

Empowering Women Producers through Value Chain Development in Commercial Vegetable Farming for Improved Livelihood and Food Security

*Dhruba Raj Ghimire*¹

¹World Vision International Nepal and PhD Scholar, Tribhuvan University, Kathmandu, Nepal

Corresponding author: dhruba.raj.gh@gmail.com

Abstract

Although agriculture and forestry sector provides employment to almost two thirds of households, the commercialisation of farming is in its rudimentary stage in Nepal. On the other hand, 28.6 per cent of Nepal's population is multi-dimensionally poor and 48 per cent households are food insecure. Given that women's workload and responsibility in the household is significant, promoting economic opportunities for them can make a big difference in the household livelihood and food security. This research investigated the effectiveness of local value chain process in commercialisation of vegetables among targeted women producers in Kailali district of Nepal, towards improved livelihoods and food security. With post-positivism paradigm, this research capitalised QUAN-qual methodology. Based on comparative performance data of 1,469 women producers engaged in vegetable farming, there has been almost three times increase in production of commodity and 78 per cent increase in average revenue of the producers within a short span of time, which is encouraging.

Key words: Food security, local value chain, marginal families, small farmers, women economic empowerment

INTRODUCTION

The value chain concept emerged in 2000s, in effort of achieving the Millennium Development Goal towards reducing poverty by increasing income (Stoian *et al.* 2012). In this context, over the past decades, multi-lateral, bilateral, government and non-governmental organisations are putting some efforts to develop value chain in reducing poverty and improving livelihoods of the poor and marginalised people.

Statistics show that about 28.6 per cent of Nepal's population is multi-dimensionally poor (NPC 2018). Looking at the nutritional indicators of children under five in Nepal, stunting (inadequate height for age) is 37 per cent, wasting (inadequate weight for height) is 10.2 per cent, and under-weight (inadequate weight for age) is 29.1 per cent

(CBS 2015). Moreover, the prevalence of anemia among women marks at 42 per cent and household food insecurity is 48 per cent (MoH *et al.* 2017). These all indicate plight of food security situation in Nepal.

The agriculture, forestry and fishery sector constitutes 66.5 per cent of the total employment in Nepal, in which, only 34 per cent of the Gross Domestic Product (GDP) is contributed by the agriculture sector (CBS 2014). There is absentee population in various parts of the rural areas which accounted to 7.1 per cent in 2011 (CBS 2012). Women's involvement in agriculture is increasing due to twelve years long political conflict in Nepal; and by and large, due to increasing trend of male out-migrating for foreign employment since the globalisation opened door for international

labour market supply (MoLE 2014). Moreover, there is a practice of people migrating to India for seasonal labour work mainly from districts in Terai and western Nepal. In this situation, women’s role has increased in terms of taking care of the family and household livelihood, although their access and control on the resources is relatively low in general. In the long run, remittance is not a long-term solution for community and the country due to its uncertainty (Ghimire 2018; Sapkota 2018). In this regards, women’s economic empowerment could play a vital role to improve household livelihood and ultimately improve the quality of life of the household members.

This paper attempts to examine the effectiveness of local value chain development for women’s economic empowerment process that would lead towards improved livelihood and food security. Firstly, it examines the progress of women producers towards market-led production of the vegetables, sale and in income within 18 months of project intervention. Secondly, this

paper investigates the contribution of the assumed components like market literacy class, business plan development, and access to market towards commercialisation. Thirdly, it captures women’s experience in managing the value chain and households livelihoods.

This research is based on the data on outcome measurement of project beneficiaries of World Vision International – Nepal (WVIN 2019a). WVIN designed and implemented five sector programmes, and one of these is the Agriculture and Economic Development (AED) programme. The lead intervention under AED is the local value chain development (LVCD) and its subsidiary components include market literacy (for illiterate producers) and saving for transformation (a saving model). For production plan, technology transfer, marketing information and linkages with the value chain actors, in this model, the producers are organised in a group of 20-25 people, which is called producers group. The conceptual frame-work of the value chain development model has been illustrated in figure 1.

Conceptual Framework for Local Value Chain Development

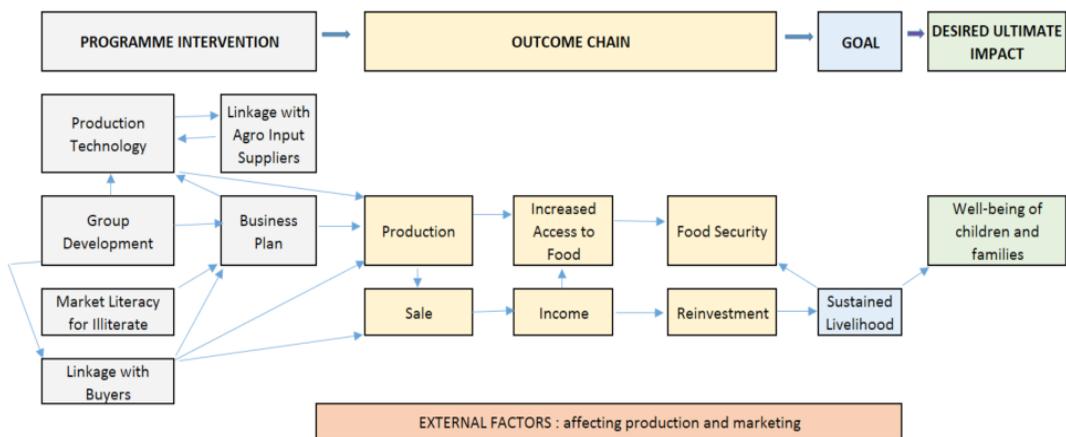


Figure 1: Conceptual Framework of LCVD

Source: Adapted from WVIN (2017a)

