



# Rural livelihood diversification and household well-being: Insights from Humla, Nepal



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## ABSTRACT

Diversification of livelihoods is a commonly applied strategy for coping with economic and environmental shocks and instrumental in poverty reduction. In this paper, we have assessed the role of livelihood diversification in household well-being in Humla, a remote mountain district in west Nepal. Employing the data produced from household surveys, we developed a composite household well-being index incorporating four components and 15 indicators, and measured the effect of diversification on it. Results suggested a uniform pattern of diversification in terms of the number of activities undertaken for livelihoods but a highly varying degree of resultant well-being across households. Analysis showed that well-being was not associated with diversification *per se* but rather on a households' involvement in 'high return sectors' such as trade or salaried job. Because involvement in these remunerative sectors is determined by various financial, social and human capitals, poor households were unable to combat the entry barrier and were prevented from getting access to them. In this way, livelihood diversification was found to have a highly skewed effect leading to inequality of income and well-being. This, in turn, is likely to risk depriving the poor households from exploiting new economic opportunities even in the future.

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## 1. Introduction

Subsistence producers and small farm wage laborers in the rural areas of low-income countries constitute over two thirds of the global poor and food insecure populations (IFAD, 2010; FAO et al., 2014). In addition to various idiosyncratic risks, the subsistence farmers confront various structural and transitory environmental and institutional stresses and shocks that frequently make them vulnerable to falling below subsistence thresholds (Eakin, 2005; Morton, 2007; Tschakert, 2007; Harvey et al., 2014). Arguably, the most significant gains in global poverty reduction can be achieved by interventions targeted at rural livelihoods to address these vulnerabilities. The understanding of local livelihood context, the sources and nature of risks and the coping behavior of the communities and their efficiencies is important for the success of anti-poverty policies because vulnerability is highly contextual to political, social, economic and historical realities of specific places (Turner et al., 2003; Wilbanks, 2003; O'Brien et al., 2009). In this

paper, we assess the role of livelihood diversification on the well-being of subsistence farmers in Nepal.

Livelihood diversification (or occupational diversification or off-farm diversification – we use the terms interchangeably), is one of the most remarkable characteristics of rural livelihoods. It is defined as “the process by which rural families construct a diverse portfolio of activities and social support capabilities in order to survive and to improve their standards of living” (Ellis, 1998 p.4). More than 50% of income in rural farming communities in developing countries comes from non-farm sources (IFAD, 2010). The context of various risks implies that diversification is primarily a risk management strategy; both risk mitigation in anticipation of shock and coping after actual shock. Viewed thus, it is a general compromise made against high output high risk to favor low output low risk (Ellis, 2000). However, there are contexts where diversification can have ‘economy of scope’ effect when the rural households invest resources across multiple scopes and reap higher per-unit returns (Barrett et al., 2001a).

Empirical studies consistently show that diversification to non-farm livelihood strategies rather than relying only on subsistence farming enables households to have better incomes, enhance food security, increase agricultural production by smoothing capital

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constraints and also to better cope with environmental stresses (Barrett et al., 2001a; Liu et al., 2008; Babatunde and Qaim, 2010; Bezu et al., 2012; Hoang et al., 2014). In addition, there is substantial evidence for the role of diversification in building household capacities to stabilize income and food consumption over time (Reardon et al., 1992; Block and Webb, 2001). Diversification tendencies are not unique to developing countries. Farmers even in the developed countries diversify not only for risk mitigation but also for enhancing better financial returns (Barbieri and Mahoney, 2009). This has led poverty reduction policies to emphasize the creation of opportunities for enabling the rural households for diversification.

However, once scrutinized in the context of basic asset entitlements of the diversifiers and the causal origin of diversification, the generally touted pro-poor aspect of diversification becomes puzzling. Ellis (2000) classifies the factors of diversification decision into two broad categories: necessity vs choice. Diversification by choice is related to voluntary decision of a household to diversify. In this case, a household chooses to diversify not for survival *per se* but also for accumulation. This is a proactive decision and leads to upward well-being mobility. The necessity driven diversification, on the other hand, is the result of desperation, the last resort of vulnerable households for survival. In this case, diversification will lead the household to end up in a more vulnerable livelihood system than the one adopted previously (Davies, 1996 cited in Ellis, 2000).

Different off-farm sectors demand different level of investment and offer differential returns. The high return sectors offer higher returns to livelihoods but demand higher resource investment capacities in terms of human, social or financial capital to start up. Therefore, the poor households are less likely to get involved in high return sectors. So diversification may not substantially help them move out of poverty. In Uganda, Smith et al. (2001) found off-farm diversification tendency highest in middle income households, whereas the low and high income households diversified the least. The high income households, however, diversified into more lucrative sectors, whereas the low income households were confined to low return sectors such as wage labor. This pattern least benefitted the poor and increased income inequality. A similar context of entry barriers for poor households and the dominance of the most lucrative non-farm activities by the relatively wealthy households was evident in Ethiopia (Woldenhanna and Oskam, 2001). Despite limited benefits for poor households from overall growth in non-farm earnings, a sharp rise in local income inequality was evident in Ghana and Uganda due to differential capacities of households to diversify (Canagarajah et al., 2001). In addition, Dzanku (2015) finds that the welfare impact of off-farm diversification is low in Ghana because off-farm diversification in rural areas is transitory because there is a wide variation between livelihood activities and professional vocation development. Some studies also highlight the importance of social capital as instrumental for accessing and securing non-farm activities, implying that poorer households lacking networks and other forms of social capital are least able to diversify into non-farm sectors that could otherwise aid their income and well-being (Zhang and Li, 2003; Guang and Zheng, 2005).

These cases indicate that off-farm sectors have not only fostered hope but also pose inherent challenges in terms of their potential for poverty reduction. In this context, if the non-farm sectors are to be utilized as an effective economic niche for poverty reduction, anti-poverty policies should be backed-up by proper understanding of their characteristics, the patterns of people's access to them and their roles in household economies. Against this backdrop, this paper attempts to scrutinize rural livelihood diversification in terms of its role in household well-being in Nepal.

