knowledge documents available in the sector. Almost 50% of the households gained income with the average income of Nepalese Rupees 12216.77 and 36% of households reported increase in annual income within the timeframe of 6 to 24 months of receipt of agricultural inputs. Larger proportion of households experienced improved food security, health and nutrition benefits and reduced household expenditure though they did not realize increase in annual income through agricultural products. Income from the sale of agricultural products was used for family livelihood, health, education with some reinvestment in agribusiness expansion and loan repayment, which indicates the shift towards livelihood diversification or creating alternative option of livelihood enhancement. The study is significant to understand the efficiency and effect of small scale external agricultural input support on family income, expenditure patterns and economic resilience reducing vulnerabilities.

Keywords: agricultural input support, indigenous, livelihood diversification, marginalized communities, sustainable livelihoods

1. Introduction

Agriculture remains the primary source of livelihood and important source of employment and part of daily life in the context of rural Nepal. Indigenous and marginalized communities living at the very remote and rural areas of Nepal are mainly dependent on

agriculture and forest resources (Chaudhary et al., 2017). Still, they are facing challenges to sustain their living. This study focuses on the Chepang and Tamang communities of the study area. Agricultural inputs are considered as both on-farm or off-farm input support such as improved vegetable seeds, livestock, irrigation facilities and technical knowledge support for the better productivity or yield from the improved agricultural practices. External input support on agriculture such as goats, piglets as livestock support, beekeeping, vegetable farming support and support with technical knowledge are taken as both tangible and intangible asset support.

1.1 Background

In rural Makawanpur, indigenous communities primarily depend on subsistence agriculture. However, their farming systems and agricultural practices are characterized by low productivity due to limited access to modern inputs, technologies and knowledge on improved seeds, fertilizers. Tamangs are the indigenous people with the major population in Makawanpur district and Chepangs are indigenous and marginalized living in rural and remote areas. The study is geographically confined to the six wards of Raksirang Rural Municipality of Makawanpur District, Bagmati Province, Nepal, where the majority of community households are indigenous families namely Tamang and Chepang. These ethnic groups, in the study area, follow agriculture and wage labors as traditional livelihood options, their household food security is average and depends on farming activities. The traditional farming practice is challenging due to limited technical knowledge and traditional income opportunities are insufficient to manage livelihood for long time (Khatiwada, 2025). To address this, local government and development programs have introduced agricultural input support to improve production and livelihoods. Indigenous families of these six wards of Raksirang Rural Municipality were supported with agricultural inputs and trainings on seasonal and off-seasonal vegetable farming, goat and pig rearing, beekeeping. Agricultural input support was done with the assumption that the inputs, along with the knowledge for improved practices, can act as catalyst for the increased agricultural productivity and therefore enhance the rural livelihoods. Despite these efforts, there is a need to empirically assess whether such support has significantly improved household economic conditions. This study covers the timeframe of 6 to 24 months period from the input to assess the efficiency of support. As the indigenous communities rely on traditional land management and agricultural practices there is a complex relationship between the agricultural inputs and the socioeconomic linkage which is an critical area of research (Silva et al., 2022).

The study has its focus on the intersection of agricultural input support and indigenous livelihoods within a specific geographical area and socio-cultural context. The study tries to understand how small external support can contribute to foster the livelihood, annual income and maintaining priority expenditures of indigenous families. The study is significant to understand the effect of agricultural input support on family income, expenditure patterns and relevant socio-economic and health benefits. The study shows its significance on examining how targeted initiatives can help to strengthen economic resilience and reduce vulnerability. There are various studies and research on agricultural input support in the context of Nepal, but only few studies are available specifically on indigenous communities. Additionally, more studies are focused on short term productivity gains than long term sustainable livelihood measures. So, the gap highlights the need for context specific evidence examining how agricultural input affects the household income, health and nutrition, education and long-term sustainable livelihood solutions as well as economic resilience among indigenous and marginalized community households in geographically remote settings.

1.2 Statement of the Problem

Indigenous communities residing in remote settings mostly rely on subsistence agriculture and both government and non-government as well as private and corporate sectors are introducing input supports through agricultural interventions. Despite the support on agricultural resources, it is unclear to what extent these input supports have been transformed to improve the family livelihoods, livelihood diversification and socio-economic resilience as well as reducing economic vulnerabilities. Increased income, improved livelihoods and food security is inconsistent among families due to various external factors too, which highlights the lack of empirical evidence on impact of agricultural inputs on indigenous households. The problem has its bigger picture with the lack of context specific and comprehensive analysis of external agricultural interventions effectiveness.

