

Household Food Security and Coping Strategies: Vulnerabilities and Capacities in Rural Communities

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Abstract- Food security is significant issue for development programming given this is a basic need that impacts survival, growth and development of human being.. As 49% of the households in Nepal are food insecure (National Demographic and Health Survey: NDSH, 2011), it is very important to explore how households in the rural communities are coping with food insecurity situation and discuss about the way out. Disasters, climate change effects on production, exploitative economic systems, growing distraction of youth from agriculture are some significant issues that are likely to intensify the risks for food security in future. Food insecurity further puts households and communities vulnerable to disasters and weakens their capacity to restore to the normal life. The objective of the study is to assess (a) household food security situation in the rural communities and (b) various coping strategies being adopted with regards to their capacities and vulnerabilities to cope with food insecurity due to disasters or adversities. The researcher used the data from multi-sector baseline surveys of three areas and special study on coping strategies of one area, carried out by World Vision International- Nepal (WVIN) in 2013, which were led by the researcher himself. This paper reveals the household food security situation of those areas; existing practice of adaptive and non-adaptive coping strategies; and causes of the household food insecurity. The findings can be helpful to policy makers and actors in development to devise appropriate programming.

Index Terms- Food security, coping strategies, resilience, community, development.

I. FOOD SECURITY AND RESILIENCE

A resilient community can be defined as having capacity to withstand considerable disruption when it happens and the ability to restore to normal life without negatively affecting future quality of lives of the community members. According to Turnbull, Sterrett and Hilleboe (2013, p.9); “resilience refers to the capacity of an individual, household, population group or system to anticipate, absorb, and recover from hazards and/or effects of climate change and other shocks and stresses without compromising (and potentially enhancing) long term prospects.” Coping capacity and resilience are not the same, and the latter is a broader concept; however these terms are being used interchangeably. A focus on resilience means putting greater emphasis on what communities can do for themselves and how to strengthen their capacities. (Twigg 2009, p.8).

Food insecure communities and households have potential to be highly impacted by the disasters- both slow onset and rapid

onset; and by the local shocks, for example, loss of job or business. Availability, access and assets base helps a family and community to ensure the food security; as this is the foundation of the development. To quote World Food Summit Plan of Action (FAO,1998), “Food security exists when all people at all times have physical or economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life¹.” Food security has four dimensions, a) Physical availability of food; b) Economic and physical access to food; c) Food utilization and d) Stability of the other three dimensions over time. A development programme that encourages farmers to produce foods, can help the communities many ways such as poverty reduction of the individual farmers; increase the availability of food; stabilizing the food prices in the community; and ultimately benefitting the poor. This ultimately improves the resilience of the community.

After a crisis or disaster, the coping strategies that families or individuals can adopt is categorized into the following two: (1) Adaptive coping strategies: are measures which deal with the capacity to accommodate or adjust to the new situation without long term effect to human well-being. (2) Negative coping strategies: are measures which are adopted by the households to survive the situation that are detrimental to human well-being. Food security is an important aspect of a resilient community.

II. A GLIMPSE INTO FOOD SECURITY SITUATION IN NEPAL

Based on Nepal Living Standards Survey 2011, the average size of agricultural land area in the country is 0.7 hectares per household². Only 49% of HHs in Nepal is food secure and has access to food year round, based on Nepal Demographic and Health Survey-2011³. This shows half of the population food insecure. The food insecurity is rooted in poverty and leads to poor health, low productivity, low income, inability to support growth and development of children; thus keeping into vicious cycle of poverty.

According to Food Balance Sheet of Nepal, 2013 (MOAC, 2013) 33 out of 75 districts were estimated to be food deficient in that year; although total domestic cereal production was slightly higher by 8% than then total national demand. Although total domestic cereal production is able to meet national demand during the year of good harvest, the distribution system is

1 <http://www.fao.org/cfs/cfs-home/en/>

² NPC: Nepal Living Standard Survey 2011-Vol.-1, p.6

³ NPC: Nepal Demographic and Health Survey (NDSH)-2011, p.13)

affected by trade with India, transportation and storage costs. Foods are not available in the inaccessible rural communities, in affordable price due to high transportation cost. On the other hand, Nepal has not been able to produce agricultural products to its potential; due to low quality inputs, traditional technology, high production cost and inadequate input subsidy and rain-fed farms (MOAC, 2011, NASP p.14).