## 2. Livelihood transition in Nepal

Nepal has an agrarian economy with over 80% of the population in rural areas, the majority adopting subsistence agriculture as the mainstay of their livelihoods (CBS, 2012). Subsistence farming is characterized by a mixed crop-livestock production system with rudimentary technology in small landholdings under continuous fragmentation. Arable land per capita decreased by more than 50% from 0.19 ha in 1960 to 0.09 ha in 2010 making it among the lowest in the world (World Bank, 2015). The share of agriculture in GDP has been decreasing gradually over the years. The share of non-farm income to total income was around 54% in 2010 (CBS, 2011). Recent studies indicate that livelihoods are undergoing rapid social-economic and environmental changes (Barnett et al., 2005; Chaudhary et al., 2007; Xu et al., 2009). Moreover, a gradual recession of farming activities is also being evident (Khanal and Watanabe, 2006; Aase et al., 2010; Bhandari, 2013; Paudel et al., 2014) signifying a transition where an increasing proportion of the population is shifting out of agriculture or undertaking various off-farm income opportunities in tandem.

Livelihood diversification, illustrated by shifting activities away from customary farming to other sectors offers flexibility and well-being to livelihoods by widening the subsistence options. Recent trends in poverty prevalence consistently illustrate the promise of this transition. A nationally representative survey shows a decrease in poverty prevalence from 42% to 25% between 1995–96 and 2009–10 (CBS, 1996, 2011). However, there are wide regional and caste/ethnic disparities in this trend. In the mid-west and far-west regions of the country poverty prevalence is still over 35%. By caste/ethnicity, the Brahman and Newar have the lowest poverty prevalence of 10%, whereas the figures reach up to 44% for low caste Dalits. For the latter group, poverty prevalence has actually increased in the last decade in the far-west region (CBS, 1996, 2011). Therefore, the complex linkage between livelihood dynamics, poverty and food insecurity offers scope for further research.

Only a limited number of studies exist on livelihood diversification in Nepal. Most of the existing studies on this theme have focused on figuring out the factors that enable households to diversify (see, Blaikie and Coppard, 1998; Adhikari, 2008b; Ghimire et al., 2014; Rahut et al., 2014). These studies thereby inform input for policies that would foster enabling environments for diversification. Although these issues are crucial, key issues regarding to what extent and in what socio-economic conditions diversification enhances poverty reduction are missing. This study attempts to fill this gap by measuring the impact of off-farm diversification on household well-being and identifying the socio-economic conditions in which diversification functions the best. In so doing, we first develop a composite well-being index and identify the 'high' and 'low' return livelihood activities in terms of their contribution to well-being. Next, we analyze economic, social and demographic characteristics of households that determine their involvement into different classes of off-farm sectors.

## 3. Materials and method

### 3.1. Study area

This study was conducted in Humla, a high Himalayan district located between 29° 35' to 30° 70'N and 81°18' to 82°10'E in the upper Karnali region of west Nepal (Fig. 1). Mixed crop-livestock subsistence agriculture has historically remained the mainstay of livelihoods here. Being in a high altitude area, Humla has rough terrain, poorly developed soil and a short growing season which limit agricultural production. Agricultural farms are sporadically distributed in largely varying areas throughout the valleys and

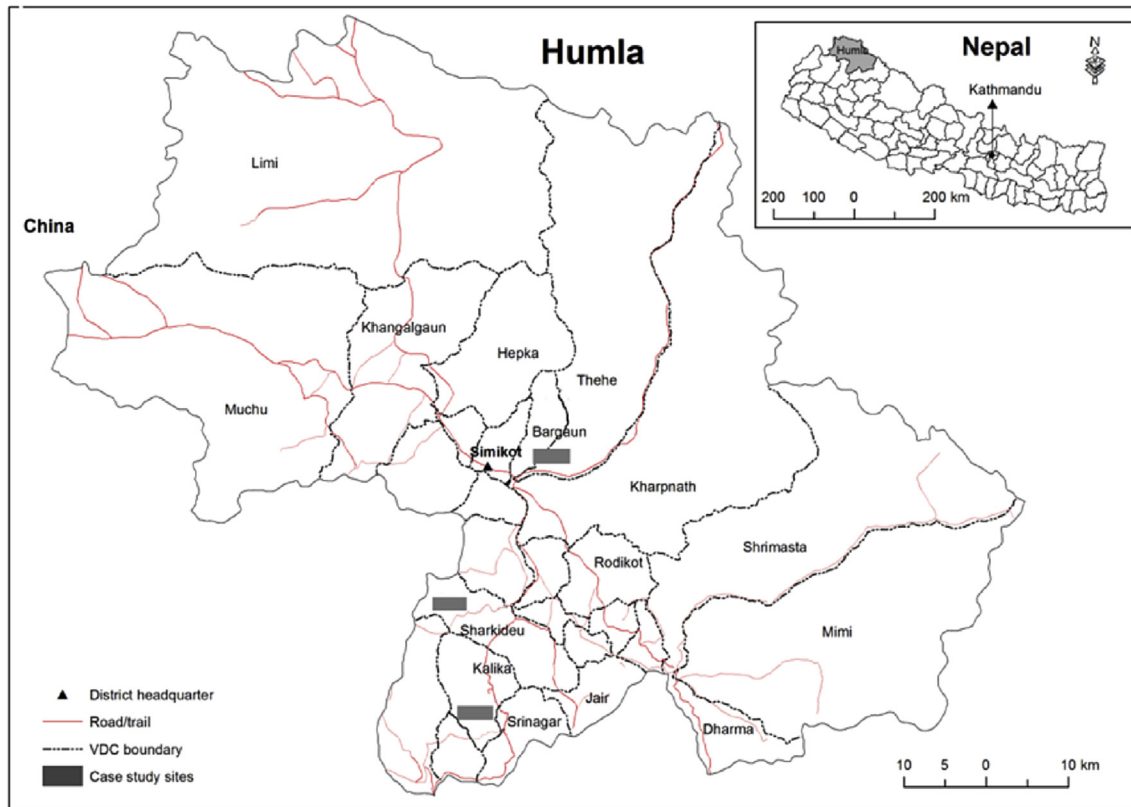


Fig. 1. Map of Humla district, Nepal.

slopes between the altitudes of 1000–4000 m above sea level. This has led to a wide variation in agricultural niches and subsequently high production diversity. Climate regulated agro-pastoral transhumance is a common characteristic in which the farming activities and livestock follow seasonal movements in high altitude areas in the summer and in lower areas in the winter.

One of the most remote districts of the country, Humla is not connected by road network. Access to the nearest motorable road takes three days to a week on foot. Intra-district connectivity depends on narrow trails, some just large enough for small pack animals. The distances to farmland and forests take a few minutes to several hours to reach from the compact settlement areas. As a result, the market and trade are limited, and agricultural technology is rudimentary and labor intensive. Only around 12% of the total cultivated land is irrigated (DDC, 2011) and most of the agriculture relies on natural precipitation, which ranges from 800 mm to 1200 mm/year. Therefore agriculture is highly vulnerable to variations in the weather/climatic pattern. The total local production is not adequate to meet the total food need which makes food scarcity a common phenomenon (Adhikari, 2008a).