1.3 Delimitations of the Study

This study has its geographical limitations, confined to six wards (Ward Numbers 1,2,3,4,5 and 8) of Raksirang Rural Municipality, Makawanpur district, Bagmati Province, Nepal. Total population of 330 households receiving agricultural input support within last 6-24 months and residing on those six wards are included for the study. 180 households from the population are selected for the study through stratified random sampling. Emphasizing the study to certain indigenous communities of Tamang and Chepang only, the study does not generalize the finding to other regions and ethnic groups. Qualitative data and information as well as broader policy level analysis and long term environmental and ecological impacts are outside the scope of the study.

1.4 Literature Review

Agricultural inputs have been recognized as catalyst for agricultural growth or increase in yield. Agricultural extension services play pivotal role in reducing rural poverty and supporting livelihood diversification by improving access to human, social, physical, financial and natural resources (Ongachi & Belinder, 2025). Agricultural input innovations might increase the nutritional status of farming households, though to lesser degree, agricultural inputs might increase the monetary value of agricultural harvest (Stewart et al., 2015).

Agricultural subsidies have played pivotal role in income levels too, among smallholder farmers, but due to inefficiencies, fiscal burdens and market distortions, traditional subsidy programs have come under scrutiny, though they were designed to improve food security and stimulate rural development (Alawode, 2025). Results from the study shows that agricultural input and subsidies influence outcomes like household income stability, dietary diversity, and the adoption of resilient farming practices and while reviewing from the sustainable livelihood framework perspectives, the results demonstrated that human capital improved the most, particularly improving the farmers' ability to support their families and achieve self-reliance, followed by financial and natural capitals (Mokumako et al., 2025). The findings from the study and analysis of effect of agricultural input subsidies in developing countries on yield and income, show that programs that provide subsidized fertilizer and improved seeds are associated with average increases of 18 percent in yields and 16 percent in farming household incomes, additionally the findings suggest that agricultural subsidies can lead to increased yields and contribute to improved living standards (Nguyen et al., 2023). Impacts on agricultural productivity can be expected as direct impact by the agricultural input subsidies but widely it is dependent on various factors like farmer characteristics, technology characteristics, livelihood and economy characteristics, agro-ecological climate and weather conditions (Dorward et al., 2014). Agricultural inputs have their effects on economic development too as the increased yield contributed to higher gross domestic product (GDP), results from the study (McArthur & McCord, 2017) suggest a clear role for fertilizer, modern

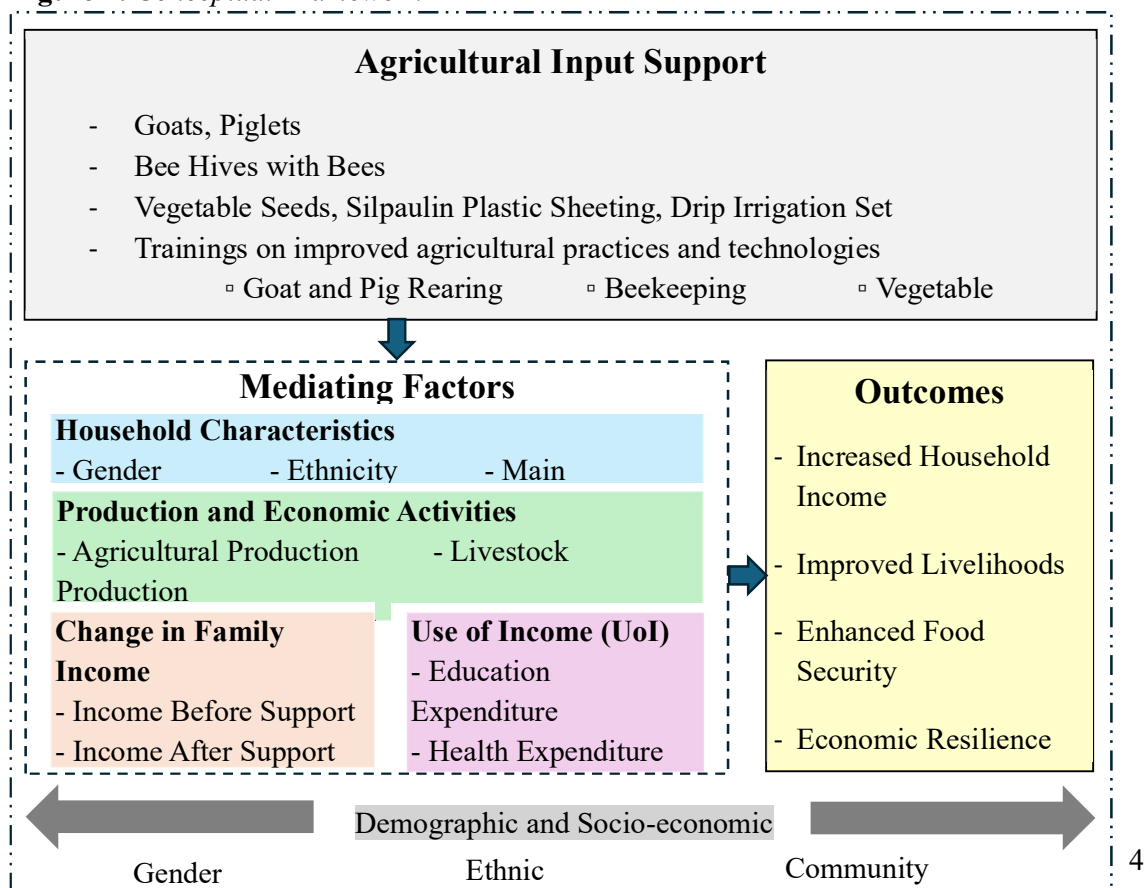
seeds and water in boosting yields. Agricultural technologies need to be encouraged with utmost importance to act as a catalyst for positive change and the innovative technologies in agriculture have contributed for increased yields, mitigating the effects of climate change, and enhancing the overall livelihoods of smallholder farmers (Ogunsola, 2024).