Based on NDSH (2011, p.36), approximately 12% of households (HHs) are mildly, 23% moderately and 16% severely food insecure. Rural HHs (46%) are less food secure compared to Urban HHs (67%). Furthermore, not surprisingly, HHs in the highest wealth quintile are much more likely to be food secure (82%) than those in the lowest wealth quintile (18%). The table below shows the coping strategy that the HHs adopted during food crisis; which suggests that people resort to taking loan from individual or institutional money lenders.

Table-1: Coping strategy during food crisis (source: NDSH 2011, p.38)

Coping strategy	Took loan	Consumed seed	Sold livestock	Sold other HH assets	Worked as labor
Urban	63.0	5.9	12.8	8.4	1.9
Rural	70.8	20.3	33.0	8.7	4.2
Average	70.1	19.0	31.2	8.7	4.0

Moreover, there is correlation between food security and stunting. NDSH (2011, pg.165), concludes that children in the HHs with food security (33%) are less likely to be stunted than those with mild food insecurity (41%), moderate food insecurity (46%), and severe food insecurity (49%).

There are good government policies regarding the food security. Three years approach paper mentions under its strategy, "Ensure food security (food availability, stability in use, and continuity) through the protection, promotion and efficient use of agro-biodiversity and the development and expansion of climate change-adaptive technologies" (NPC, 2013, p.59). Notably, promotion of agro-biodiversity and technologies for climate change is considered for long term food security. It is also notable that MDG has given a high priority to invest in increasing food production and improving food security (MDG, 2013, p.92). However, the progress towards achieving the objectives of those policies is very slaking.

III. PROCESS AND METHODOLOGY OF THE FIELD STUDY

3.2 Process

This analysis is drawn from datasheets of multi sector baseline survey of 3 programme areas and one special case study. Mobile phone technology, with use of internet based software named 'episurveyor', was applied to record the responses on-the-spot. Key steps involved:

- 1. Preparation:** The researcher developed methodology and tools for the multi-sector baseline survey of each of the programmes in the 3 districts. The sectors/ projects included: Livelihood; Maternal Child Health and

Nutrition; Education; and Water, Sanitation and Hygiene. Prepared team of the surveyors.

- 2. Quantitative information process:** For each multi-sector baseline, the process included (1) Orientating programme team on the objective of baseline and methodology, (2) Developing questionnaire, finalization and entering into the mobile phone; (3) Orientation to enumerators on survey; (4) Pilot test; (5) HH survey administration using mobile phone record system;(6) Supervision of the survey; (7) Data checking through the internet system; (8) Data export from episurveyor to spreadsheet; (9) Data cleaning, analysis and (10) determining baseline value for each of the indicators .
- 3. Qualitative information process:** Carried out FGDs and analyzed
- 4. Secondary information process:** Collected facts and figures from line agencies and communities
- 5. Feedback process:** Baseline survey report was prepared and shared with the stakeholders for their information and feedbacks.
- 6. Special study:** Additional special quantitative data collection was carried out for Shrilanka village of Kailali district.
- 7. Extraction of data and analysis:** In preparing this report, author pulled out relevant information from datasheet of the baseline surveys.