As shown in figure 1, production is presumed to be the function of production technology, backward linkage, business plan, and people's willingness to be organised in the group. Production technology component included wide range of activities such as trainings on seed selection, land preparation, cultivation, input supports, and irrigation as needed. Likewise, market literacy was designed to improve business planning, calculating and recording. Sale is influenced by production and linkage with the market. Similarly, income depends on sale along with the marketing factors like price and associated costs. Income, especially income security, is a precondition for sustainable livelihoods and food security. Eventually, the sustained livelihood is important for well-being of children and their families.

A brief overview of the concepts and terminologies being used for women's economic empowerment, livelihood, food security and value chain and their inter-links has been presented here. Based on the definition by Chambers and Conway (1992: pp.5), livelihood means "adequate stocks and flows of food and cash to meet basic needs". According to Sen (1976), livelihood is also the capability against means of living. Global focus in the current era is towards sustainable livelihoods and long-term food security. DFID (2000) presented a framework of sustainable livelihood giving emphasis on five capitals *viz.* human, social, natural, physical and financial as foundation, and projecting increase in income, improvement in well-being, reduction of vulnerability, improvement of food security, sustained use of the natural resources as the outcome of the sustainable livelihoods.

Women's role in the family prevails as a care-taker of children and involving in the productive works such as farming in Nepal. However, being a patriarchal society, Nepalese community traditionally provides space to male to uphold control over the assets and make decision about the use of the assets. To empower women, various types of empowerment models have been practiced in Nepal. Nevertheless, there are two things crucial for empowerment: capability to have control on something over others (which is power); and the legitimacy of the control (which is authority), as postulated by (Weber 1999).

According to the definition on food security by FAO (2008), "Food security exists when all people at all times have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life". Basing on this definition, food security has dimension of access, availability, usage of food and stability of all these three. The global focus has shifted from food self-sufficiency to economic access of food (Clapp 2017).

As per the definitions of the World Bank and the Food and Agriculture Organisation (FAO), small farmers are those depending in less than two hectares (ha) of agriculture land (World Bank 2003; IFAD and UNEP 2013). In Nepal, majority of the farmers own less stretch of land. As per MOAD (2012), 12 per cent of the households are landless or have upto 0.1 ha of land, 12 per cent have 0.1-0.2 ha, 31 per cent have 0.2-0.5 ha, 26 per cent have 0.5-1.0 ha, 14 per cent have 1.0-2.0 ha, 3 per cent have 2.0-3.0 ha, and 2 per cent have above 3.0 ha. This clearly shows a skewed pattern of land ownership in Nepal.

For the long-term food security, small and marginal farmers must come out of the subsistence farming practice (Pingali 1997) given that sustainable livelihoods can only assure long term food security (Maxwell and Smith 1992). Govereh *et al.* (1999) define farming commercialisation in terms of proportion of agro-product that is sold in the market. In terms of key factors affecting the commercialisation, Hagos and Geta (2016) recognised institutions (formal and informal), assets holding, market and their integration, transaction cost and policy, as the key factors for commercialisation of products. The authors categorised these factors as internal and external. These sets of factors also provide a basis for feasibility and effectiveness of commercialisation and value chain.

Based on Webber and Labaste (2010), value chain development is an “effort to strengthen mutually beneficial linkages among firms so that they work together to take advantage of market opportunities, that is, to create and build trust among value chain participants”. In other words, this is a network where producers are connected with the different actors of the markets (such as input suppliers, whole sellers, retailers, consumers, public and public service providers) in a way that this creates a win-win situation when negotiation happens. Given that there is an important role of women in terms of well-being of family and livelihood, it is important to examine how local value chain development model is effective for women.

METHODOLOGY

The objectives of this research are to assess the effectiveness of the local value chain in

livelihood of women producers, to examine the factors associated with value chain, and to draw lessons to further strengthen and replicate the approach of value chain in the relevant context. Conducted in Tikapur and Bhajani Municipalities of Kailali district, this research has adopted QUAN-qual technique with a paradigm of post-positivism.

Part of the raw data for this research have been extracted from the database of Agriculture and Economic Development (AED) project beneficiaries maintained by World Vision International Nepal (WVIN 2019a; WVIN 2019b), which consists of beneficiary profile and baseline and outcome values of individual producers. WVIN implemented AED programme, where local value chain development was prime model of the projects in the implementing districts.

The geographic area and gender of the producers for this research has been adopted on purposive basis and present in the form of a case study. WVIN implemented AED programme in five districts (Kailali, Jumla, Kathmandu, Sindhuli, Udayapur) with support from implementing non-governmental organisations (NGOs). In Kailali district, AED was implemented in two geographic areas named Kailali Centre and Kailali East covering five Rural/Municipalities. The data were obtained from the producers (beneficiaries of the project) of two Palikas i.e. Tikapur and Bhajani, especially focusing for women producers. Out of the total 2,104 producers in these two Palikas, 2,086 were women. Furthermore, the data of 16 producers whose land-ownership is above two ha, which is equal to 3.0 *bigah* (1 *bigah*=0.67

ha), were filtered out, in order to focus the study for those who have up to 2.0 ha of land. This was based on the definition of small farmers as defined by the World Bank (2003) and IFAD and UNEP (2013). Similarly, data of 545 producers was filtered out since their complete baseline values were not available to compare with time-2. Hence the quantitative information of 1,469 women producers has been included in this research. The qualitative data for this study remained for the same geographic area i.e. Tikapur and Bhajani.

