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PRADESH VIKAS

(A Journal of Provincial Development)

वर्ष ४, अङ्क १ | Volume 4 Issue 1

२०८१ असार | 2024 JULY



बागमती प्रदेश सरकार

प्रदेश नीति तथा योजना आयोग

हेटौंडा, नेपाल

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सल्लाहकार समिति

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सम्पादकहरू

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श्री पुष्कल श्रेष्ठ
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प्रकाशक

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प्रदेश नीति तथा योजना आयोग,
हेटौंडा, नेपाल

यस जर्नलमा प्रकाशित लेखहरूमा व्यक्त विचारहरू सम्बन्धित लेखकहरूका निजी विचारहरू हुन् र तिनले प्रदेश नीति तथा योजना आयोग, बागमती प्रदेशको विचारको प्रतिनिधित्व गर्दैनन्।

(Opinions expressed in the articles published in this Journal are the views of respective authors and not represent the views of Province Policy and Planning Commission, Bagmati Province.)

सम्पादकीय

सङ्घ, प्रदेश र स्थानीय तहलाई नीति, योजना र कार्यक्रम तह गर्न सहयोग पुग्ने अनुसन्धानात्मक लेख रचनाहरू प्रकाशन गर्ने हाम्रो मुख्य लक्ष्य हो ।

प्रदेश विकास जर्नलको चौथो अङ्कमा आठ ओटा अङ्ग्रेजी र तीन ओटा नेपाली भाषाका गरी जम्मा ११ ओटा लेखहरू समावेश गरिएका छन् । यस अङ्कमा चेपाङ समुदायको खाद्य सुरक्षाको अवस्था र त्यसलाई सम्बोधन गर्ने रणनीतिहरू, कृषकको जीवनस्तर उकास्न अर्थराजनीतिक कृषि विकासको ढाँचा, लैङ्गिकताको दृष्टिकोणबाट स्रोत र कृषि सम्बन्धी निर्णयमाथिको नियन्त्रणको अवस्था, बागमती प्रदेश सरकारद्वारा सञ्चालित व्यावसायिक तथा सिप विकास तालिमको उपयोगिताको अवस्था, नेपालमा कोभिड-१९ नियन्त्रण, स्व-व्यवस्थापन र संयुक्त संयुक्त व्यवस्थापनमा सञ्चालित सिँचाई प्रणालीको दिगोपना, नेपालमा ज्ञान अर्थतन्त्रको वास्तविकता र सम्भावना, स्रोतमा फोहर वर्गीकरण र व्यवस्थापन, नेपालमा जलवायु परिवर्तनका प्रभावहरूसम्बन्धी अर्थराजनीतिक दृष्टिकोण, सिमान्तकृत समुदायको स्वास्थ्य सेवा लिने सम्बन्धी मानवशास्त्रीय दृष्टिकोण र नेपालमा ऊर्जाको अवस्था र यसका आधारभूत कारणहरूसम्बन्धी लेखहरू समेटेका छौं । हाम्रो आग्रहलाई स्वीकार गरी आफ्ना अमूल्य लेख रचना मार्फत सहयोग पुऱ्याउनु हुने विद्वान लेखकहरूप्रति सम्पादक मण्डल हार्दिक कृतज्ञता व्यक्त गर्दछ ।

यस जर्नलमा प्रकाशित लेखहरू तीनै तहका सरकारका नेतृत्व वर्ग, योजनाकार, उच्च अधिकारी, विश्वविद्यालय, अनुसन्धानात्मक संस्थाहरू, अध्येताहरू, निजी क्षेत्र, सहकारी, विकास साझेदार, नागरिक समाज, सञ्चार जगत, गैरसरकारी संस्था र विकासमा चासो राख्ने सबैका लागि उपयोगी हुन सक्दछ ।

यस अङ्कमा केही कमजोरीहरू रहेका हुन सक्छन् । ती कमजोरीहरू औल्याइ दिनुहुन र अगामी अङ्कलाई थप स्तरीय बनाउन उपयुक्त सुझाव तथा सहयोग उपलब्ध गराई दिनुहुन विद्वान पाठक र लेखकहरूमा सम्पादक मण्डल हार्दिक अनुरोध गर्दछ ।

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Food Security and Coping Strategies of the Chepang Community in Bagamati Province, Nepal

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(Article Type: Research Article)

