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(RESEARCH ARTICLE)

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Sustainable Development and Indigenous livelihood: A case study analysis of Chepang and Tamang in Nepal

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Abstract

Sustainable development is the novelty and best practice for the marginal Chepang and Tamang who manage traditional livelihood to manage food security and nutrition in Nepal. This study aims to examine the ongoing livelihood patterns and challenges of Chepang and Tamang in Makwanpur and Chitwan districts following farming practices. A cross-sectional design with mixed method analysis with purposive stratified sample method was used and 94 surveyed houses were answered from the three LG of Makwanpur and Chitwan districts during Dec 2024-Jan 2025.

The result illustrated that both the surveyed Chepang and Tamang practicing traditional farming anticipate seasonal food stock and traditional knowledges that fit best for sustainable development. In addition, the ongoing farming is traditional and low returning challenging the livelihood patterns. Climate Change, lack of farming skills, and market connectivity is limited and farmers are depending on readymade market stock which is drawbacks of sustainability. The primary and secondary livelihoods are farming and wage labors patterns are gradually changing into dependencies. The local and traditional farm production are reducing due to a lack of technical knowledge, climate, and inappropriate support from the development agencies. Lack of production and self-sufficiency are limited. The self-sufficiency P value is highly significant and Negative correlations shows that food sufficiency and farming are highly associated each other. The study concluded the farming practices of Cheapng and Tamang are traditional insufficient and depending more in market access. The Development supports are limited and lack of sectoral development activities added challenges in sustainable development and future livelihood. Local Production enhancement and multiple livelihood options are suggested to manage food and sustainability in farming practices are advised.

Keyword: Sustainable Development; Livelihood; Farming; Income; Diversity

1. Introduction

The Sustainable Development Goals (SDGs) were first discussed formally at the United Nations Conference on Sustainable Development held in Rio de Janeiro and then at the UN General Assembly in 2014. Ahead of the MDG deadline, the UN Open Working Group (OWG) for SDGs proposed a set of 17 SDGs with 169 targets for the period 2016 to 2030 (NPC, 2017). Likewise a total of 17 goals were targeted/ set in Nepal to manage development starts from no Poverty to till the institutional partnership for the Goals.

Nepalese primary occupation is farming followed by the forest resources that contributed nearly 40 percent in income (NPC, 2013).

The Chepang indigenous, one of the 59 groups of indigenous peoples of Nepal have practiced traditional farming called shifting cultivation. The called Praja, are regarded as the most marginalized and poor group in Nepal due to low income

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and lack of access. Chepang reside in Chitwan, Makwanpur, Dhadhing and some part of Gorkha district in Nepal. CBS (2003) recorded a total of 52,236 population (CBS, 2003), that has reached up to 65,000 in 2023 (NSO, 2024). In Makawanpur, the number of the Chepang is about 23,210 (NCA, 2013). The figure now has reached 33,000 nearby by the end of 2024 and still many people are involved in farm based activities. The Chepang are the most vulnerable resource poor and marginalized and socio-economical deprived ethnical community depends on natural forest resources. On the other hand, Tamang are an indigenous inhabitants of the Himalayan region tibeto-burmen speaking communities have their unique and distinct culture, language and religions are distinct than Chepang. Tamang are marginalized too and following traditional and social life residing in Makwanpur, chitwn together in the same settlement. The food security and livelihood of both communities are season insecure and traditional farming is considered the most sustainable activities that manage environment and manage food security (Chhetri & Silwal, 2015; Piya et al., 2011).

For sustainable development, both Chepang and Tamang are following agroforestry practice that considered the best practice in the rural rugged and sloping areas. This generates production, livestock, farming product that helps people to manage livelihood and for the self-sustainability Agroforestry largely provides benefits like high production and multiple crops benefits (Kang, 1984). After several development interventions, the development speed of Makwanpur and Chitwan has increased, Vegetation and greeneries not only helps in earning rather helps in climate anticipate sustainability (MDI, 2011).

The sustainable livelihood concept was put forward by Brundtland Commission on Environment and development at first as a way of linking socio-economic and ecological consideration in cohesive policy-relevant structure (WCED, 1987). The studies show that livelihood strategies are basically based on agriculture, livestock and forest related activities. Agriculture plays a vital role in rural livelihoods in generating income and providing fuel, construction materials, and animal feed (Paudyal, 2017). To sustain rural livelihoods, a range of activities are pursued including both the access to and the use to which they can be and are mediated by social factors (social relations, institutions, organizations) and by exogenous trends (e.g. economic trends) and shocks (droughts, diseases, floods, pests) (Ellis, 1999).