3.2 Sampling for quantitative measurement

To determine sample size, 95% confidence level was considered. The sample sizes required for statistical significance in the results were calculated using the following formula:

$$n = deff \times \frac{(Z_a + Z_b)^2 \times (P_1(1 - P_1) + P_2(1 - P_2))}{(P_2 - P_1)^2}$$

where:

- n = required minimum sample size per survey
- deff = design effect (adopted 2 for 30 cluster sampling)
- Za = Z-score for statistical significance (adopted 1.645 for 0.05 significance)
- Zb = Z-score for degree of statistical power level with which it is desired to be certain that an actual change of size = (P2-P1) will be detected (adopted 1.282 for 90% power)
- P1 = estimated level of an indicator as a proportion at the time of the first survey
- P2 = estimated level of an indicator as a proportion at some time in the future, such that the quantity calculated by (P2-P1) is change that it is desired to be able to see

Table-2: Sample size and area

Programme Area	No. of VDCs	Respondents	Sampling technique	VDCs	Characteristics of the district ⁴
Rupandehi	8 VDCs	660	30 cluster (proportion to population sampling)	Makrahar, Manmateriya, Kha.Bangai, Mainahiya and Manpakadi	Gangoliya, Pa.Amawa, Harnaiya, 13 th rank out of 75 district, Terai
Lamjung	9 VDCs	840	-do-	Besisahar, Baglungpani, Banjakhet, Sundar Bazar, Parewadanda and Nalma	Gaun Sahar, Chandisthan, Tarku, Hill 22 nd rank out of 75 district,
Udayapur	7 VDCs	840	-do-	Rauta, Bhuttar, Aaptar, Jante, Laphagaun and Khanbu	Pokhari, Moderate, 41th rank out of 75 districts, Hill

⁴ Ranks are based on the Poverty and Deprivation Index from “District of Nepal: Indicators of Development” by GoN, ICIMOD, SNV

Others:

- Case study with quantitative: 100% sample taken from a small cluster of 32 HHs named Shrilanka at Geta VDC in Kailali. It is a marginalized community in Terai, populated predominantly by Tharu ethnic group. This is highly a flood prone area.
- Focused Groups discussions in Rupandehi, Lamjung and Udayapur with marginalized farmers (total 15 FGDs)

8. Key findings

8.1. Main source of Income:

The table below shows that, while main income source is agriculture, but the percentage is varying. It is low in Rupandehi and Lamjung and higher in Udayapur. Dependency on agriculture is very low in Shrilanka village.

Table-3: Percentage of HHs according main source of income (primary, field survey 2013)

Sources	Lamjung	Rupandehi	Udayapur	Kailali (Shrilanka)
Agriculture	29.7	19.6	84.9	17.0
Livestock and poultry	2.8	5.4	2.2	-
Business	4.2	7.8	1.6	3.0
Employment/job	14.0	6.4	1.4	10.0
Skilled worker	7.4	14.4	1.3	6.0
Daily wage labour	5.0	20.0	2.00	47.00
Pension	13.7	0.3	4.0	-
Remittance	23.0	12.0	2.6	17.0
Fishery	-	0.40	-	-
Other	0.2	13.7	-	-
Total	100.0	100.0	100.0	100.0

In Lamjung and Udayapur, 45% and 27% of the HHs have at least one family member abroad respectively. Comparing these information with national data, 25.4% population is absentee and the highest proportion (44.81%) of absent population is from age group 15-24 years. (CBS, 2011)

Based on baseline survey in Lamjung, 27% respondents said that their interest on agriculture is declining. They also expressed that declining number of family members available for farming has affected their farming. This is because youth prefer going out for foreign employment. It was also observed that in a house,

when the bread winner goes out for foreign employment, the other family members tend to come to town for education for children

8.2. Involvement in Saving and Credit or Cooperatives

Saving and Credits (S&C) groups are prevalent in each VDCs where studies were carried out and many As illustrated on the table below, households who are involved in these groups range from 30% to 84.3%. Cooperatives are also expanding and involvement of HHs is varying from 7% (lowest at Shrilanka village) to 29.1% (highest in Rupandehi).