Farming with modern agricultural practices, tools and methods can lead to increased production and bigger market linkage opportunities at the same time there is increased investment, high dependency on external resources and possible ecological and soil degradation. Traditional farming practices with indigenous knowledge has lower yield issues but has the benefits of biodiversity protection fostering social cohesion, so the integrated method of incorporating traditional farming with carefully chosen modern technologies are the right way towards sustainable, equitable and resilient development (Das, 2025).

Households might have different forms and options of livelihood, households, with livestock-based and wage-based livelihood strategies are less diversified and more specialized than households with crop-based livelihood strategies and ethnicity has significant effect on agricultural diversification (Torres et al., 2018). As suggested by the Sustainable Livelihood Framework (SLF), livelihood capitals can be analysed with the lens of five forms of capital which are, human, physical, financial, social and natural. Agricultural inputs are physical and financial capital whose impact or effectiveness are defined by the capacity of recipient to mobilize human and social capital. Improvement on livelihoods can be related to alleviation of poverty too. Findings from the study suggested poverty as a complex issue requiring interconnected solutions rather than a isolated interventions and the study analysis has revealed agriculture through innovation and agri-technology as one of the key strategies for alleviating poverty in developing countries (Sharma et al., 2025).

1.5 Conceptual Framework

Figure 1: Conceptual Framework



This conceptual framework has taken agricultural input support as primary drivers of livelihood enhancement or alternative options of income generation, mediated by different factors like household characteristics, production and economic activities, income and use of income. Agricultural input support includes both tangible and intangible supports provided to target households. Tangible or physical inputs including livestock support, beehives with bees, seeds and other physical support for vegetable farming are important for increment of agricultural production and diversification of on-farm and off-farm agricultural activities. Intangible input support, such as training and knowledge transfer on improved agricultural practices and technologies also play important role in strengthening human capital with knowledge and skills on different agricultural activities. Moreover, trained farmers can access other resources and develop business plans for their small-scale agri-business too. Such combined initiatives of providing both tangible input support as well as capacity building with skill and knowledge transfer are seen more effectively addressing both resource and knowledge gaps. Support with agricultural inputs is particularly significant in the context where indigenous and marginalized communities are facing challenges to practice diversified agriculture.