Chhetri and Silwal (2015) found that Chepang and Tamang gradually improving Livelihood through Farming practice. Farm-based plantation help managing local Food security and maintain Sustainable Development. However, the other social and economic factors are yet to address in the sustainable development. Market sale and purchase are still common trend in the present time but this is essential to check the present status of Chepang and other ethnics (Gurung, 1990; Chhetri & Silwal,2015).

After Federalization act 2015, Chepang and other ethnics like Tamang, Rai, Magar and other people benefited from the service of Local Government (Chhetri et al., 2020). Sustainable Development was a key issue for the development agencies to manage local livelihood. Farm-based production like maize, millet and other local products increased the food security situation that were produced from the own field. This traditional farming and sustainability is somehow linked with ethnics in Makwanpur and Chitwan district (Chhetri & Silwal, 2016).

Hence, previous study related many facts of Chepang and Tamang like, the livelihood pattern and sources are traditional and align with Sustainable development, but after Federal system, the trend has been change due to development limitation and priorities are changed and thus, this study designed to analyses the ongoing livelihood pattern and the challenges on the study area aligning will highlights the major sources and can revealed the sustainability scenario in the study area.

2. Methods

This is a cross sectional purposive study following mixed method where both Qualitative and Qualitative research methods will be apply. The Chepang and Tamang houses will be purposively choose from the Ward no 5 of Kalika Municipality of Chitwan district and comparatively Manahari RM of Makwanpur district for the cross tabulation and better analysis Graph-1.