Table-4: Percentage of HHs involved in Saving & Credit and Cooperatives (primary, field survey 2013)

Involvement	Lamjung	Rupandehi	Udayapur	Kailali (Shrilanka)
HHs involved in S&C Groups	66.50	62.10	84.30	30.00
HHs involved in Cooperatives	46.50	59.20	37.60	10.00
HHs involved either in S&C or Cooperatives	78.10	76.80	85.80	37.00
HHs involved in both S&C and Cooperatives	34.90	45.00	36.10	8.00
HHs involved in none	21.9	23.2	14.2	63.0
Food insecure HHs involved in Cooperatives	22.0	29.1	17.2	7.0

It is notable that significant proportion of households are involved neither in S&C nor in Cooperatives; and frustratingly, very low proportion of the food insecure households (varying from 7% at Shrilanka village and 22% at Lamjung), are involved in Cooperatives.

8.2. Food Security Status

As illustrated by table-5, food security situation shows worse condition in Udayapur. Rupandehi is good. Lamjung and Shrilanka village are below national average.

Table-5: Percentage of HHs according to food security months (primary, field survey 2013)

Food Sufficient Months	Lamjung	Rupandehi	Udayapur	Kailali (Shrilanka)
0-3 months	1.60	2.40	6.50	6.90
3-6 months	6.30	2.50	33.10	7.20
6-9 months	15.00	5.00	22.90	14.10
9-12 months	5.00	4.70	5.90	13.80
12 or more months	72.10	85.40	31.60	58.00
Total Percentage	100.00	100.00	100.00	100.00
Food secure HHs	72.10	85.40	31.60	58.00
Food security @95% Confidence Interval	69.1-75.1	82.6-88.2	28.5-34.7	58.00
Food insecure HHs	27.90	14.60	68.40	42.00
Mean food sec months of food insecure HHs	7.2	6..7	5.7	7..2

From the study, Udaayapur is the most food insecure among the areas of study. On the contrary, Rupandehi is the most food secure. It is noted that Rupandehi is better district. Among the food insecure HHs, the mean value of food security month is 5.7. The highest mean value is at Lamjung, which shows a little bit better condition for food insecure families.

8.3. Farming diversity and food security:

The table below shows the comparative status of food secure and insecure families who sold some vegetable, did off-seasonal farming and cultivated 3 or more crops in the past 12 months.

Table- 6: Involvement of food insecure HHs in crop diversity (primary, field survey 2013)

Area	% of HHs who sold vegetable	% insecure who vegetable	Food HHs sold	% of HHs who did off-seasonal farming	% insecure HHs who did off-seasonal farming	% of HHs cultivated 3 or more crops a year	% insecure HHs cultivated 3 or more crops a year
Rupandehi	16.6	18.8		7.1	14.2	22.4	33.0
Lamjung	NA	NA		12.5	23.0	18.5	25.2
Udayapur	NA	NA		9.8	27.2	7.2	14.6

This table also gives glimpse on a few aspects of commercial farming and crop diversification situation. Overall, status of the both has been found weak. Furthermore, selling vegetable is regardless if they consumed at home or not. Poor and rich sell the vegetable for their earning. But from the table-6, it is obvious that a significant proportion of food insecure households are not able to gain income from vegetable farming. Very low proportion of them was involved in off-seasonal farming; and so is the case for cultivating multi-crops.

The following table illustrates the coping strategies adopted by the respondents, who experienced food insecurity past year.

8.4. Coping Strategies

Table-7: Percentage of food insecure HHs according to coping strategy (primary, field survey 2013)

Coping strategies	Lamjung	Rupandehi	Udayapur	Kailali (Shrilanka)
1. Reduced size/number of meals	0.8	1.9	2.2	5.0
2. Took low quality food	3.3	11.30	1.1	
3. Child discontinued school	0.4	-	1.2	
4. Sold land, productive assets	7.2	1.90	5.30	5.0
5. Took loans from local money lender	7.9	-	50.5	37.0
6. Some family members left village to seek job in other villages or towns	40.9	10.40	16.9	17.0
7. Sold livestock	5.8	0.90	7.5	17.0
8. Family members worked longer hours than normal including seasonal labour	17.1	50.00	0.5	19.0
9. Took loans or borrowed money food from relatives/ friends/ neighbors	10.8	17.90	11.5	
10. Took loans from bank	5.8	5.70	3.30	
Total	100.0	100.0	100.0	100.0