The framework acknowledges agricultural input support as the major element or input for livelihood enhancement and diversification, while it takes household characteristics such as gender, ethnicity, major occupation as the mediating factors. Decision making at the household level are often influenced by gender dynamics, ethnicity, education and major source of income. Production and economic activities are another mediating factor, where production, market participation or sales and income diversification are the channels through which the agricultural inputs are transformed into economic gains. Impacts of input support are traced through changes in family income with the comparison of annual income of family before and after getting support. The use of income (UoI) pattern also acts as factors to mediate the effects of inputs for long term benefits such as expenditure on human capital development to reinvestment in business growth. Increased household income, improved livelihoods, enhanced food security and economic resilience are articulated as the outcomes of agricultural input support. The outcomes entail not only well-being but also improved livelihoods with social empowerment and increased capacity for coping against economic shocks, crisis or disasters.

1.6 Research Gap

There are various programs on agriculture subsidies from the government side and other development partners and non-government sectors are also doing lot of investment supporting rural agriculture and rural livelihoods. Though, plenty of research and studies are existing in the sector primarily focused on short term effects, there is limited literatures and empirical evidence that examines the direct effect of agricultural input support to indigenous and marginalized households particularly residing in the remote areas. Existing literatures are focused on increased yield, income but the broader perspective of capital gain, livelihood priorities, use of income (UoI) patterns, investment of income on business expansion are often overlooked. A clear gap is prevalent in understanding how agricultural input supports influence on production, thereby increasing the income of specific household and livelihood improvements within specific geographic and socio-economic context.

1.7 Research Objective

Main objective of this study is to analyse the impacts of agricultural input support on indigenous livelihoods. So, the research seeks to find out, to what extent, external agricultural input support has affected indigenous livelihoods in the study area of Raksirang Rural Municipality. The study is not only limited to the direct outcomes in terms of income from agricultural products and food security but also the mediating factors such as household characteristics, production activities, income, use of income (UoI) patterns and socio-economic

context. By doing so, the study tries to provide evidence-based findings which can inform policy and practice as well as future programming and initiatives ensuring that agricultural support interventions are objective oriented, effective and equitable.

1.8 Research Question

To what extent does agricultural input support affect household income and livelihood improvements among indigenous communities?

This question aims to assess how different types of agricultural input support blended with technical training bring changes in household income, use of income (UoI) patterns, livelihood diversification and economic resilience among indigenous households. The role of mediating factors like household characteristics, production and economic activities and use of income patterns for livelihood improvements are also considered.

2. Materials and Methods

The methodology focused on quantitative methods to analyse measurable aspects of efficiency of agricultural input and the impact of external support of agricultural inputs on household livelihoods of indigenous families.

The tools materials and methods were adopted with the objective of capturing empirical evidence through structured data collection and statistical analysis. With the use of questionnaire survey among sampled households, the study tried to quantify relationships between agricultural input support and its effect on family livelihood such as change in annual income, use of the income, expenditure diversification, and expansion of the agribusiness as alternative option of livelihood. This structured process ensures that the findings are based on the filed data and are grounded in field realities and contribute meaningfully to understand how small agricultural input support can affect family economy and agricultural practices among indigenous communities in rural Nepal.

2.1 Study Area

The research was conducted in Raksirang Rural Municipality of Makawanpur District, Nepal, which is predominantly inhabited by indigenous communities. The Rural Municipality consists of nine wards; among them six wards (1,2,3,4,5 and 8) were purposively selected for this study based on their agricultural practices and livelihood dependence on farming inputs. The study area is dependent on subsistence agriculture, with limited or no access to modern agricultural technologies and knowledge, and diverse options of family livelihood like daily wage, seasonal labour migration, foreign employment, making it a specific area of study to examine the impact of agricultural inputs on indigenous households.

2.2 Population and Sampling

Population households for the study are the strata of community households who have received agricultural input support. List of households receiving agricultural input support within last 6-24 months was received from the agricultural development section of the Raksirang Rural Municipality Office and the non-government organisation working on the study area and was cross verified at the field level too. Sample of 180 households were selected from the total population of 330 households receiving agricultural input support in the selected wards. In this study, stratified random sampling techniques were employed to select 180 households out of a total population of 330. Stratification was done across the six wards of Raksirang Rural Municipality to ensure proportional representation and the study population have received external agricultural input support. Within these strata of community households receiving agricultural input support, households were selected randomly to maintain objective of the study, reduce sampling bias and ensure proportional representation of households

receiving varieties of agricultural input support across the six wards. The approach was helpful to maintain reliability on variations in agricultural input support provided and their effect on family livelihood.

2.3 Research Design

The study adopted a quantitative, non-experimental, descriptive research design to systematically measure the relationship between agricultural input support and indigenous livelihoods. This research was designed to assess the effect of external support on agricultural inputs limiting the timeframe of 24 months from the receipt. This facilitated the generation of evidence on the status of agricultural input utilization and its effects on household economy, livelihood options, and agribusiness development.