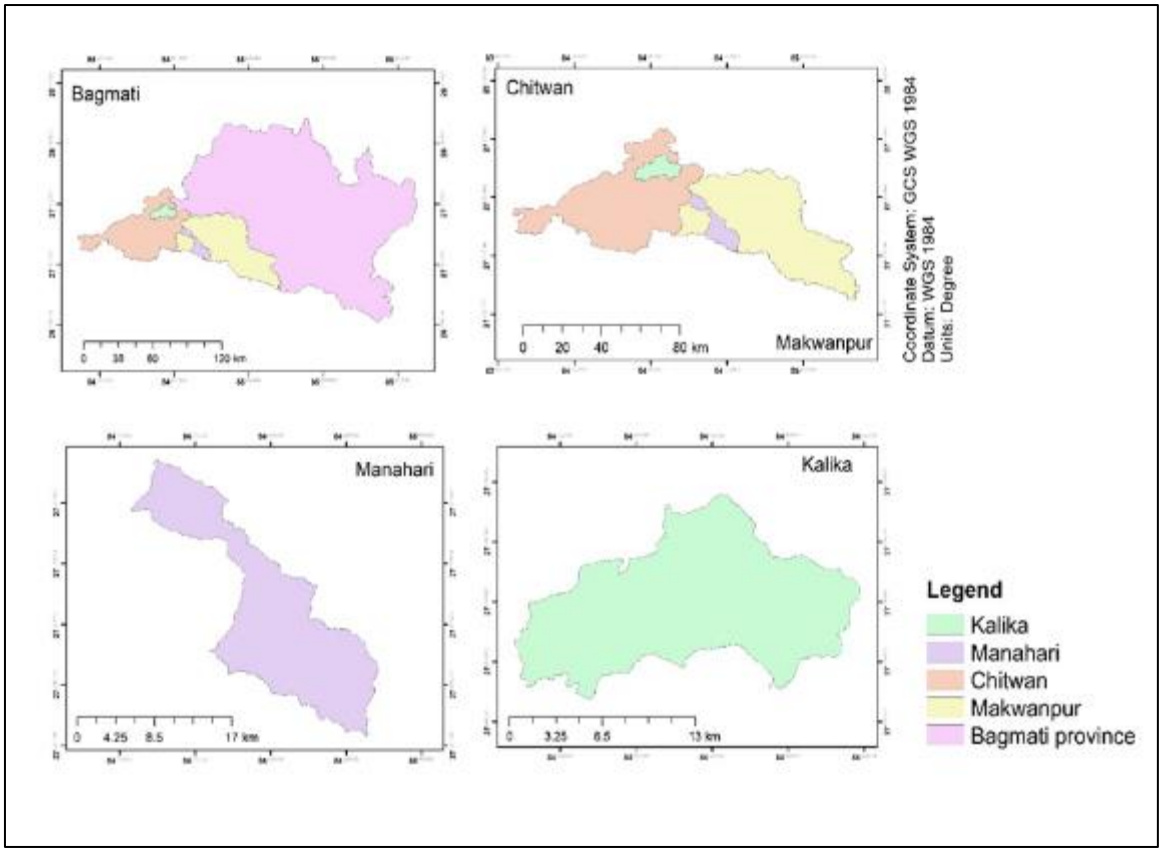


Figure 1 Map of study area

For the sample of the houses a total of 86 households were selected for this study (Manahari:-42 houses(Tamang-20, Chepang-22), Kalika:- 44 houses (Tamang-23, Chepang-21)A HHs question were developed (Annex-1) and various check list like FGD, KII formats were used to captured the data from the field. The study took more than 30 days in Dec 2024 to Jan 2025. All data were compiled entered and tested through MS Excel and SPSS Vol 24 for the correct analysis. Mean, graph and tables were introduced and t-test and regression analysis were presented in the result section.

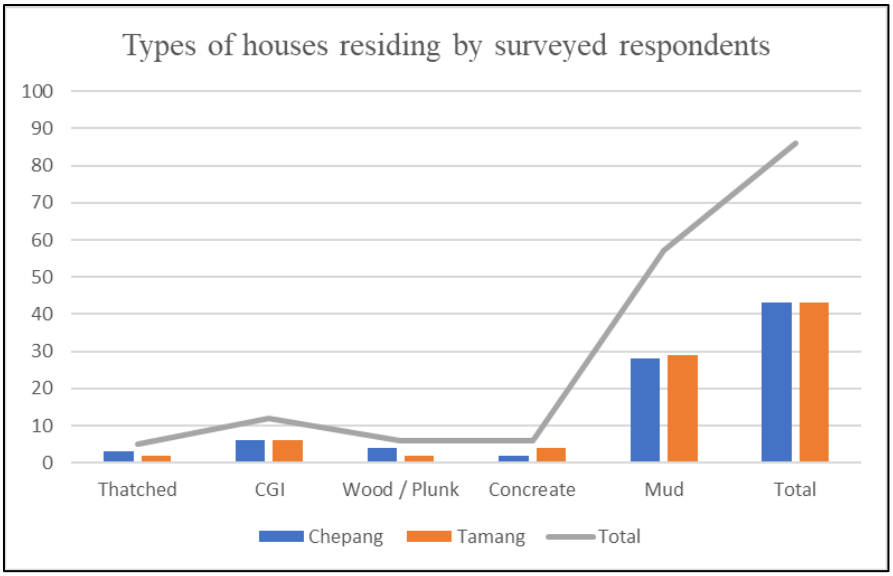
The research further collect information from the Local Government offices (Kalika and Manahari Local Government) and Information from Social sectoral, Expert from the field, lead farmers, Local traders, school and NGO were contracted for the better elaboration and activities that were done previously in the study area. In addition, Nepal Chepang Associations, Indigenous Organization were consulted for the brief information related to the Chepang/ Tamang project intervention and activities done in the previous time. In addition, information from the secondary review like Journal articles, thesis, books and various web pages were search and captured from the various review.

A research question was developed to manage two major analysis of ongoing livelihood and challenges are given below:

- What are the livelihood sources and how they are managing following sustainable farming system?
- This research question will guide the study and results will be carried out following research questions.

3. Results

In this section, the analysis is made based on the data collection from the field addressing the research question.



(Source: Field survey, 2025)