Quantitative method has been used in examining the changes in production, sale and revenue of the selected commodities in time-2 against time-1. The baseline measurement, referred as time-1, was conducted in September 2018 and the outcome monitoring, referred as time-2, was conducted in September 2019 (WVIN 2019a) with the same producers, which gave comparative data of each of the individual producers. The data comprised of two aspects: profile of individual producers and comparative variables taken in time-1 and time-2. The profile includes household and individual characteristics, ethnicity, food security status, Poverty Probability Index (PPI), affiliated producer group, type of commodity, and land ownership. The time-1 and time-2 data included production of selected commodities, production cost, quantity sold, revenue, business plan, saving, market literacy and so forth. The commodities included potato, mushroom, spice vegetables and fresh vegetables as these were the categories used by the project and each of the producers groups focused on one of these. The data in time-1 and time-2 were collected with the same producers through survey questionnaire.

Each of the measurements on production, sale and income include that from past six months for time-1 and time-2.

WVIN used food security and PPI as proxy indicators to assess economic vulnerability of potential beneficiaries at the start of the project. The food security status was measured using a Household Food Insecurity Access Scale (HFIAS), which gives four ordinal category of food insecurity (Coates *et al.* 2007). The PPI is a proxy indicator to measure poverty (PPI Alliance, n.d).

The quantitative data of 1,469 producers were analysed using SPSS version 20 software. Data analysis included cleaning of inconsistent or incomplete data, analysis of variance, T-test (pair), comparing mean, chi-square test and correlation test as required. All the continuous variables were tested with the test of Normality. Each of the variables was found to have normal distribution as per Kolmogorov-Smirnova and Shapiro-Wilk tests (Shapiro and Wilk 1965).

In addition to the quantitative method, qualitative methods were used to capture the women producers' experience in terms of their engagement with and outcomes of local value chain development process, enablers and barriers for production and marketing, and their pathway of empowerment. Five focus group discussions (FGDs) were conducted with the producer groups – two in Tikapur and three in Bhajani – where altogether 55 women producers participated. In addition, one FGD was conducted with the staff of partner NGO, who were responsible to build the capacity of producer groups in the value chain development model.

Qualitative information were gathered during the FGDs (Morgan 2012) and relevant participatory rural appraisal techniques such as outcome mapping (Earl *et al.* 2001), and Ten Seeds Technique (Jayakaran 2007) were also used. The FGDs focused on people's experience on the enablers and barriers in the value chain process, outcome mapping tool focused to discuss if or how the interventions helped to achieve outcomes and Ten Seeds Technique to figure out the magnitude of the issue.

Hypothesis

Based on the data collected for 1,469 women producers in time-1 (September 2018) and time-2 (September 2019), Table-2.a and 2.b presents the key descriptive analysis. During or before the time-1, the

project focused on market assessment, facilitating formation of producers groups and organising them. But during and before time-2, the project focused on enhancing production technology through training and agricultural inputs, conducting market literacy class for illiterate producers, rolling out saving model (called saving for transformation), linkages with the market actors (agro vet suppliers, buyers etc.), and marketing information.

Since the increase in revenue from sale, quantity of sale and market-led production are the measures of success of value chain, these three variables have been placed in the hypothesis test. The null and alternative hypothesis formulated is as follows:

Table 1: Hypothesis

Variable	Null Hypothesis	Alternative Hypothesis
Production of vegetables undertaken for commercialization	The mean production of time-2 is not significantly different from that of time-1	Mean production of time-2 has significantly increased over time-1.
Sale of the vegetables	The mean sale of time-2 is not significantly different from that of time-1	Mean sale of time-2 has significantly increased over time-1.
Revenue from the sale of the vegetables	The mean revenue of time-2 is not significantly different from that of time-1	Mean revenue of time-2 has significantly increased over time-1.

FINDINGS

Descriptive Information from Quantitative Data

Table 2(a) and 2(b) illustrate the fractions or mean values with range, standard deviation

and standard error on the different variables considered in this research.