There are three predominant caste/ethnic groups in Humla. Thakuri/Chhetri (hereafter Chhetri)<sup>1</sup> is a Nepali speaking Hindu caste group that shares nearly 50% of the population. This group is has traditionally high social and political status because it is at the top of the caste hierarchy and also has historical links to the ruling class in Karnali. In addition to farming, the Chhetris have been able to access public service sectors and other salaried jobs to a limited

extent. Being at the bottom of the caste hierarchy, Dalits are the weakest in political and social power relations. Therefore, they are most underprivileged in terms of socio-economic well-being such that they own much smaller landholdings than the high castes, have the lowest income and high food insecurity (Nagoda and Eriksen, 2014). The Dalit group makes up 14% of the total population. The Tibetan speaking Buddhist ethnic group called 'Lama' shares about 16% of the population. This group traditionally practices fraternal polyandry (two or more brothers sharing wife) which has not only enabled them to avert land fragmentation upon inheritance but also to enhance efficiency in the use of family labor by regulating the dependency ratio (see also Ross, 1981). The overall food security situation of this group is relatively better than other two groups.

### 3.2. Data collection

The data on which this paper is based were produced from household surveys between October and December, 2013, and April and June 2014. The design and administration of the survey questionnaire followed extensive preliminary qualitative inquiries. First, we visited many villages to conduct a series of informal discussions and several in-depth interviews with local farmers. Next, we conducted ten group discussions ( $n = 74$ ) to get information on various aspects of the local livelihoods such as agricultural practices, food security and the pattern and processes of livelihood diversifications. In addition, we also elaborated a local wealth classification employing locally valued asset criteria for household well-being (described in more detail in the next section). Considering caste and gender the major factors shaping local power relation, the groups were composed to maintain homogeneity within groups and heterogeneity between groups (Bedford and

<sup>1</sup> Thakuri claims to remain superior to the Chhetri in Humla. However, our statistical analyses did not mark significant well-being difference between these groups which allowed us to mix these groups for analysis.

Burgess, 2001). The total number of group discussions was based on the concept of 'theoretical saturation' (Agar, 1996; Bryman, 2004) which resulted into 10 groups with 74 participants from three major caste/ethnic groups including 33 female participants.

Before the household surveys were conducted, a workshop including local field assistants finalized the survey questionnaire. We followed stratified sampling methods in order to incorporate caste/ethnicity and altitudinal locations of the settlements which are the major dimensions of farming and livelihoods in Humla. This led to the selection of three villages: Bargaon, Sarkideu and Kalika (Fig. 1). These villages are inhabited by all the three major caste/ethnic groups and are located at altitudes ranging from 1800 m asl to 3100 m asl. Because physical access is highly limited throughout the district due to the lack of road; data collection limited to these three villages not only minimized the associated time, logistical and technical problems, but also adequately incorporated the major issues shaping local livelihoods. The survey questionnaire was administered in 313 households which included statistically sizable population of all the major caste/ethnic groups roughly proportional to the district population composition (Lama = 27%, Chhetri = 49% and Dalit = 24%).

### 3.3. Data analysis

#### 3.3.1. Selection of well-being indicators

Given well-being of the subsistence farmers the major desirable outcome of livelihood diversification, the concept and indicators of well-being remain central to analysis. In its most common parlance, well-being refers to positive and desirable life condition. The Stanford Encyclopedia of Philosophy defines well-being as a condition of how well a person's life is going for that person (Crisp, 2015). Having a good life is associated with having things or resources of 'prudential values' (Griffin, 1986) that enables meeting various elementary needs of life such as being adequately nourished and escaping morbidity as well as more complex needs such as having a life of dignity, self-respect and taking part in the life of the community (Sen, 1993). The idea of a good life, therefore, makes well-being a relative concept defined according to material circumstances as well as individual preferences and social and cultural contexts. This has led to the shift from money-metric measures of well-being to subjective well-being that take into account subjective aspects such as the perception of satisfaction, happiness, security and freedom (see Kingdon and Knight, 2006; Costanza et al., 2007).

Narayan-Parker and Patel's (2000) study made an extensive analysis of poverty and well-being bringing together data from 60 countries. One of the most recurrent themes of the study was the location and social group specificity of well-being (and conversely poverty) across the countries. This highlighted the importance of local worldviews and criteria in defining well-being (see also Chambers, 1995). To operationalize the concept in the context of rural livelihoods, we drew from these studies and based on extensive qualitative inquiries to trace the local worldview of well-being and thereby to identify the associated key components. Although most of these components include tangible/quantifiable assets, they inherently capture the values intrinsically desirable for the local people because they are derived according to the functional links with their 'well-being'.

First, we asked the group discussants to free-list key components that characterize a 'quality of life' or household well-being. Next, they were asked to classify these components into categories that would represent households at different levels of well-being. The concept of different degrees of well-being was elicited by asking them to figure out the major differences between the wealthy and poor households in their communities. This resulted in

a well-being continuum ranging from low to high well-being with a corresponding set of household characteristics (Fig. 2). Next, we selected 15 indicators associated with these components according to their functional importance in the local context (Table 1).

We selected food security as the first component of household well-being. We used the six-item short form of the food security survey (USDA, 2015) with one year reference period to measure food insecurity. Because the questions asked in the survey relate to the experience of having food insecurity; total number of negative answers was calculated as the indicator of food security. The total answers ranged from 0 indicating food insecure to 6 indicating food secure households. Our second set of components is related to housing arrangements in terms of basic household facilities and goods. Because different goods and facilities are accumulated or built over a relatively longer time; they better reflect well-being than other indicators such as income for example; which fluctuates within shorter time periods. Moreover, McKay et al. (2007) also find that the local people describe some of these housing related assets as their most urgent needs.

The third component is related to the stability of subsistence. Contingencies such as acute illness of any family members or loss of crops due to extreme weather events incur additional economic burden. The normal subsistence resources are not enough to remain above the subsistence threshold during such circumstances. In addition, it is also important for households to be able to take part in the 'life of the community' (see also Sen, 1993) such as the ability to afford social functions such as festival and wedding celebrations or mortuary rites to a socially acceptable standard. In the local people's classification, a household with a high level of well-being has an adequate disposable store of resources, especially cash savings, so that they can meet contingencies as well as stabilize the desired level of subsistence including the participation in the 'life of the community'.