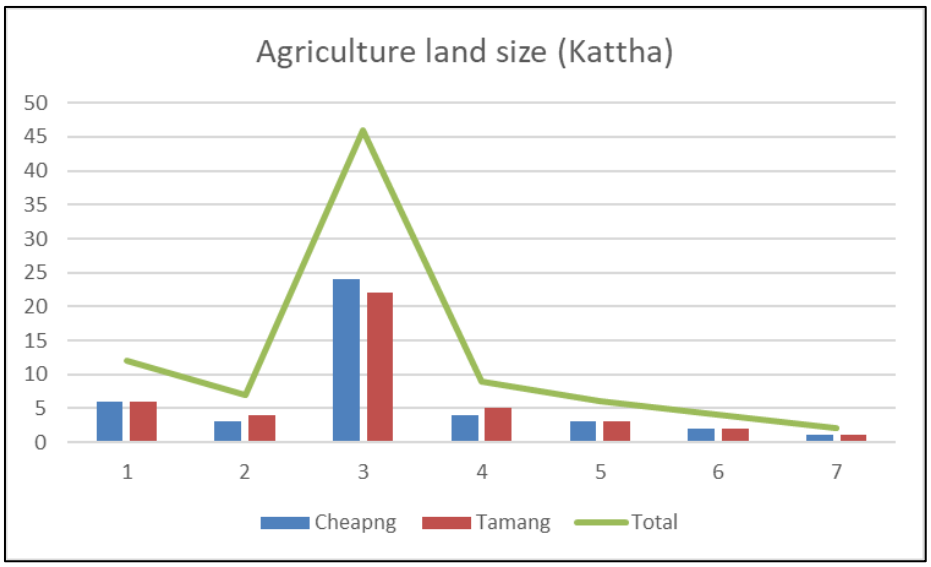
Figure 2 Houses types

The majority of respondents in the study area have found residing in Mud houses followed by CGI sheet as a second largest types of houses within the area. This clearly shows that the demographic status of both surveyed are average or poor and somehow associated with average livelihood.

In addition, thatched and wood plunk houses also seen poorly constructed in the study area that may not last for more than 2-3 years and this indicates that houses demographic status is poor or average.

To confirm this KII added that ethnics are poor and the wealth indicators can observed from the concreate house indicates that the income of the houses are somehow increased.

Annex-4 witnessed that the houses are diverse and thatched/ mud and CGI sheets are in the same areas, the majority of mud were high.



(Source: Field Survey, 2025)

Figure 3 Agriculture land size

From the socio, economic perspectives, the land size of the surveyed peoples varies in between 1 to 7 Kattha per houses that belong to own or lease farming to manage food security. The land size indicates that the average statistics of land

is 3 Kattha for the majority of the people and for people still 1 kattha land holding people are around 5 HHs in both Tamang and Chepang areas. This clearly indicated that the farming are is insufficient to manage production and for any agricultural promotion and sustainable development activities land is limited and challenging for the people to manage food for a year.

In farming land, Maize, Millet are common cereals for all and very few reported cultivating paddy in limited areas. The types of land is not irrigated and most of the land belongs to rain fed and uplands.

Annex-2 added that the family size is little higher in the surveyed area and this sometimes help in farming but in income perspectives high effort is required.

Table 1 Food Sufficiency from own production

Food sufficiency from own production	1	2	3	4	5	6
Chepang	6	4	24	2	3	4
Tamang	6	5	22	3	3	4
Total	12	9	46	5	6	8

(Source: Field Survey, 2025)

From the sole production of own land, the majority of houses manage food stock up to 3 months (46 responses) and still 12 houses have only 1 months food sufficiency and only 8 houses have 6 month food sufficiency from own production, This clearly indicates that self-production is insufficient to manage local livelihood and Chepang and Tamang traditional farming patterns like rain fed and plantation of traditional seed somehow sustaining land, and average production but large production input and effort both. Farmers claimed that input and large mechanization is not available with them and limited food sufficiency throughout year has no alteration.

The average family mean shows 5.70 (Annex-3) indicated that the family size is little bigger in the surveyed communities and food portion and income required additional effort to manage local livelihood and sustainable development point of view farming and major livelihood required hard effort to manage sustainability.

Annex-5 revealed the Regression (0.000) and Correlation (Negative -.001) statistics is highly Significant for the surveyed area and P value stands 0.000 within 86 surveyed houses which is less than 0.005 shows that the food security and production from the own land is associated with each other and highly related to each other.

KII and Farmers added that the market dependencies have increased now, Rice, Pulses and other foods items are ready in markets and Chepang and Tamang are now speeding trend of market dependencies are drawback of sustainable development because farming activities are declining gradually.