Table 2(a): Descriptive Analysis of the Information (Proportion Analysis)

Variables (N= 1469 for each)	Proportion	Range (Min- Max)	Std. Dev.	Std. Error
Women producers (%)	100%	-	-	-
Literate producer (%)	49%	-	-	-
Joined market literacy: time-2	29%	-	-	-
Food insecure producers HH: time-1	44.5%	-	-	-
Having business Plan: time-1	4%	-	-	-
Having business Plan: time-2	29%	-	-	-
Having access to Financial Institutions: time-1	38%	-	-	-
Having access to Financial Institutions: time-2	45%	-	-	-
Producers who increased revenue in time-2	61%	-	-	-

Table 2(b): Descriptive Analysis of the Information (Mean Analysis)

Variables (N= 1469 for each)	Mean value	Range (Min- Max)	Std. Dev.	Std. Error
Total annual income of producer HH from different sources (NRS): time-1	31538	6200 – 328200	25930	677
The Poverty Probability Index (PPI) (score): time-1	52.6	15 – 92	11.0	0.29
Age of producers: time-1	33.3	18 – 65	8.8	0.23
Household size: time-1	6.88	2 – 29	3.6	0.09
No. of children (under 18) in the HH: time-1	2.6	0 – 12	1.5	0.04
Own land (<i>kattha</i>): time-1	11.9	11.3 – 12.4	10.5	0.27
Land used for commercial farming (<i>kattha</i>): time-2	2.3	0.5 – 40.0	3.2	0.25
Institutions/ groups of monthly saving: time-1	0.94	0 – 6	1.2	0.03
Institutions/ groups of monthly saving: time-2	2.8	0 – 7	0.7	0.02
Amount of monthly saving (NRS): time-2	406.9	0 – 2210	207.0	5.4
Production of commodities (KG) : time-1	139.4	0 – 4400	291.4	7.75
Production of commodities (KG) : time-2	445.1	0- 25600	1000.9	26.10
Sale of commodities (KG): time-1	136.7	0- 4000	297.1	7.75
Sale of commodities (KG): time-2	258.5	0- 18750	703.4	18.35
Revenue from sale of commodities (NRS): time-1	4744.8	0- 113400	9744.0	254.23
Revenue from sale of commodities (NRS): time-2	8455.3	0 – 300000	19301.8	503.60

Cash investment in production of commodities (NRS): time-1	707.4	60 – 12550	1152.4	30.06
Cash investment in production of commodities (NRS): time-2	1849.9	50- 45150	3240.1	84.54
Net differential income (time-2 minus time-1) after deducting the cash investment (NRS)	2567.9	-95960 - 242650	16446.9	429.12

Notes:

1. 1 Kattha=0.666 Ropani or 0.0339 Hectare

2. NRS 111.67 = 1 USD as in September 2019

Source: Comparative data of producers (WVIN 2019a)

A 49 per cent of the women producers are literate; 29 per cent joined literacy class (Table-2.a); the mean age of producers is 33.3 years in time-1, the average household size is 6.88 (Table-2.b). However, the women producers were not only to be engaged in the production or sale but their family members supported them. Table-2.a further elaborates that has been a drastic increase (from 4% to 29 %) in the proportion of producer households who prepared business plan; a slight increase (from 29% to 38%) in the access to financial institutions; and a drastic increase (from 0.94 to 2.8 institutions or groups per household) where the savings is deposited. An average producer saves Nepalese Rupees (NRS) 406.9 per month (Table-2.b).

Since the project targeted the producers owning less land, in this case study, the average land ownership is 11.9 *kattha* (Table-2.b). One third of the producers (32.1%) have been taking landlords' land in form of tenancy or lease. The mean area of

land used for commercial vegetable farming for the past six months in time-2 was 2.3 *kattha* (Table-2.b).

The Pearson's correlation of 0.52 with p value of 0.00 between Poverty Probability Index (PPI) and Food Insecurity (HFAIS-ordinal category from food secure through severely food insecure) indicates that lower the PPI, the higher the food insecurity and vice versa. Moreover, change in the production, sale and revenue of the commodity has been observed between time-1 and time-2.

Results of Hypothesis Test

The results of the hypothesis test have been illustrated in Table-3. The hypothesis set was around the significant difference of means of production, sale and revenue of time-1 and time-2. The test was performed with Paired T-test. In addition to mean and T-test results, lower and upper bounds at 95 per cent confidence level and standard deviation have been presented.

Table 3: Paired T-Test on Mean Values of Time-1 and Time-2

Particular	Time	Mean ¹	Std. Dev.	Lower-Upper @95% C.I.	Mean difference (Time 2-Time1)	% difference	T ²	Sig. ³
Produced quantity (KG)	Time-1	139.4	291.4	125.6 - 155.3	305.6	219	-12.23	0.00
	Time-2	445.0	1000.8	399.1 - 505.6				
Sold quantity (KG)	Time-1	136.7	297.0	122.7 - 152.7	121.8	89	-6.76	0.00
	Time-2	258.5	703.2	225.6- 303.5				
Revenue (NRS)	Time-1	4752.3	9792.1	4267.3 - 5285.6	3703.0	78	-7.32	0.00
	Time-2	8455.2	19301.7	7519.1 - 9500.5				

Notes:

1. N (Sample size) in Paired T-test is 1469 for each of the three tests.

2: DF (degree of freedom) is 1468 for each of the three tests.

3: Significance was analysed for two tailed test.

Source: Comparative data of producers (WVIN 2019a)

Decision on Accepting or Rejecting Null Hypothesis

- With p value of 0.00 (i.e. <0.05) demonstrated in the Hypothesis test, the null hypothesis that vegetable production of time-2 is not significantly different from time-1, is rejected. The data demonstrates that there has been 219 per cent increase in the production in time-2 (average 445.0 KG) from time-1 (average 139.4 KG).
- With p value of 0.00 (i.e. <0.05), null hypothesis that vegetable sale of time-2 is not significantly different from time-1, is rejected. The data demonstrates that there has been 89 per cent increase in the production in time-2 (258.5 KG) from time-1 (136.7 KG).