2.4 Data Collection

Structured questionnaire survey tool was adopted to collect data from the selected 180 ample households. The questionnaire was designed to collect primary data on household demographics, major occupation for family livelihood, type of agricultural input support received, change in family income, use of income etc. Field testing of survey tools was carried out to ensure clarity and to check if any prevailing errors on the questionnaire survey tool. Necessary modifications were assessed and incorporated before the final data collection survey. Orientation on data collection to enumerators was done to ensure accuracy and response bias. Experienced enumerators familiar with local culture language, context and geography carried out the data collection questionnaire survey through the android devices.

2.5 Data Analysis

As the primary data collection was done in 2025, using android devices, the collected data was exported directly to Microsoft Excel sheets from the Kobo Toolbox dashboard and used for analysis. Descriptive statistics (frequency, percentage, mean, and standard deviation) were used to summarize household characteristics and agricultural input support patterns.

The analysis of the dataset (n=180) reveals majority of households belonging to Tamang, 65% followed by substantial proportion belonging to Chepang households, 35%. The ethnic composition shows the dataset contains households from the marginalized and indigenous community only. Disaggregated respondent data has the participation of female respondents as 72% and remaining 28% as male respondents. Analysis of annual income of family, reveals 36% of the households have experienced increase in annual income. Mean annual income of the households at the pre-support status was NRs. 95,000, which has been increased to NRs. 115,000 at the post-support status, which shows the mean annual income is increased after getting external support. Similarly, median at pre-support was NRs. 60,000 and the same at post-support was NRs.80,000, while mode, the most frequent value lies at NRs. 100,000 at both pre and post support status though some households are rising to NRs. 150,000 to 200,000. This indicates the mean income is increased, but the median and mode show the income gains are not uniform across the households. The variance and standard deviation show pre-support of NRs. 70,000 and post support of NRs. 85,000, which indicates non-uniformity as some households gained a significant increase while other households with the unchanged or lower increment status. Broader interpretation of the analysed data is presented under the results and discussion section.

3. Result and Discussion

The effect of agricultural input support is analysed through the dataset collected from the 180 households of Raksirang Rural Municipality of Makawanpur District. Key dimensions including respondent characteristics as well as types of agricultural input support, changes in