Table 2 Livelihood summary of respondents in the study area

Livelihood		Agriculture	Livestock	remittances	salary	Business	Wage labor	Social grant	Forest product sale
First	Chepang	32	2	1	1	3	1	1	2
	Tamang	32	2	1	1	3	1	1	2
Second	Chepang	7	6	2	0	2	22	2	2
	Tamang	7	6	2	0	2	22	2	2

(Source: field survey, 2025)

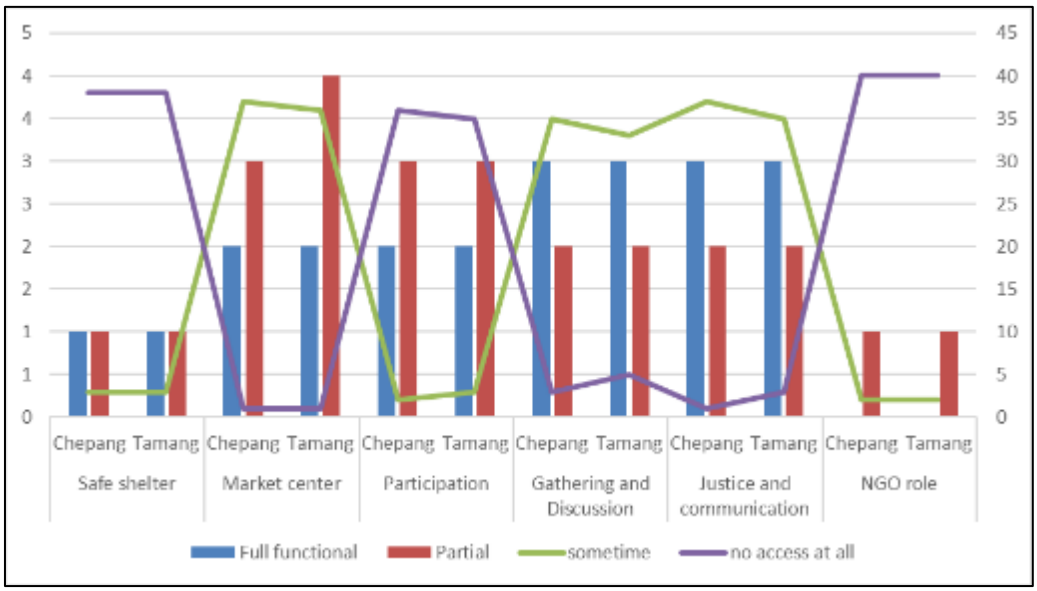
Aligning with previous data, the primary source of Livelihood is agriculture followed by wage labor as the second prime source of livelihood. Agriculture deal with Maize, millet and paddy in cereals. In most of the area, cash crop like vegetables, legumes and oilseed generate cash income and thus agriculture remain the primary mode of Livelihood.

For both Chepang and Tamang community, nearby wage (On/ off) farm activities are high. People earning NRS. 600 to 800 per day for unskilled work and for skilled NRS. 1000 per day stands the normal wage for mason, wood carpenter. During crop plantation season both communities are earning NRS. 400 per day. In season average of 15 to 20 days work opportunities around but in off season people out migrated to other areas and earned from the wage work.

The income mean is 5.95 followed by expenditure mean 5 means expenditure (Annex-3) is lesser than income. Expense on Food and Non-food is similar stated by the houses during survey.

KII and FGD, and Surveyed communities (Annex-4) added that the sustainable farming practices are local seeds plantation in owl land, the local fertilizers and uses of markets pesticide is high in the area. Due to land limitation the mechanization and high input support mechanism is not seen in the area.

Agriculture Unit added that Chepang are traditional and promote local and traditional cultivation. Maize, Millet, paddy, cash crops, Legumes and oilseeds are mostly locally available and promote in the land, Very few are using outsourcing labor and applying mechanization. The rain fed irrigation is the primary source for them and tis pattern is little changed due to erratic rainfall since the last 3 years affected the sustainable farming cycle of the study area. This challenges affecting into the household food security and both communities are low interested towards own farming investment.



(Source: Field visit, 2025)