The main coping strategy found is taking loan from local money lenders, from relatives or friends or from the bank (item no. 5,9,10). Taking loan from money lenders is not the preferred option, as they tend to charge higher interest, as expressed by the respondents. Banks provide loan in cheaper interest rates when banks are assured that the loanee is able to pay back. Based on transformational development indicator frame-work and the community defined categories, taking loans from the local money lenders has been considered as non-adaptive coping mechanism.

Family members leaving village to work and extra labour work like daily wages or seasonal works are the other common coping mechanism, which are adaptive strategies. In Terai villages, unskilled labour has good market; whereas in hill areas, people may need to go to other areas for search of work. Areas with better food security are found to have adaptive coping strategies. The following table show the status of adaptive (summary of item no. 1,2,3,4 and 5) and non-adaptive strategies (summary of item no. 1,2,3,4 and 5), adopted by the households.

Table-7: Percentage of HHs according to adaptive and non-adaptive coping strategies

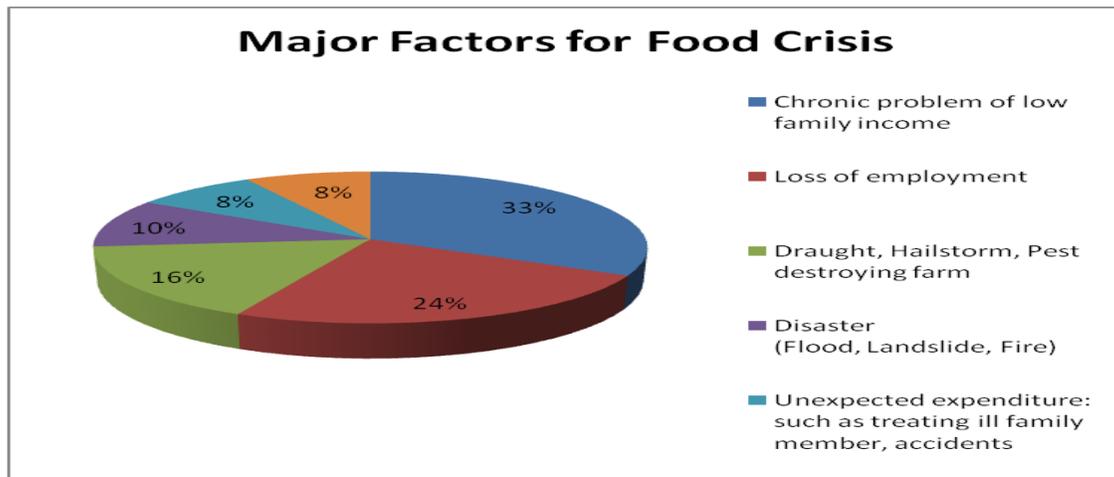
Category of coping strategies	Lamjung	Rupandehi	Udayapur	Kailali (Shrilanka)
Adaptive	80.4	84.9	47.7	53
Non-adaptive	19.6	15.1	52.3	47

8.5. Major causes of food crisis

Based on FGDs, based on the crisis that occurred in the past 12 months , major factor of food crisis is illustrated in the diagram below. It shows the biggest factor is chronic problem of

low family income. Loss of employment is the second biggest factor given the widespread high unemployment rate and risk involved in foreign employment. The other factors are disasters and unexpected situations and family and land issues.