The poor households, however, reported that their subsistence stability often gets upset, especially when they fail to meet contingencies. They considered livestock to be the most critical of stores because it was the only thing that could be sold to get cash. Many households allocated a certain number of livestock, mainly sheep, as their stores not only to meet contingent needs but also to maintain social and community lives. Around 18% of households

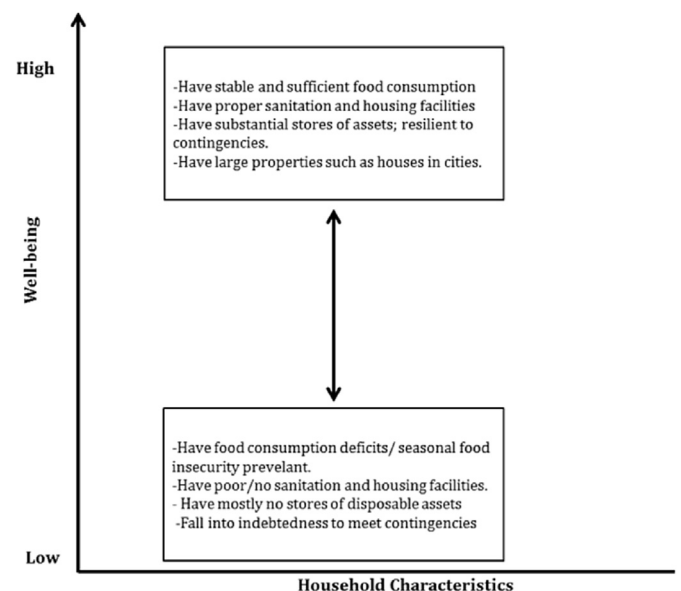


Fig. 2. The perceived well-being continuum and associated household characteristics.

**Table 1**  
Variables used for calculating composite well-being index.

Component	Sub-component	Indicators	Measurement unit	Max and min
Food consumption		Food security	Inverse of food insecurity score	Min = 0, max = 6
Housing arrangements	Sanitation	Access to latrine	Yes = 1; 0 otherwise	Min = 0, max = 3
		Access to improved stove	Yes = 1; 0 otherwise	
	Household assets	Access to safe drinking water	Yes = 1; 0 otherwise	Min = 0, max = 5
		Possesses television	Yes = 1; 0 otherwise	
		Possesses radio	Yes = 1; 0 otherwise	
		Possesses telephone	Yes = 1; 0 otherwise	
		Has accessed electricity	Yes = 1; 0 otherwise	
		Has purchased solar light panel	Yes = 1; 0 otherwise	
Stores and claims	Savings	Cash savings	Nepali rupees (in thousand) <sup>a</sup>	Min = 0, max = 350
		Livestock	Number of livestock owned	Min = 0, max = 29
Large scale property	Claim	Accessed NFC rice last year	Yes = 1; 0 otherwise	Min = 0, max = 1
		Has house in Simkot	Yes = 1; 0 otherwise	Min = 0, max = 6.45
		Has house in Nepalgunj/Surkhet	Yes = 1, 0 otherwise	
		Has house in Kathmandu	Yes = 1; 0 otherwise	

<sup>a</sup> NPR 1000 = US\$ 9.84 as of 27.05.2015.

that owned livestock reported to have sold livestock at least once in the previous 12 months to meet emergency expenses. We therefore used cash savings and the number of livestock as indicators for stores. In addition, Nepal Food Corporation (NFC) based subsidized rice distribution scheme was the key resource accessed by the people to meet acute household food deficit. We included dummies of access to NFC (1 if they purchased the subsidized rice in the last 12 months; 0 otherwise) as an asset that contribute to the stability of subsistence.

The fourth component was the large scale properties in possession of only a few households. This set of components includes buildings or housing plots in economically strategic places such as Simkot, the district headquarters, regional cities in the Tarai or even Kathmandu, indicating variation in their value according to their locations. However, no official and timely updated standard valuation for real estate across the country could be found. Moreover, there are high discrepancies between the actual real-estate transaction values and the officially rated valuation (see Shrestha, 2012). We developed a conversion scale from the self-reported valuation of the properties by the respective owners ( $n = 26$ ). Mean reported values (in million rupees) were 1.20, 3.58 and 7.75 for properties in Simkot, regional cities (Nepalgunj and Surkhet) and Kathmandu respectively. We assigned a value of 1 for the property in Simkot as our reference value. Proportionately, properties in the regional cities got a value of 3 and in Kathmandu a value of 6.45.

### 3.3.2. Calculation of well-being score

Because the components selected for calculating household well-being are measured into different scales, we created indices for each of the components and aggregated them into a composite index. To standardize the indicators measured on different scales into indices, we adopted the following equation from UNDP (2014) which is used in calculating human development indices:

$$IndexA_i = \frac{A_i - A_{min}}{A_{max} - A_{min}}$$

where  $A_i$  is the actual value of an indicator of a sub-component (e.g. food self-sufficiency) and  $A_{max}$  and  $A_{min}$  are the maximum and minimum values of the indicator in the whole data set (6 and 0 respectively for food security, Table 1). After standardization, the indices range from 0 to 1 to indicate low to high score respectively and are free of measurement unit. After each of these indicators was standardized, the value for the components having more than 1 indicator was derived by averaging the sub-component values

using the following equation:

$$C_i = \frac{\sum_{i=1}^n Index A_i}{n}$$

where  $C_i$  is one of the four major components for household  $i$ , (Food consumption, Housing arrangements, Stores and claims and Large scale property),  $Index A_i$  is the sub-component(s) that make up the major component and  $n$  is the number of sub-components in each component. After the values of all three major components were calculated, the composite well-being score was calculated by averaging all the components using the following equation:

$$W_i = \frac{\sum_{i=1}^{n=4} C_i}{N}$$

where  $W_i$  is the composite well-being-score of the household  $i$  and  $C_i$  is one of the four components and  $N$  is the total number of components that make up the well-being index (=4). The composite household well-being score range from a value of 0–1. A score around 0 indicates low level of well-being, whereas around the value of 1 high well-being.

### 3.3.3. Analysis

The role of non-farm diversification on well-being was analyzed using multivariate regression models. Among the six reported off-farm activities (wage labor, trade, wage migration, salaried job, NTFP collection and handicraft and tool making); six occupations (except NTFP collection) scored statistically significant correlation coefficients with household well-being. To identify the best livelihood activity(ies) in predicting wellbeing; we entered them into stepwise regression models. The coefficients of determinant ( $R^2$ ) consistently increased with the addition of the first to the fifth independent variables from 0.358 in Model 1 to 0.721 in Model 5 (Appendix A). The final model (Model 5) is statistically significant ( $F_{5, 307} = 158.303$ ,  $R^2 = 0.721$ ,  $p < 0.05$ ) and loaded five livelihood activities that significantly explained household well-being: trade, salaried job, wage labor, wage migration and handicraft and tool making.