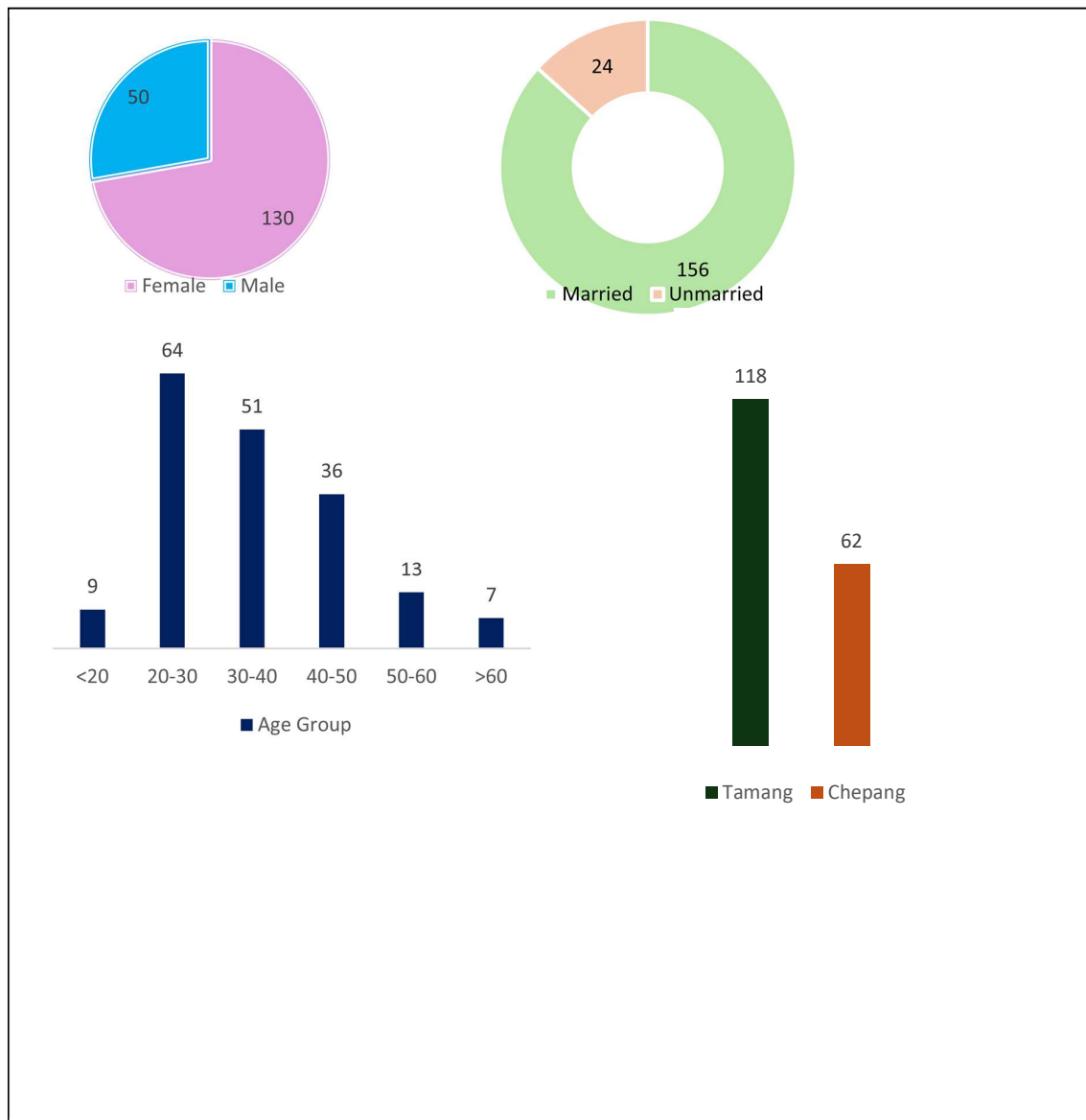
income levels and use of income (UoI) for different expenditure patterns are presented and interpreted in this section. The analysis covers the timeframe of 24 months from the time of receipt of agricultural inputs, though some families have gained early incomes.

Farm based agriculture and livestock remain one of the primary sources of livelihood in the study area context, where the provision of productive assets like livestock, farm based agricultural inputs, knowledge support can play a pivotal role to enhance income generation and economic resilience. However, the effectiveness and outcomes depend on various factors like community context, their willingness and priority, socio-economic status, type of support provided, gender roles, market linkage etc. Analysis of data from this study highlights the income gains remained uneven across the households, previous study also highlights that input subsidy programs lead to increased yields and incomes but the poverty reduction remains limited and uneven (Jayne et al., 2018). Data shows the annual income of the households receiving agricultural input support has been increased, though some families have unchanged annual incomes and delayed incomes. Increment on annual income has improved the livelihood of the households as the mean annual income of the households has been increased by 21%, similar study of assessing the effects of the support program for arable agriculture development on the livelihoods of smallholder farmers in Botswana revealed an overall Livelihood Assessment Index (LAI) score of 0.70, indicating a 70% improvement in livelihoods attributed to the input subsidy program (Mokumako et al., 2025). Income gains from the agriculture production has been allocated to livelihood needs, health, education, loan repayment, business expansion which demonstrates the allocation towards immediate needs to sustainable growth strategies, similar expenditure tendencies have been documented in different contexts where the income gains have been allocated to household consumption and farm or business expansion (Dorward & Chirwa, 2011). Results and discussion in this section are presented and interpreted using both descriptive statistics and a comparison perspective, comparing the level of income and reviewing the differences will give a picture of income change among various input support types. Income gain and use of income on different expenditure patterns reveal household priorities.

3.1 Respondent Household Demographics and Socioeconomic Profile

The analysis of the dataset (n=180) reveals majority of households belonging to Tamang followed by substantial proportion belonging to Chepang households. The ethnic composition reveals the deliberate targeting of marginalized and indigenous community. Disaggregated respondent data shows 72% of the respondents were female, while 87% of the respondents were married. Similarly, the age group categorization shows majority of respondents fall under the physically, socially and economically active group of 20-40 years of age.