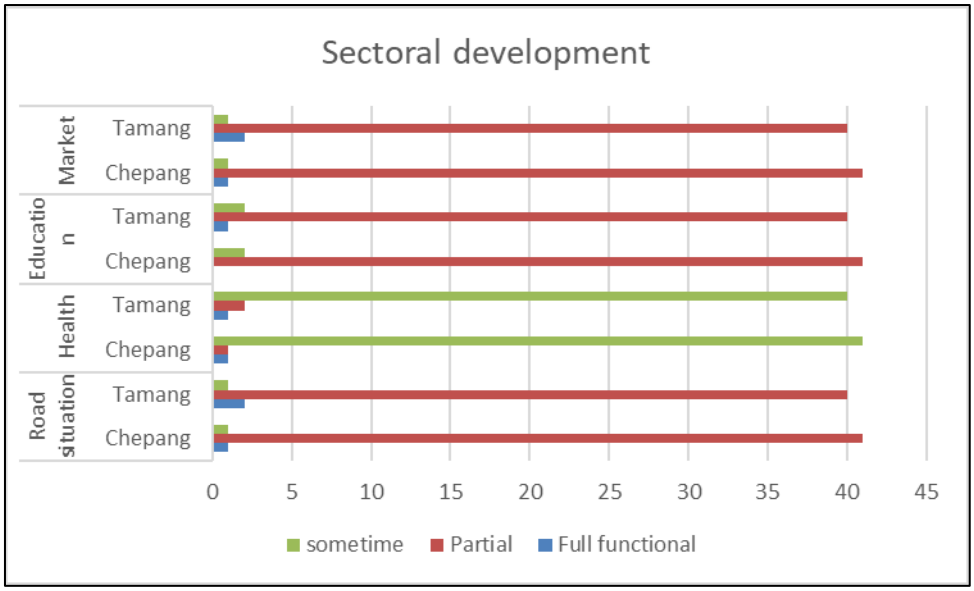
Figure 4 Access opinion of the various development systems

From the access perspectives, Both Chepang and Tamang trend of accesses are average towards Market centered, Participation, and NGO access and for the Safe Shelter. But in case of Gathering and Discussion, the majority of surveyed population have opted full functional. Justice and communication remains average. The access point of view are real. In the study area the lack of community shelter like vegetable collection center, Disaster safe rooms and other safe evacuation structure is limited.

The nearby market is Bharatpur for Kalika and Manahari/ Rajaiya for the ward 4 which is nearly 10-12 km away, this access of market is little far and local market is limited functional.

The NGO role is limited in the area as lack of funding and after federal system all activities of sectoral development is taking care by the Local Government. The justice and communication recorded limited as Chepang and Tamang voices and development demands like houses, income, sustainable development in infrastructure and lack of employment are not addressed. From the Political perspectives, the gathering is ongoing but only smart people benefited from the gathering and holds the opportunities.

KII added that Chepang are marginal and poor than Tamang, Chepang are limited and addressing their needs is challenging, the major point is limited land and no skills.



(Sources:- Field visit, 2025)

Figure 5 Sectoral development status opinion of respondents

The sectoral development status also indicates limited functional and partial, The roads, are black top in the area but the settlement of surveyed are gravels, Health system are limited and all facilities are not proving in the ground level because for the higher medical treatment people move to district headquarters. For Market functioning, the markets is small in the area and cannot meet the demand of the people. For farm gate price and other related services, the big market determined the price and local markets are partial filling the people's demands.

The overall trend of sectoral development show that the local infrastructure services and demands are high and accelerating accordingly, this structural promotion affecting local agriculture and forest production and this way the sustainable development activities are challenging and high/ low precipiation and adverse climatic issues are another challenges of farmers.

4. Conclusion

The study further concluded that the Chepang and Tamang both follows traditional livelihood earning modes are agriculture and wage labors. The household food security is average and depends on the farming activities. The traditional farming practice and sustainable development is challenging as the technical knowledge is limited and traditional income opportunity cannot manage livelihood for long time and this causes a change in the pattern but following similar livelihood strategies is depending more on more in the market products which is one of the drawback of the future cultivation and low interest towards ongoing development support and returning from the local production is somehow insufficient income sources for both Chepang and Tamang. Hence, comprehensive livelihood options are required that change and support the houses following ongoing state and LG policies. Local production enhancement would be the best method to sustain and manage livelihood.

Disclaimer: The author is underway Ph.D. study from the Pokhara University and thankful to all surveyed participants of Makwanpur and Chitwan district for the true and valuable answer.

Compliance with ethical standards

Acknowledgement

The author Kabita Khatiwadahas been working as Assistant Lecturer at Balkumari College and Nursing Director of Manakamana Hospital and Chairman of Mother Child Health Nepal (MOCHEN) NGOs, Chitwan district, Nepal. She is underway Ph.D. study from the Pokhara University, Nepal. Author would like to thanks all respondents and research mentors of Pokhara University for this achievement.

Disclosure of conflict of interest

Not any, Consent and approval from the University and Local Government were taken to perform this research, Thus, No conflict arouses.