For validation of the model; we randomly split the data set into a 75% training sample and a 25% validation sample. The stepwise regression of the training sample produced the same subset of predictors as produced by the regression model of the full data set. Moreover,  $R^2$  for both the validation sample and training sample were approximately equivalent, underscoring the robustness and validity of our model. Having determined the most important of

livelihood activities, we assessed the socio-economic determinants of these activities using logistic regression models. By socio-economic determinants we refer to resources such as labor available at households, social and political network, and education and skills which can be invested in various ways to diversify into off-farm sectors.

## 4. Results

### 4.1. Household characteristics and livelihood strategies

Households in Humla hold 0.7 ha of cultivable land on average and meet 63% of the total food need by self-production (Table 2). Measuring food insecurity using food security scale revealed that only 15% households were food secure that met all three criteria of food security: adequacy, access and food preference. All other households were found to be food insecure to some degree. The bottom 28% households had very high food insecurity. Food scarcity in terms of availability was reported to occur mainly between March and July when the food harvested in the previous summer has been consumed and the winter crops are not ready for harvest. The disaggregated socio-economic indicators by caste/ethnicity show that households belonging to the low caste have far smaller landholdings than those in the other two groups (Table 2). This group produces only 47% of its total food need and has the most severe case of chronic food insecurity. The average income of the Dalit households was 55 thousand in Nepali Rupees whereas the Chhetri households had nearly double this figure and the Lama group almost five times higher. Moreover, Dalits are found to be the most disadvantaged in terms of other socio-economic indicators such as education. Although education is overall low in Humla, only 10% Dalit households had any member having secondary education ( $\geq 10$  years education) against the corresponding figures of 24% Chhetri and 20% Lama households ( $\chi^2 = 7.026$   $df = 2$ ,  $p < 0.05$ ). In terms of composite household wellbeing index, the Dalit scored the lowest 0.32, the Chhetri had better score of 0.40 whereas the Lama

the highest score of 0.67 (Fig. 3). This difference is statistically significant ( $F_{2, 310} = 106.078$ ,  $p < 0.001$ ).

With regards to livelihood strategies, the most common occupation was agriculture, reported by almost all households. In addition to cultivating their own farms, many households that have a small parcel of land and surplus labor work as farm wage laborers locally. Wage labor was the second most common activity practiced by 76% of the households (Table 2). However, farming is a highly seasonal activity in Humla. The long and cold winter is generally a lean season for agriculture. This season, therefore, offers a window of opportunity to attempt off-farm income sources in extra-local settings. Many young men particularly from the low income and most food insecure households migrate to India for wage labor.

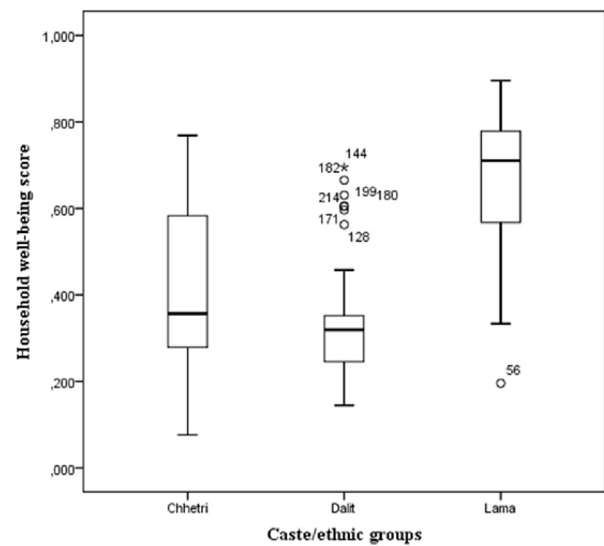


Fig. 3. Household well-being score by caste/ethnic group.

**Table 2**  
Household characteristics and livelihood diversification (n = 313).

	Caste/ethnic groups			Total
	Lama	Chhetri	Dalit	
Household size	6.7	6.1	6.3	6.3
Number of working age members (age: 15 y–64 y)	4.6	3.5	3.4	3.8
Dependency ratio <sup>a</sup>	55	89	103	82
Family type (%) (Polyandrous = 1; 0 otherwise)	72	0	0	20
Education				
Household head's education (years of schooling)	3.4	4.5	3.1	3.9
Household with member having > 10 years schooling (%)	19.3	23.7	9.6	19.2
Landholding size (ha)	1.2	0.6	0.4	0.7
Irrigation coverage (% cultivated land)	5.7	23.8	14.1	16.5
Extension visit (% of households)	18.4	22.4	12.2	18.8
Livestock (Cattle equivalent) <sup>b</sup>	8.0	5.9	3.4	5.9
Food production sufficiency (%)	75	64	47	63
Food security score <sup>c</sup>	4.18	1.84	1.12	2.32
Income (NPR'000)	268	104	55	137
Household well-being score	0.67	0.39	0.31	0.43
Off-farm diversification (% of households involved)				
Wage Labor	43.7	82.9	98.6	75.7
Wage migration	11.5	36.2	45.9	31.6
NTFP collection	57.7	40.1	9.5	37.7
Salaried job	26.4	22.4	4.1	19.2
Trade	37.9	9.2	5.4	16.3
Handicraft and tool making	5.7	12.5	2.7	14.1
Total Number of livelihood activities	2.83	3.03	2.89	2.94

<sup>a</sup> Ratio of number of dependent population (<15 y+> 64 y) to the working-age population (15 y–64 y).

<sup>b</sup> Conversion scale for small animals to cattle was based on local prices (derived from group discussions).

<sup>c</sup> (0–1) = Very low food security, (2–4) = Low food security, (5–6) = High or marginal food security.

They return before the beginning of the next farming season with small amounts of cash and consumer goods. Around 32% households had involved in wage migration.

Trade is also an important off-farm activity in Humla. Our survey data shows that 16% households involved in trade. Those households unable to get involved in trade also earn some money through the collection of non-timber forest products (NTFP) mostly medicinal herbs such as *Atis (Delphinium himalayai)* and more mushrooms which they can sell to local traders. NTFP collection was reported by around 38% households. Handicraft and tool making is also an important source of income for some households. All agricultural tools in Humla are locally produced, so tool making is particularly related to making spade, sickles and other agricultural tools. In recent decades, Humla has witnessed a mushrooming of non-governmental organizations (NGOs) that have created a local niche for salaried jobs adopted at present by 19% of households particularly but not exclusively in the NGO sector. Overall, the average number of livelihood activities for all the households was 2.94 and the mean difference is not statistically significant across caste/ethnic groups.