- With p value of 0.00 (i.e. <0.05), null hypothesis that revenue of time-2 is not significantly different from time-1, is rejected. The data demonstrates that there has been 78 per cent increase in the revenue (gross income) in time-2 (NRS 8455.2) from time-1 (NRS 4752.3).

Commercialisation of Commodities and Revenue

About 12.3 per cent households have been involved in fresh vegetables; similarly, 2.1 per cent in mushroom, 52.7 per cent in potato and 32.9 per cent in spices commodities. In other words, more than half of the value chain is shared by potato. Proportion of marketed vegetable out of total produced in time-2 is 58 per cent, which

is still below the expected level (Table-4). Furthermore, this is highly contributed by potato (mean production: 464 KG, mean sale: 224 KG, i.e. proportion: 48%). Unlike fresh vegetables and spices, potato is less perishable and can be sold after months of harvesting.

Based on the food security assessment of the producers in time-1, 55.5 per cent were

food secure, 30.2 per cent were mildly food insecure, 6.7 per cent were moderately food insecure and 7.6 per cent were severely food insecure. In the dichotomous term, it means 55.5 per cent were food secure and 45.5 per cent were food insecure. Commercialisation according to food security status is illustrated in Table-4.

Table 4: Mean Values of Production, Sale and Revenue According to Food Secure/ Insecure

Particulars	Production (KG)		Sale (KG)		Revenue (NRS)	
	Time-1	Time-2	Time-1	Time-2	Time-1	Time-2
Food Insecure	89.9	285.5	93.8	147.6	3098.2	4783.8
Food Secure	179.1	572.7	171.1	347.3	6062.5	11393.4

Source: Comparative data of Producers (WVIN 2019a)

Increase in Revenue and its Associated Factors

Difference in revenue was calculated deducting the revenue of time-2 from time-1. The mean value of increase of revenue of those who joined market literacy (NRS 6,629.60) and who did not (NRS 2,526.10) was examined with the T-test of Equality of Means. The p value of 0.01 (i.e. <0.05) demonstrates that this difference is significant. Further, Spearman’s correlation of 0.214 (p=0.00 i.e. <0.05) between ‘Market Literacy’ and ‘Difference in Revenue’ supports this fact.

Similarly, the mean value of increase of revenue of those who prepared business plan (NRS 11,299.6) and who did not (NRS 651.6) was examined with the T-test of Equality of Means. The p-value of 0.01 (i.e. <0.05) demonstrates that this difference is significant. Further, Spearman’s correlation of 0.430 (p=0.00 i.e. <0.05) between ‘Business Plan’ and ‘Difference in Revenue’ supports this.

There is a moderate correlation (Spearman’s cor. = 0.54) between monthly saving and revenue of time-2, with p-value of 0.00 (i.e. <0.05). This is possibly because that the producers with higher income, deposit higher amount of saving. Likewise, Chi-square test was applied to examine the association between ‘connection with market’ (ordinal: not yet connected, emerging, growing, maturing) and ‘Increase in Revenue in time-2’ (ordinal: positive, neutral, negative). With Pearson’s Chi-square value of 535.3 at 6 degree of freedom gave out significance of 0.00. This shows that connection with buyer is a significant factor for commercialisation leading to increased revenue.

COST-BENEFIT ANALYSIS

Key figures in Table 5 gives progressive net income before and after deducting the project investments. As shown in the table, average net cash incomes (after deducting producers’ investment) in time-1 (period

of six months in 2018) and time-2 (period of six months in 2019) are NRS 4,037 and NRS 6,606 respectively. The investments made by the Project supported by WVIN, before time-1 and time-2 are NRS 1,232 and NRS 2,341 respectively (WVIN 2019b).

Thus, the net incomes per producer after deducting the project investments come to be NRS 2,805 and NRS 4,265 respectively. Applying 5 percent inflation rate (MoF 2019), the latter value (NRS 4,265 in 2019) becomes equivalent to NRS 4,062 for 2018.

Table 5: Mean Values of Income, Investment and Differences (NRS) of Producers in Time-1 and Time-2

Particulars	Time-1	Time-2	Difference
Net cash income in (A)	4037	6606	2569
Project Investment in NRS (B)	1232	2341	1109
Net income after deducting Project Investment (C= A-B)	2805	4265	1460
Net current value of money as in 2018	2805	4062	1257
Valuation of stock (potential to sell) in Time-2 (D)		4588	
Valuation of stock (potential to consume) in Time-2 (E)		1529	
Total notional net cash income in Time-2 (A +D)		11194	

Notes: Here ‘Net cash income’ means cash earned after deducting their own investments by the producers

Source: Comparative data of producers (WVIN 2019a)

At the individual producer level, the net income ranges from negative figure (NRS 95,960) to a figure of NRS 242,650 (Table 2b). Three reasons were observed pertaining to the negative differences. The first reason is: five big producers reduced their production drastically to focus their livelihoods to other areas in time-2 period. The second reason is: a small proportion of the products were yet to be sold especially potato. As the database shows that, out of those having negative difference, 52.1 per cent were from the potato producers with mean stock of 260 KG. Obviously, the third reason is, rest of the farmers having negative differential income those who were not able to increase their income in time-2 from time-1.