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Annexes

- Annex-1, HHS questions

HHS Questionnaires

Sustainable Development and Indigenous Livelihood

HH Types:……Ward no:……., Palika……..

Q no	Questions	Responses
1	Total HHs family members	Total…….Nos, Above than 50 years…….less than 15 years…….16th to 49…… (Physical Presence)
2	Residing in	Thatched, b) CGI, c) Wood / Plunk, d) Concreate, e) Mud
3	Agriculture area (Own/ Lease)	……Kattha

4	Farming practice	Cereal (Maize, millet) with Leumes, b) Only Cereals.
5	Food Sufficiency from own production	Up to 1 month or less than that, b) Up to 3 months, c) Up to 6 months, d)Up to 9 months, e)Up to 12 months and above
6	Livestock information's	Goat/ Sheep……., Cow/ Buffaloes…… Hen/ Duck/ Pigeon……., Pig……
7	Source of irrigation	Rain fed, b) Lowland/ Irrigation through river,
8	Livelihood-First	Agriculture, b) Livestock, c) remittances, d) salary, e) Business, f) Wage labor, g) Social grant, h) Forest product sale
9	Livelihood-second	Agriculture, b) Livestock, c) remittances, d) salary, e) Business, f) Wage labor, g) Social grant, h) Forest product sale
10	Challenges of agriculture	No human, b) Climate change impact, c) No input support, d) No technical support, e) Poor Market, f) Poor technical extension, g) Dependency in market purchase,
11	Challenges of animal husbandry	No human, b) Climate change impact, c) No input support, d) No technical support, e) Poor Market, f) Poor technical extension, g) Dependency in market purchase, h) NA
12	Challenges of jobs/ businesses	No human, b) Climate change impact, c) No input support, d) No technical support, e) Poor Market, f) Poor technical extension, g) Dependency in market purchase, h) NA
13	Challenges on forest product	No human, b) Climate change impact, c) No input support, d) No technical support, e) Poor Market, f) Poor technical extension, g) Dependency in market purchase
14	Estimated monthly income from all sources per months? Current	……NRS
15	Estimated month expenses from all sources	……NRS
16	Roads situation-access	Full functional, b) Partial , c) sometime, d) no access at all
17	Health situation	Full functional, b) Partial , c) sometime, d) no access at all
18	Education	Full functional, b) Partial , c) sometime, d) no access at all
19	Market services	Full functional, b) Partial , c) sometime, d) no access at all
20	Community structure like safe shelter	Full functional, b) Partial , c) sometime, d) no access at all
21	Community market center	Full functional, b) Partial , c) sometime, d) no access at all
22	Participation	Full functional, b) Partial , c) sometime, d) no access at all
23	Gathering and discussion	Full functional, b) Partial , c) sometime, d) no access at all
24	Justice and communication	Full functional, b) Partial , c) sometime, d) no access at all
25	How do you rate the NGO role in social development	High, b) Average, c) Low, d) NA
26	How do you rate the LG role in social development	High, b) Average, c) Low, d) NA
27	Private Sector role	High, b) Average, c) Low, d) NA
28	Federal or Provincial	High, b) Average, c) Low, d) NA

Annex-2, Total HHs family members

Total HH family memebrs	2	3	4	5	6	7	8	More than 10	Total
Chepang	1	8	3	5	7	17	1	1	43
Tamang	1	6	4	6	6	18	1	1	43
Total	2	14	7	11	13	35	2	2	86

Annex-3, Mean statistics summary

		Total HHs family members	Residing in	Agriculture area (Own/ Lease)	Food Sufficiency from own production	Cow/ Buffaloes	Pig	Birds/ Poultry	goats	Estimated monthly income from all sources per months? Current	Estimated month expenses from all sources
N	Valid	86	86	86	86	86	86	86	86	86	86
	Missing	0	0	0	0	0	0	0	0	0	0
Mean		5.70	4.14	3.12	3.09	11.50	11.62	3.40	5.74	5.95	5.00
Std. Deviation		1.822	1.347	1.350	1.360	2.279	2.030	2.846	4.638	.781	.686

Annex-4, Household survey, interaction with farmers about the livelihood situation

Annex-5, P and Regression status of Food sufficiency from own production

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	0.000	0.108	0.000	1.000[c]
Ordinal by Ordinal	Spearman Correlation	-0.001	0.108	-0.009	0.993[c]
N of Valid Cases		86			