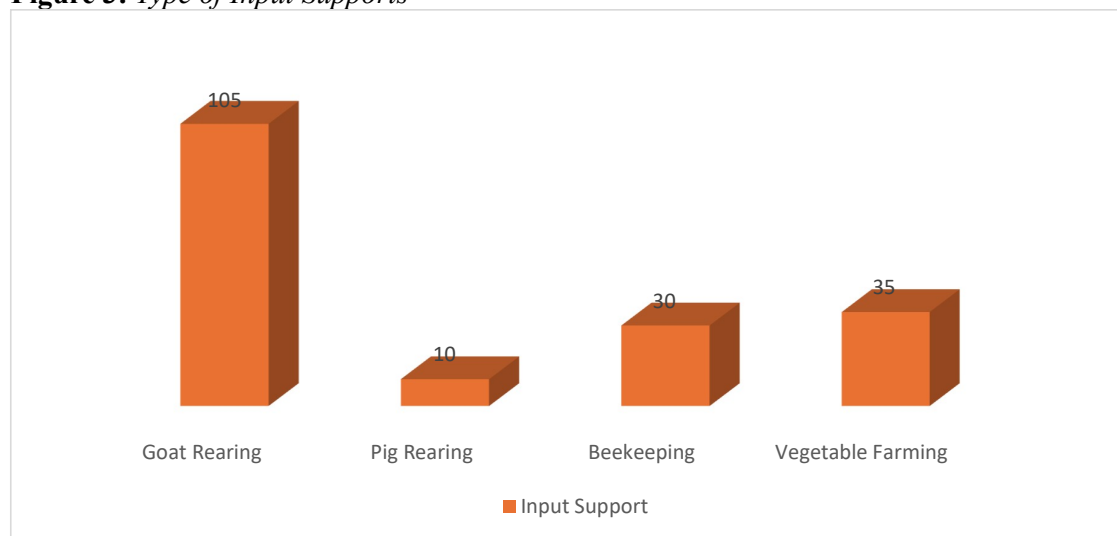
Figure 2: Respondent Demographics



3.2 Distribution and type of Input Support

The dataset indicates a clear dominance of livestock-based input support with majority of households receiving goat and piglets followed by seed and tools support on vegetable farming and beekeeping support. Livestock focused support seems relevant in the rural and mountainous context, as the nature and stability of income generation will be dependent on the environment and market conditions. Furthermore, it was also observed that there are ways to use livestock manures as organic fertilizer in farms and unlike livestock, vegetables and crop-based agriculture are more susceptible to environment and market conditions.

Figure 3: Type of Input Supports



3.3 Change in Family Income: Pre- and Post-Support Analysis

Annual income of family was analysed with the comparison perspective, which reveals 36% of the households have experienced increase in annual income. However higher proportion of households mention no change in family income, which can be attributed to several factors like, agricultural impacts taking long time to feel and measure, delayed returns, limited market access, household consumption etc. Some families have gained income from the agricultural products, which they have used on their priority expenditures, but they have not realized change in their annual income. So, the proportion of households having change or increase in annual income seems less than the proportion of households getting income from agricultural product sales. Most importantly, the households who have consumed the increased agricultural production or return from those must have improved their health and nutritional status, which have been agreed by some of the households surveyed. The findings from the pre and post support income level analysis is not contradictory with the existing literatures in the sector which highlights the income increment from agriculture depends not only with the inputs provision but it is highly dependent on the production efficiency, market linkage and conditions as well as other complementary services like availability of fertilizers, field technical support.

Use of Income (UoI) Patterns

Income from sale of agricultural products: 90 Households
Average Income: NRs. 12216.77
Increased Annual Income: 65 Households
Annual Income Unchanged: 115 Households

The analysis of Use of Income patterns shows a strong tendency of households allocating incomes on immediate needs for family livelihoods to other priority expenditures and long-term investments. income utilization patterns reveal a strong tendency among households to allocate income toward both immediate needs and long-term investments. Small proportion of households have used income from agricultural production on business expansion and loan repayment too. Use of income patterns also shows some households have used the income proportions on multiple expenditures like on family livelihood, health and education. Use of income on family livelihood, health, education shows a positive aspect of livelihood and socio-economic resilience. Similarly, investments on expansion or loan repayment are particularly noteworthy, as they indicate growth-oriented strategies, aligning with the concept of productive use of capital or income, which is essential for sustainable livelihoods and scaling up livelihood improvements.