Chart-1: Major factors of HH food insecurity in rural communitiess (Primary, based on FGDs 2013)

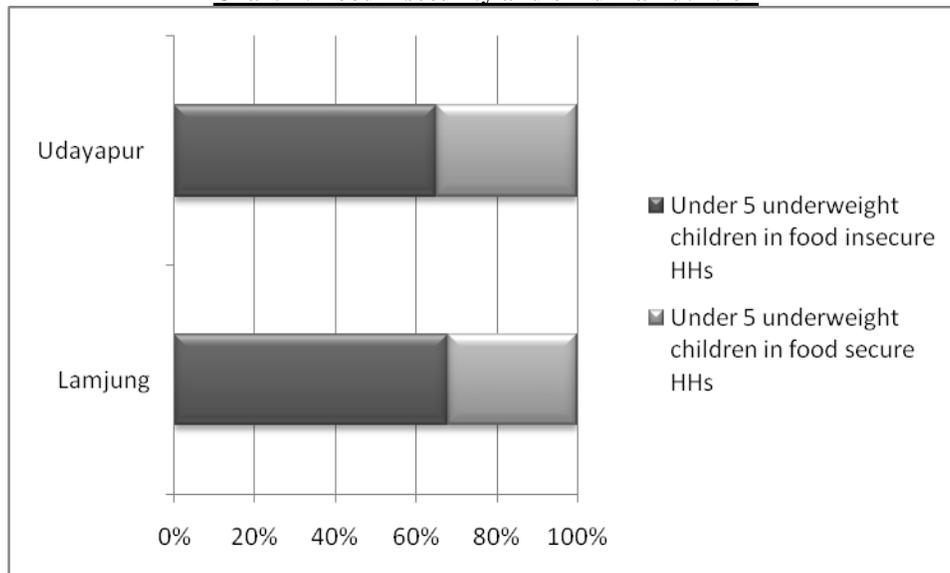


8.6. Effect of food insecurity in child nutrition

Based on Lamjung and Udayapur analysis, proportion of children with malnourishment is comparatively higher in food insecure

HHs. The association of food insecurity with child nutrition is illustrated by the chart below.

Chart-2: Food insecurity and child malnutrition



IV. CONCLUSIONS

Improving Food security for the disadvantaged communities

From the field studies, food security situation is found poor in the marginalized communities. A significant proportion of households do not suffice food till 6 months too. It is important to address this issue. Government has good policies on ensuring food securities but lacks focus and the progress is slaking. Development actors need to seek for long term solution for food security with special attention to vulnerable households. Possible options are farm based income generating activities based on their interest, feasibility and landholding status.

Strengthening adaptive coping strategy

Households applying non-adaptive coping strategies such as selling productive household assets and taking low quality food is a significant concern. The most common coping strategy the households are adopting is taking loans such as from local money lenders. At this, insufficient income to pay back the loan is likely to result into selling productive assets and migration. Self/employment opportunities are to be expanded as discussed already. Affiliation in the Saving and Credit Groups and Cooperatives need to be promoted; since there is low proportion of poor families in these organizations. This improves the social networks and provides access of fund during the crisis.

There are already existing good practices of coping strategies in the communities, some of which this study might not have explored. Good coping strategies need to be promoted. Adopting farming technologies to adapt the climate change are something important to look for.

Addressing vulnerabilities to food crisis

In section 7.5, the causes of the food insecurity has been discussed. Chronic poverty, loss of employment and the other adversaries such as localized disasters or unexpected adversaries to productions are the key risks for food security. In section 7.6, impact of food insecurity in nutritional status of children has been highlighted. Therefore, given food security is a multi-faceted issue, there should be a good sectoral integration to address these issues and improve the food security in the long term. Sectors like education, agriculture, health, forestry, infrastructure need to have a common effort on access, availability, utilization and stability of the food security.

For building disaster resilient communities, systematic capacity of community to prepare for and respond to local disaster needs to be strengthened. Moreover, developing measures to store and process foods; protect livestock and household assets can be helpful to prepare well for any local disasters. Disaster Risk Reduction need to be integrated at the local among the development sectors. Three years approach paper envisions that local bodies will design and implement programmes to address the issues of climate change adaption and disaster management. (NPC, 2013, p.113), which is very important to pursue.

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