In aggregate, 57.4 per cent of producers increased net their income in time-2 compared to time-1, whereas 85.6 per cent increased their production. A 58.1 per cent of produced quantity has been already sold in time-2. On top of the sold NRS 6,606, the valuation of the unsold products comes to be NRS 6,117 applying the ratio of valuation. Almost one-fourth of the production is consumed at the household level, based on the qualitative study. The existing revenue, potential revenue, and the notional consumption tell that the production and commercialisation is encouragingly progressive.

EXPERIENCES OF PRODUCER WOMEN

As specified under the methodology, five FGDs were conducted with the women producer groups. Before selecting the producer groups for FGD, the producer database was analysed to figure out the performance of the producer groups in terms of production and sale. Based on the analysis, three comparatively well-performing producer groups and two comparatively challenging producer groups were selected for the FGDs. This section reflects producers' experiences at collective and individual levels, through their involvement in the local value chain development process.

In Srijana Spicy Vegetable Producer Group of Tikapur, 12 out of 14 farmers have started selling vegetables in comparison to just one out of fourteen before the project interventions. A total of 29 producers are affiliated with this group. The farmers in this group are cultivating in land size from 0.5 *kathba* to 80 *kattha*. Similarly, Kopila Producer Group from the same locality also reported that they have started to grow vegetables during the off-season to increase their production. Moreover, their achievements were evident in the statement from one of the members of the producer group, who opined,

We all used to sell by carrying the products on baskets but now the whole-sellers come to the community to collect the products.

Moreover, the group also stated that they are reinvesting their earnings in educating their children, especially sending them to private schools.

Another group, Kopila producers have experienced a significant surge in their earnings since the start of the project. From this group, 12 producers participated in the FGDs out of total of 23 producer members. Among the 12 members, eight were able to raise the income significantly through sale of the products. One of those women producers who increased their income expressed,

I have increased my production almost three times compared to last year. My annual income from the commodity is now NRS 112,000. World Vision made our connection with the whole-seller and we are able to sell in the market.

Producers of the Gulab Producers' Groups of Bhajani mentioned that the information about market comes from the whole-seller (with whom they have agreement); some retailers of Bhajani; and also from the market facilitator. However, four out of eight mentioned that they also take their products to the *haat bazaar* (open air market that runs certain days in a week) for direct selling. Furthermore, collective bargaining power exerted by the producers following the formation of producers and increase in their awareness level is due mainly to the market literacy classes. Such change has surged the confidence level amongst the producers. One of the producers who still sell by carrying her goods to *haat bazar* said,

In the future, we can call the whole sellers to our locality, although right now we are selling by carrying the goods to the market centres.

For the case of Sagar Rupantarkari Saving Group, there are five buyers connected by WVIN and its implementing NGO partner

Digo Bikas Samaj. Local market facilitators, the project staff assigned to provide support to producers groups have been playing role of providing market information and also facilitating the agreements with the buyers, based on the FGDs.

The producer groups are competing with Indian vegetables. The competition is not easy but they are gradually gaining trust from the consumers. The Chair of Gulab Producer Group stated,

Awareness among the people that local vegetables are more hygienic than Indian vegetables is emerging. Even some Indian retail merchants purchase Nepalese products such as leafy vegetables, cucumber, water-melon and transport these to India by bicycles.

Almost 70 per cent of the participants said that their consumption of the vegetable has increased. The analysis shows that the difference between production and sale of vegetables is nearly 30 per cent. One of the woman producers having ten family members including four kids expressed

Along with increase in the production of the vegetable, our household consumption of the vegetable has increased. We consume almost one third of the products at our house.

Some other producers who are food insecure said, "Vegetable farming has enabled us to get a cash to buy rice".

One Tharu producer, aged 38, experienced a rise in her income from vegetable by more than four folds from NRS 13,000 to NRS 102,000 in the past twelve months. She opined,

Our family holds three kathha of land and has taken bataiya (tenancy) of 2

bigah. On the bataiya land, we grow cereal crops especially rice and wheat; and in our own three kathha land, we grow vegetable. Being in the group, we learn on how to cultivate vegetable and even we plan on what to plant in each season. World Vision and its partner organization – Digo Bikas Samaj provided us training and some tools. We have also used mulching technology.

Sagar Producer Group members of Bhajani mentioned that they started getting more support from local government after their producer group was registered with the local government. Majority of the husbands works as mason, labourers or seasonal migrant workers in India. One of the participants summarised,

Vegetable increased 2-3 times more. This is because of the support rendered by World Vision and partner NGO, our group efforts, mulching technology, irrigation, group formation, and linkages with the buyers.

Seven out of twenty individuals in Sagar Group have account in the bank. One of them said,

We have started monthly saving. We will continue this even after the project is phased out. Unnecessary expenditures have been cut-off since we started saving.

From this group, 25 women started market literacy but three dropped out in three months. They have identified names of the vegetable buyers and they have put the names of the buyers in the community building where they meet regularly. Group has developed production plan but only one-fourth of the members have individual business plans.

With the market literacy class, majority of them (seven out of twelve) can read out simple words and upto four digits. Almost one forth (three out of twelve) can operate calculator for simple calculation after the market literacy class. One of the participants said,

We learned not only the letters but also on how to produce and how to sell, from the literacy class.