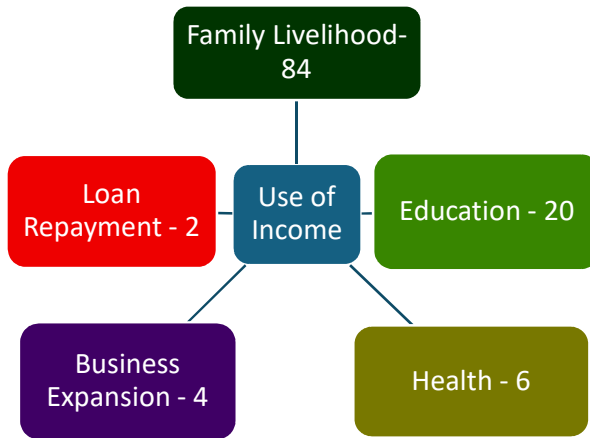


Figure 1: *Use of Income from agricultural*

Integrated Discussion and Implications

Findings of the study highlight the shaded part of the impacts of small agricultural input support. Strong participation of women, inclusion of marginalized households, gaining income from the sales of agricultural products and positive or productive use of those income lies on the positive side of the social, economic and behavioral impacts. Similarly, economic impact or change in income remains uneven across households. However, the results from the dataset suggest that the households are strengthening their socio-economic resilience, building assets and doing reinvestments too. Reinvestment in agribusiness supports commercialization, which indicates market-oriented production rather than subsistence farming. Agricultural commercialization views the agricultural production as the main income generating activity of the farming household, tying farmers into the wider market economy, not only through the sale of farm commodities, but through the purchase of inputs, labour, assets, credit, and consumer goods (Kem, 2017). Some families have gained income, but they have not felt significant change in their annual income, as the income has gone to their priority expenditure or increased annual expenditure. Variation in the proportion of households getting income from agricultural product sales and the proportion of households getting change in their annual income is mainly due to expenditure on household priorities, sudden or increased expenditure. As the small quantity of agricultural input support is in growth phase and it has not achieved a widespread increment or improvement, but the strong pattern of reinvestment observed among households is making a lasting impact and strong foundation for sustainable livelihoods.

The study shows that small external support on livelihood interventions, particularly those focused on livestock, have significant potential to improve household income and well-being in the indigenous and marginalized communities of rural Nepal. However, the effectiveness and lasting impact depends on a combination of different factors, like the volume and type of input support and access to other complementary services. The findings from the study suggest integrating physical support initiatives with knowledge development, capacity building, facilitation on market linkage and most importantly linking with long term institutional support. If such initiatives or support can be integrated with other subsidy services to be received from permanent institutions like local governments, these can be sustained in the long run with high positive impacts.

4. Conclusion and Recommendation

The study has examined the effectiveness of agricultural input on the livelihoods of indigenous households. The findings give a picture to show how small-scale agricultural inputs change into income and a medium for betterment of health, education and livelihood. However, the results show that there is no linear or uniform relationship between received input support and income gained, proximity of impact also vary across households, though having same type of input support. Major proportion of households did not realize measurable change in their income, the discrepancy between household income and production can be attributed to consuming behavior too, as the increased or surplus production is often consumed at household level or provided to neighborhoods. Household priorities and expenditure strategies are analysed through the use of income (UoI) patterns, which demonstrated the tendency of expenditure on food, health, education as well as reinvestment and capital development too. Use of income on business expansion and loan repayment are the significant moves from survival oriented agricultural practices to growth-oriented capital development strategy. In conclusion, the study supports the meaningful and positive change in the livelihoods of indigenous households, specifically on the enhancement of livelihood, food security, income diversification and strengthening socio-economic resilience. However, there is clear need for sustained investment of resources, institutional support and provision of complementary services for sustainable livelihood outcomes.

Recommendations

Based on the findings from the study, there is a clear need to combine agricultural input support with continuous technical support especially on-site support, facilitation on market linkage and other extension services on capacity building. Field based guidance, institutional follow-up and support are crucial for the proper utilization and management of input support and adoption of improved agriculture practices. Facilitation on market linkage is essential to strengthen income gains from the sale of agricultural products. In case of remote areas like the study area, open air market, Haat Bazaar could be an option for the market linkage at the local level while bulk production and bulk transportation supported with road accessibility could be alternative options for marketability of agricultural products. Increased production cannot translate into tangible benefits unless the products cannot access fair price and timely market. Further, fragmented and dispersed support initiatives are not sufficient to bring a significant impact, so comprehensive support package including inputs supported by infrastructure facilities on irrigation, extension services of on-site support as well as loan and credit facilities should be considered.

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