#### 4.2. Livelihood strategies and household well-being

Table 3 shows the results for regression estimates predicting the effects of different livelihood activities on household well-being. Overall, the model explains over 72% of the variation on the predicted variable: household well-being ( $F_{5, 307} = 158.303, R^2 = 0.721, p < 0.05$ , Appendix A). Among the independent variables, trade and salaried job positively explained household well-being as expected. The most instrumental of them was trade. Holding all other off-farm activities constant, trade increased household well-being by 0.294 units ( $p < 0.001$ ). The correlation coefficients in Table 3 show that trade made a 44% shared contribution (partial correlation = 0.663) to well-being. Even when all other activities were controlled for, it explained around 22% of the variance (semi-partial correlation = 0.469). After trade, salaried job was found to be the most promising off-farm activity. Holding other activities for constant, the adoption of salaried job made a 0.25 unit contribution on household well-being ( $p < 0.001$ , Table 3). It explained around 20% of variance in well-being when all other variables were controlled for.

The remaining three livelihood activities, however, did not make positive contribution. The adoption of wage labor as a livelihood strategy uniquely explained about 3.6% variance (semi-partial correlation =  $-0.19$ ), marking a 0.106 unit moderation in the household well-being ( $p < 0.001$ ). Similarly, seasonal wage migration was another livelihood activity that negatively predicted well-being. Holding all activities for constant, it moderated well-being by 0.049 units explaining around 1% variability (semi-partial correlation =  $-0.102$ ), which is statistically significant ( $p < 0.01$ ). The last statistically significant predictor in the well-being model was handicraft and tool making. It uniquely explained less than 1%

variance on well-being which was statistically significant ( $p < 0.05$ ).

Conceptually, the motivation for diversification lies in the attempt of households to support their livelihood and improve well-being. Trade and salaried job have played this desired role by positively contributing to well-being. Therefore, they can be classified as high return livelihood activities. On the other hand, wage labor, wage migration and handicraft and tool making that have negative coefficients and moderate well-being can be labeled low return sectors. Despite this moderation effect, Table 2 illustrates that these low return activities are the most frequently reported livelihood strategies in Humla. In the next section, keeping the positive livelihood outcomes of off-farm diversification in context, we analyze the factors that determine households' involvement in high return sectors.

#### 4.3. Socio-economic determinants of high return diversification

We entered relevant household socio-economic variables into logistic regression models for predicting the high return sectors (Table 4). Model 1 predicts the adoption of high return livelihood activities (hereafter high return sector). High return sector, the outcome variable is a binary variable derived by assigning a value of 1 if the household adopted at least one of trade or salaried job. If none was adopted a value of 0 was assigned. The results in the other models; Model 2 and Model 3 predict salaried job and trade, the two high return livelihood activities separately so that any significant predictors to the high return sectors could be analyzed more in depth in terms of their causality.

In Model 1, six factors significantly explained high return off-farm activity. Having strong network outside the district was a significant determinant of high return sector. We define this type of network as the one that has economic transactions involved. Holding for all other factors, households having such networks were nearly six times more likely to involve in high return sector than the household that did not have such network (odds ratio, OR = 5.75;  $p < 0.001$ , Model 1). A disaggregated analysis showed that although such networks significantly and highly predicted trade (OR = 6.69,  $p < 0.001$ , Model 3), their role in salaried job was not significant (Model 2). We will discuss the network and trade causality in the next section in detail.

Being politically active by having affiliation in political parties or other locally important formal institutions was another key factor enabling households to access high return sector. Measured by the affiliation of a household in any political party or other formal institutions, political network increased the log odds of high return sectors by 0.876 units ( $p < 0.05$ ). A look at Model 2 and Model 3 shows that the political network and high return sector nexus can be explained in light of its association with salaried job but not with trade. Political affiliation increased the log odds of salaried job by 2.21 units ( $p < 0.001$ ) when all other factors were held constant. In addition to the institutional network in terms of direct involvement in party politics, another form of political/institutional network was

**Table 3**  
Coefficients of independent variables included in the well-being models.

	Unstandardized coefficients		Standardized coefficients		t	Correlations	
	$\beta$	Std. Error	$\beta$			Partial	Semi-partial
Constant	0.465***	0.017					
Trade	0.294***	0.019	0.513		15.532	0.663	0.469
Salaried job	0.252***	0.017	0.468		14.678	0.642	0.443
Wage labor	-0.106***	0.017	-0.214		-6.335	-0.34	-0.191
Wage migration	-0.049**	0.014	-0.107		-3.381	-0.189	-0.102
Handicraft and tool making	-0.045*	0.019	-0.073		-2.372	-0.134	-0.072

\*\*\* $P < 0.001$ , \*\* $P < 0.01$ , \* $P < 0.05$ .

**Table 4**  
Logistic regression results for the predicting high return sectors.

Measures	Model 1: High return sector	Model 2: Salaried job	Model 3: Trade
Household size	−0.100 (0.90)	−0.148 (0.86)	−0.023 (0.97)
Female headed household (=1)	0.356 (1.42)	−0.196 (0.82)	0.575 (1.77)
Age of the household head (years)	0.045 (1.05)**	0.033 (1.03)	0.031 (1.03)*
Number of working age members (15–64 years)	0.440 (1.55)**	0.525 (1.69)*	0.131 (1.14)
Education of the household head (years of schooling)	0.307(1.35)***	0.526(1.69)***	−0.020 (0.98)
Network outside the district (=1) <sup>a</sup>	1.749(5.75)***	1.047(2.84)	1.902 (6.69)***
Membership in any institution (=1) <sup>b</sup>	0.876(2.40)*	2.221 (9.21)***	−0.393 (0.67)
Strong network in formal institutions (=1) <sup>c</sup>	0.859(2.36)	1.959 (7.09)**	−0.658 (0.51)
Bank credit (has got bank credit in the past = 1)	0.587 (1.79)	−0.402 (0.67)	1.363 (3.90)*
Per capita food production	0.004 (1.00)	0.001 (1.00)	−0.001 (0.99)
Access to forest in the village proximity (=1)	−1.140(0.32)**	−0.984 (0.37)	−0.901 (0.40)*
Constant	−6.936	−8.198	−5.171
Nagelkerke R <sup>2</sup>	0.571	0.735	0.259
Model $\chi^2$	165.19***	191.85***	51.77***
Degrees of freedom	11	11	11

Figures in parenthesis indicate odds ratios (OR).