The Sagar producer group is composed of ex-kamaiya (i.e. ex-bonded labourers). This group has 20 producer members. During the FGDs, one of the producers said,

We had never experienced selling vegetable before this project. Our primary occupation is labour work. Women earn four hundred rupees a day during the daily wage season. Now, vegetable has become the second source of income as we started to grow vegetable in 3-4 kattha of land.

The producers have stated that they have applied the newly acquired knowledge and skills from the market literacy class and their observation from the exposure visits whilst cultivating vegetable and selling them using the modern channels. One of the participants, aged 41 said,

Now we can read and write. We can keep record of vegetable sales.

Similarly, the participants from the FGDs carried amongst Padampur of Tikapur-7 stated that the members of the group meet regularly to discuss the new farming techniques and the key challenges encountered by them whilst undertaking the initiatives. The group, like many other

groups, stated that they have prepared a collective cropping calendar and have a group production plan in place.

In terms of crop intensification, majority of the women producers were able to focus on few crops such as potato, or mushroom or spice vegetables or fresh vegetable even though they existed in small area of land. One of the participants, aged 33, opined,

I took risk in it because I was previously selling a little amount of some products and also that I learned from watching others who were making benefits from focusing a few.

Here, demonstration effect is an important factor for replication of good practices. Based on the FGDs, there has been improvement in the technology such as using improved seeds, tillage, weeding, watering, mulching, and tunnelling.

As of now almost 60 per cent of the producer groups are skilled enough to continue their production and marketing activities through collective efforts (WVIN 2019b). The established norms of regular meeting, market information sharing by local market facilitator of the producers group and formal and informal contracts with the buyers have enabled them on this. One of the participants whose husband had been to India for seasonal labour work said,

Previously, I used to depend on my husband's income, but now we can sell the vegetables and can earn my own living.

Other participants also had similar expressions. The literacy, group formation and earning has helped women to organise better and be empowered.

Based on the FGDs, food security situation has improved due to more earning through commercial farming. Their coping mechanism has also improved due to their affiliation with the producers group and saving groups.

During the FGDs, a pattern of expenditure, made out of their income, was obtained

through a rapid process using Ten Seed technique. Figure 2 below indicates the area where the producers spent the most and the least. The question was administered was: “Where did you spend the income you secured in the past twelve months?” The result of the responses obtained through Ten Seed Technique has been presented in the figure 2.

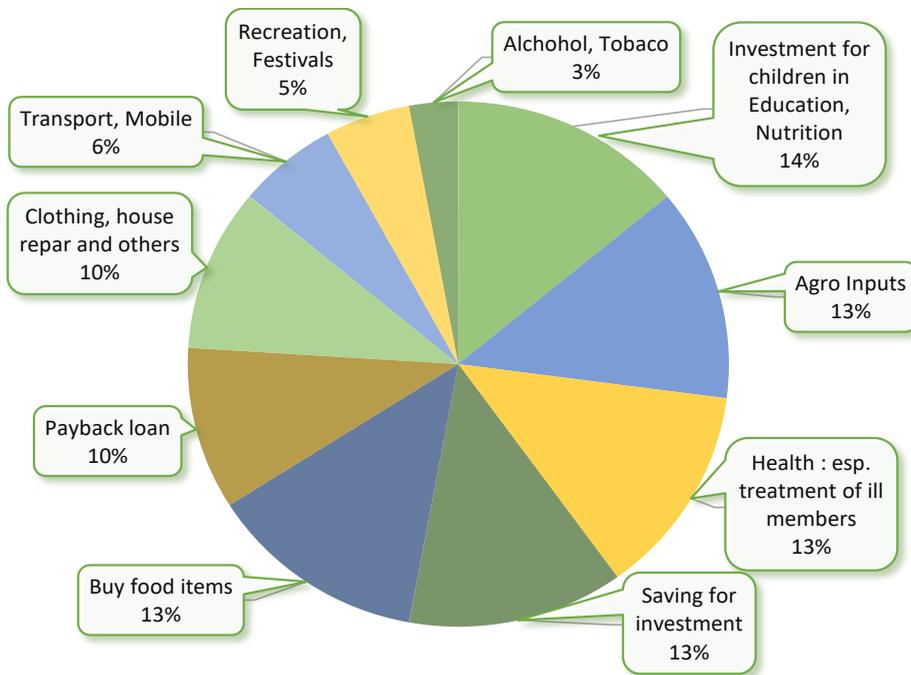


Figure 2: Expenditure of the Income Made in the Past 12 Months

Source: FGDs 2019

As the pie-chart shows, the biggest expenditure is in the area of investment for children (education and nutrition); agro-inputs; food items; health (treatments); and saving for investment. This shows that women have utilised the income for rational causes. In general, FGDs re-affirmed the findings that there is a good access to saving and credits due to the presence of saving and credit groups, cooperatives and other banks and financial institutions in the area.

Therefore, formation of another saving group in that area is not relevant.

Based on the FGDs, many of the producers are also facing number of challenges. One of the challenges is farmers, who are interested in cash crops, are not able to get quality land through leasehold or share cropping arrangements. For example in Srijana Spice Producers Group in Tikapur, where all members are Chaudhary women, said that they are not able to make significant

production due to poor quality of land, where they cultivate in share cropping arrangements with the landlords. Another challenge is that the buyers (especially whole sellers) are not interested to come to producers if the quantity of the vegetable is small. This has compelled producers to carry their own products to market centres or *haat bazar*. Furthermore, a few participants in the FGDs complained that the whole-sellers were not always honest in terms of price negotiation. Furthermore, the practice of expelling cows out of the houses by some people especially when cow gets old or becomes exhausted, has increased the number of freed cows on the fields, who eat up the vegetables planted by local farmers. This has posed challenges amongst the vegetable farmers not only at Tikapur, Bhajani but also at other parts of Kailali as well.