Significance for  $\beta$ : \*\*\* $P < 0.001$ . \*\* $P < 0.01$ . \* $P < 0.05$ .

<sup>a</sup> Question in the survey: Do you have any close relative/s, friend/s or business partner/s outside the district with whom you have regular contacts in connection with commodity or financial transactions?

<sup>b</sup> Is any of your family member actively affiliated to political parties or other formal institutions in or outside Humla?

<sup>c</sup> Do you have close relatives or friends in government or non-governmental institutions working in Humla or outside?

also consistently iterated in the group discussions. A particular type of network in terms of having close relatives in the NGO and/or government institution as employee was also traced through surveys (see Table 4) which significantly predicted salaried job. Because most of the salaried jobs reported in Humla were related to NGO sector, the prediction of latter type of network implied that securing job in Humla is more likely for people having relatives or other types of close connection with NGO or government institutions in local or extra local settings.

The most basic factor for high return sector, mainly salaried job is related to educational qualification. Education of the household head significantly predicted high return sectors. A one year increase in the education of the household head increased the log odds of salaried job by 0.526 units ( $p < 0.001$ , Model 2). Interestingly albeit unexpectedly, education had a moderation effect in trade with negative coefficient, but this was not statistically significant (Model 3) which allows us to explain that this association has occurred by chance.

Age of the household head was also a positive contributor to high return sector. Holding all other factors constant, a one year increase in the age of the household head increased the log odds of high return off-farm activity by 0.045 units ( $p < 0.001$ ). This implies that younger household heads are less likely to get involved in high return sectors than their older counterparts. Interestingly, household size did not have a statistically significant contribution on high return sector; rather it was the number of working age members in a family that statistically significantly predicted it. An increase of working age member by one person in a household increased the log odds of its involvement in high return sector by 0.44 units ( $p < 0.01$ , Model 1) when all other factors were held constant.

In addition to social and human capital, we measured financial capital of a household as a dummy variable in terms of access to bank credits. It was statistically significant factor of trade but not salaried job which is quite plausible. Households with access to bank credits were nearly four times more likely to involve in trading than household not having credit access (OR = 3.90,  $p < 0.05$ , Model 3). Surprisingly, access to forest in the village proximity had a negative impact on high return sectors. The log odds of the high return sectors decreased by 1.14 units for households having forest resources compared with the ones not having forest access in the proximity ( $p < 0.01$ ). This may apparently be explained in terms of the increased motivation of households

rather to involve in NTFP collection for cash income which is comparatively easier to access than other more resource demanding activities. This may also be the case induced by the correlation of caste/ethnic locational distribution and access to forest. For example, the Lama households, involved more in trade (explained later) live in Bargaon which has limited access to forest compared with other villages such as Sarkideu.

Having determined the household level factors of high return activities, we further disaggregated the data on diversification to high return sectors by caste ethnicity. Again, we assigned a value of 1 if the household adopted at least one of trade or salaried job. If none was adopted a value of 0 was assigned. Unlike the general data on livelihood diversification in Table 2, the figures thus derived traced caste/ethnic diversification only into the high return sectors. Results suggested that only 9.5% low caste Dalits got into the high return sectors against the corresponding figures of 30.3% Chhetri and 57.5% Lama households which marked a statistically significant association ( $\chi^2 = 42.68$   $df = 2$ ,  $p < 0.001$ ). Involvement into high return sector in the latter two groups can also be clearly differentiated. The majority of the Lama households (64.7%) that diversified into high return sectors were involved in trade whereas the majority of the Chhetri households (56.7%) in salaried job. This implies that the primary high return sector for the Chhetri is salaried job whereas that for the Lama is trade.

## 5. Discussions and conclusion

Our findings qualify the general understanding in rural livelihood diversification and well-being by demonstrating that a household can enhance well-being only when it pulls into its livelihood portfolio the high return sector(s) among various off-farm opportunities available. However, pulling the high return sectors is not a matter of free choice. This can be better explained using a schematic framework (Fig. 4) which recognizes that off-farm sector for diversification is rooted into and differentiated by background pre-conditions reflecting various assets: both tangible and intangible assets at the household's disposal. In this context, when the well-endowed households diversify, they diversify for 'good reasons' (Von Braun and Pandya-Lorch, 1991) not for survival but for accumulation. So they are more likely to get into high return sectors and achieve wealth or well-being (Woldenhanna and Oskam, 2001). The asset poor households, on the other hand, are



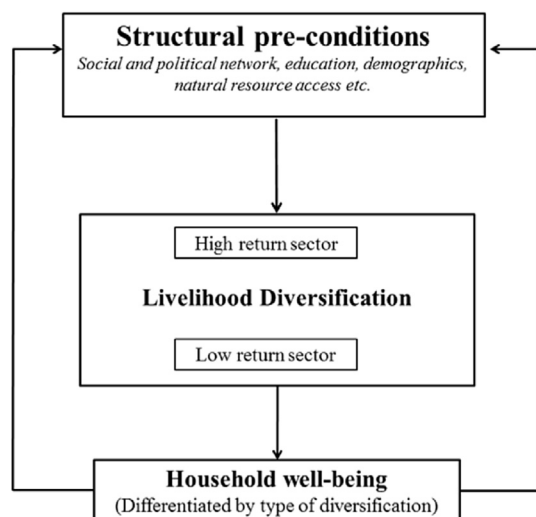


Fig. 4. Livelihood diversification and well-being nexus.

less likely to overcome the entry barriers and are confined to low return sectors which make insignificant contribution to well-being. There is also a positive feedback effect in this nexus that reinforces the well-being conditions: already rich households accumulate assets that form the basis for further lucrative diversification. The poorer households, on the other hand, are trapped in the same low return sectors resulting in overall widening of inequality (Reardon et al., 2000; Barrett et al., 2001b; Canagarajah et al., 2001).

The characteristics of the off-farm sectors as well as the configuration of the pre-conditions are contextual to socio-economic, institutional and geographical contexts of places. In Humla, we found trade and salaried job the key off-farm activities instrumental for well-being. Trade is one of the sectors in which the Himalayan farmers have diversified their livelihood activities for centuries (Fisher, 1987; Bishop, 1990). The present day trade primarily includes the trans-border trade of NTFP and secondarily that of food and other commodities that are procured both from Tibet and cities like Nepalgunj and Kathmandu. Another sector; salaried job; is a recently developed economic niche. Most of the jobs are related to clerical jobs in NGO offices or field work for their development projects. In addition, the increased number of both private and public schools has also increased the number of teaching jobs. However, involvement in both these sectors is determined by various assets such as education, good social and political networks and financial investment capacities. Caste and ethnicity most notably reflect the distribution of these assets and the resultant pattern of livelihood diversification in Humla. Therefore, the overall livelihood dynamics necessitate a more in-depth analysis of local socio-economic and historical dimensions of caste/ethnicity.

The inefficiency of local production to sustain the communities marked the origin of trade in the Himalaya (Fürer-Haimendorf, 1975 p. 286). Households with agricultural success and a higher level of food security are evidently less likely to invest in new technologies or ideas aimed at economic diversification (Sanders and McKay, 2014 p. 29). The Tibetan speaking Lamas have been historically located in the higher altitudinal areas, whereas the Chhetris occupy more productive land in the valley-bottoms that offers better food self-sufficiency (Levine, 1987). Dalit originally comprised landless laborers and artisans who performed a wide range of tasks to the high castes (Bishop, 1990). Arguably, this variation in land ownership and food security can explain why Lama households are more likely to be involved in trade. Moreover,

polyandrous family structure and the associated household demographics, with more working age members than monogamous families, not only offered motivation but also some necessity for the Lama households to become involved in different activities (see Ross, 1981). Their cultural similarity with the Tibetan communities in terms of religion and language also facilitated their mobility and trade networks. The Hindu caste system has strong concepts for purity and untouchability which pose strict sanctions on mobility, interaction and dietary conducts for both the high and low castes. Fürer-Haimendorf (1975, pp. 286–305) argues that freedom for commensality facilitated Lamas' mobility and interaction with other communities also in the southern regions which made strong trade networks possible for them. Trade performance is strongly determined by social capital in the form of trade network (Fafchamps and Minten, 2002), and arguably Lama has benefited from the strong network which they have historically built and maintained (see also Nagoda and Eriksen, 2014).

The determinants of salaried job, another high return off-farm activity, are also related to human and social capitals. The prospects for salaried jobs are meagre for the majority of people with low education and the opportunity skews heavily toward households with better educated members. In addition, NGOs which provide the biggest job niche in Humla are embedded into a highly politicized structure of local power relations. The NGOs at all levels have evidently remained major instruments for the political parties to strengthen their patronage network (Hachhethu, 2007; UNRCHCO, 2013). For more than the last fifteen years, an absence of elected local institutions has led to the political patronage to transcend NGOs and dominate the resource mobilization and functioning of all government institutions (Harris et al., 2013; Sharrock, 2013). In this context, the access to the local institution for job is processed through the channel of party politics which makes it difficult for the people who are subordinate in local power relations and disassociated from party politics to negotiate and claim their access. Our findings are consistent with other studies (Jones and Boyd, 2011; Nagoda and Eriksen, 2014) that highlight an unequal distribution of resources of all kinds favoring the high caste by virtue of their historical social and political dominance whereas making it difficult for the low caste Dalits who have the lowest level of education and social and political power to claim access to various development and humanitarian institutions and to find salaried jobs.

The poor subsection of the population, unable to get involved in lucrative non-farm sectors are forced to adopt activities that do not require high investment capacities and special skills. One of them is wage labor which is based mainly on an unequal patron-client type of relation between the high and the low caste which contributes no more than a little relief for the laborers' families in situations of acute food crisis (Adhikari, 2008a). The second choice, seasonal labor migration, also ends up with low paying wage labor in India (Bruslé, 2008). The Karnali region remains off the beaten track from foreign labor migration which marks a general trend for all the rest of the country. Foreign labor migration from other parts of Nepal has contributed a huge share in the national economy (Seddon et al., 2002; Kollmair et al., 2006; Maharjan et al., 2013) and has also created opportunities for the socially and economically underprivileged subpopulation like the Dalits to move out of poverty and contest caste institutions by mobilizing financial, human and symbolic capital accumulated through migration (Sunam, 2014). The lack of a foreign migration trend in Humla can supposedly be explained in light of the migrant's lack of necessary social network to get information, low education and other skills and also the lack of financial capital to meet the start-up expenses for high return foreign employment.

Like wage labor, the Dalits serve the high castes with various

occupation related tasks and services such as metal works and tailoring under patron-client exchange systems such as 'Lagi' or 'Balighare' (Adhikari, 2008a). The most common is the making of a wide range of simple agricultural tools for use on farms belonging to high castes who offer a certain amount of grain in exchange. Because the majority of the low caste Dalits have inadequate land and low food insecurity; handicraft and tool making reflects a need driven diversification which is a strategy to meet or maintain survival but cannot make substantial contribution on accumulation and upward well-being mobility (Ellis, 2000) which means what we call 'low return sector'.

We draw two main conclusions from this study. First, diversification as such does not contribute to well-being; but rather a household's ability to pull high return sectors into its livelihood portfolio is more instrumental in enhancing well-being. Second, a household's ability to diversify into a high return sector is dependent on antecedent level of resources and assets: both tangible and intangible assets. Because these resources are unequally distributed; the resource rich households diversify into high return sectors and substantially improve their well-being. The resource poor households, on the other hand, lack the investment capacity and are forced to continue their low return diversification. In this way, off-farm diversification can increase local wealth inequality. A prospective look at future livelihoods in the context of widening inequality informs that low caste and poor households that lack resources and diversify into low return sectors at present are equally unlikely to be able to exploit new economic opportunities effectively even in the future. This highlights the need for rural poverty reduction interventions to be sensitive to local inequalities and direct targeted opportunities to the most underprivileged ones.

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## Appendix A

Summary of the well-being models (derived by stepwise regression).

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std. error of the estimate	Change statistics				
					R <sup>2</sup> change	F change	df1	df2	Sig.
1	0.598 <sup>a</sup>	0.358	0.356	0.170283	0.358	173.115	1	311	0.000
2	0.813 <sup>b</sup>	0.660	0.658	0.124038	0.303	276.133	1	310	0.000
3	0.840 <sup>c</sup>	0.705	0.702	0.115711	0.045	47.220	1	309	0.000
4	0.846 <sup>d</sup>	0.715	0.712	0.113889	0.010	10.967	1	308	0.001
5	0.849 <sup>e</sup>	0.721	0.716	0.113043	0.005	5.628	1	307	0.018

<sup>a</sup> Predictors: (Constant), Trade.

<sup>b</sup> Predictors: (Constant), Trade, salaried job.

<sup>c</sup> Predictors: (Constant), Trade, salaried job, Wage labor.

<sup>d</sup> Predictors: (Constant), Trade, salaried job, Wage labor, Wage migration.

<sup>e</sup> Predictors: (Constant), Trade, salaried job, Wage labor, Wage migration, Handicraft and tool making.

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