DISCUSSION AND CONCLUSIONS

There has been encouraging progress towards production and commercialisation of the vegetable farming undertaken by women producers by being organised in the producers group and obtaining family support whatever possible in the given context. Affiliation in the group (where group enables development of production plan, market information, connection with the value chain actors); access to market (especially connection with whole sellers, retailers consumers); involvement in market literacy; and improved saving (for future investments) are the enablers of the local value chain development.

Economically empowered women can manage the family better and can contribute

better towards well-being of children and the whole family. As per Oxfam's model, women's economic empowerment happens 'when women 'enjoy their rights to control and benefit from resources, assets, income and their own time, and when they have the ability to manage risks and improve their economic status and wellbeing' (Kidder *et al.* 2017: p.4). In this study, women producers in the study area feel empowered through learning from the market literacy class, working in producers group, negotiating with the buyers, handling money and making some financial decisions. They enjoy making choices about use of their earnings at their discretion. In a nutshell, local value chain development approach built on group approach and embedded with market literacy has been found an effective model for women economic empowerment. This model has been found effective for producer women in the other studies too. For example, the 3PM Project Evaluation report revealed that women were able to double the revenue within three years of implementation of the 3PM Project despite the fact that women's average revenue was still half than the men's (WVIN 2017b).

Crop intensification is about growing few crops by applying improved technology with the objective to scale it up, leading towards commercialisation of the products (Verkaart *et al.* 2017). In the study area, it has been found that producer women were able to concentrate on a few crops, thus demonstrating their commitments and confidence towards commercialisation. Some relevant studies provide evidences that crop intensification based on market needs, marketing and agricultural inputs

play vital role in income of the farmers. Gurung *et al.* (2016), from the experience of ten years of implementing the project named 'Prosperity Realization through Irrigation and Smallholder Markets', postulated that there can be a significant rise of income for the farmers if they are better connected with the market and irrigation facilities. For example in Kapilvastu, the yield of vegetable increased to 595 from 142 kg/ *kattha* in the past ten years. Similarly, the annual net income per household increased to NRS 20,425 from NRS 4,452 during the same timeframe. Furthermore, Pun and Kamracharya (1998) observed that high value cash crop can provide 5 to 10 times higher economic value.

The rise in the income is a large contributor of food security for the food insecure households. Economic access provides the resilience against the risk of food insecurity even during times of disaster (Ghimire 2018). Furthermore, vegetables are convenient sources of nutrients. One of the advantages of semi-commercial farming is that the children, pregnant, lactating women and other members of the families get the nutrition from their vegetables they produce in the households. It has been found that about one-fourth of the vegetable products are consumed in the households.

Almost one-third have taken land from the landlords in lease for commercial farming and others have taken *bataiya* (share-cropping) for cereal crops. The leased land can provide opportunities for commercial farming if suitable land is found. Furthermore, a practice of river bank farming (*Bagare Kheti*) was observed for few producers groups. The FGD

participants who cultivated at river bank reported to undertake 0.5 to 5 *kattha* of land per household. Only one season farming has been cultivated at the river bank area due to flooding during the monsoon season. Nevertheless, river bank farming indicates that commercial farming is feasible for the poor producers provided that they have access to land in form of leasehold.

Stoian *et al.* (2012) recognised that in order to engage in value chain development process in a meaningful way, poor producers will have to have minimum assets. In case of this research, it was reported that many of the poor producers were not able to be part of the local value chain due to their limited endowment, capacity and interest. As it was expressed during FGDs, specifically, those who had no or too little land, or unable to find suitable land on lease, or did not have adequate cushion against any risk, or were not able to assume higher risk, or did not have confidence in being part of group. Furthermore, based on WVIN's Mid-Term Review of AED Projects in five districts, approximately 10-15 per cent of the eligible potential producers (poor households) did not take part in the projects. A model to work with ultra-poor is recommended to uplift ultra-poor before they can be involved in semi/commercialisation (WVIN 2019b).

Average revenue from sales of vegetable of a *Dalit* family is almost half of the average, the percentage increase in the revenue is 73, which is progressive yet gap between *Dalit* and other caste is wide. In similar study in Sunsari, the elites of the community refused to lease out their lands to the neighbouring *Dalit* farmers in a fear that they would lose their agricultural labourers if those poor *Dalit* households engage in

the commercialisation of the vegetable (WVIN 2019b). In this backdrop, here comes the role of government to provide enabling environment and ensure basic infra-structure to the poor producers or marginal farmers with consideration of socially disadvantaged caste groups, towards high value or cash crop production and marketing.

Sustainability is the crux of local value chain. To promote sustainability, there is a need to strengthen the network of the producers groups with the buyers and enhance adaptability to select the items as per market dynamics. Local governments have a lot of opportunities towards promoting local value chain for high value or cash crops by giving legal recognition to the producers groups, establishing market information system, plant insurance, extension of the technical service to the marginal farmers, capitalising land use plan to provide leasehold land to the producers and providing legal protections.

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