Abstract

The Chepang community is the 44th largest community out of 142 caste and ethnic communities in Nepal, and the 12th largest community out of 136 caste and ethnic communities in Bagamati Province. It is one of the most marginalized and predominantly agricultural communities in Nepal. This study was carried out during May-June, 2024 in the Chepang Special Protected Area in Bagamati Province. The key objectives of the study were to investigate the food insufficiency status of the Chepang community, production of indigenous food crops and the coping strategies of the community at the time of food shortage. Taking into consideration the nature of the study, both quantitative and qualitative approaches, methods and data were used to carry out the study. It is based on the 200 households randomly selected from the eight Palikas of the Chepang Special Protected Area. It was found that their own production is not sufficient throughout the year for 68 percent peasant families. Moreover, 79.7, 66 and 26.4 percent of the peasant families produce local maize, millet and buckwheat respectively. Borrowing of food items, going for daily wage jobs, purchase on credit and seeking debt/loan for buying foods they needed are the key coping strategies of the Chepang households at the time of food shortage.

Key Words: Chepang Special Protected Area, Food Security and Coping Strategies.

1. Introduction

Chepang Community is one of the mostly marginalized communities in Nepal. Once, they have their own kingdom with four kings (Bista, 2019). In the past, their main sources of livelihood were the hunting of wild animals, birds and gathering of wild fruits. Their agricultural practice, *khoriya kheti*, was very primitive in nature in comparison to that of the agricultural practices of other communities. Keeping in mind the reality, with the objective to mainstream them into the development process, then His Majesty

the Government of Nepal introduced 'Prajā Bikash Karyayam' (Chepang Development Program) (Wikipedia, 2023). This program was being implemented until the democratic era. In the Federal Republic Era, Bagamati Province Government declared the eight local governments (Palikas) from Chitwan (3 Palikas), Makwanpur (3 Palikas) and Dhading (2 Palikas) districts as Chepang Special Protected Area for socio-economic transformation of the Chepang Community (Bagamati, 2022). After the declaration, Bagamati Province Government started giving priority to development of the Protected Area. The '*Chepang, Chiuri and Chamero*' and the '*Nutrition Special Program*' are the few examples in this regard.

In Nepal, it is the 44th largest community out of 142 caste and ethnic communities, and in Bagamati Province, it is the 12th largest community out of 136 caste and ethnic communities (except the communities mentioned under 'Others', 'Foreigner', and 'Not Stated' categories) (NSO, Nepal Population and Housing Census, 2021). The Chepang community accounts for 0.29 percent of the total population of Nepal while it accounts for 1.27 percent of the total population of Bagamati Province. Altogether, 98.12 percent of the total population of Chepang community of Bagmati province are living in three districts only, namely; Chitwan, Makawanpur and Dhading (Table 1).

Table 1: Population of the Chepang Community in Nepal

| SN | Particulars | Population in Number | | Chepang Population in Percent (%) |
|----|-----------------------------|----------------------|------------------|-----------------------------------|
| | | Chepang | All Castes Total | |
| A | Chitwan | 35,637 | 719,859 | 4.95 |
| B | Makawanpur | 23,650 | 466,073 | 5.07 |
| C | Dhading | 17,160 | 325,710 | 5.27 |
| D | Sub Total (A+B+C) | 76,447 | 1,511,642 | 5.06 |
| E | Other Districts of Bagamati | 1,467 | 4,605,224 | 0.03 |
| F | Bagamati Province Total | 77,914 | 6,116,866 | 1.27 |
| G | Nepal | 84,364 | 29,164,578 | 0.29 |

Source: Nepal Population and Housing Census, 2021, National Statistics Office, Kathmandu, Nepal.

Available data and researches confirm that the community is predominantly an agricultural community. It is widely accepted that, in the agrarian community, land is the main source for the livelihood of the people (Paudel, 2003). Land is primarily used for agriculture. Hence, there is no doubt that agricultural is the main source of family income for the Chepang Community. In accordance with the Article 36 of the Constitution of Nepal, every citizen has the right to food and to be safe from the scarcity of food (The Constitution of Nepal, 2015). In accordance with the Article 25 of the Universal Declaration of Human Rights, everyone has the right to food and livelihood (UN, 2015). It means that food security is the primary concern of every person, community, state and the global community as well. For several reasons including social, cultural and evolving stage of the community, the Chepang Community, like many other indigenous communities, engages in the production of indigenous food crops. Hence, this study is related to the food security issues of the Chepang Community. It focuses on the eight *Palikas* that belong to the Chepang Special Protected Area, namely; Manahari, Raksirang and Kailash Rural

Municipalities of Makawanpur District; Rapti and Kalika Municipalities and Ichhakamana Rural Municipality of Chitwan District, and Gajuri and Benighat Rorang Rural Municipalities of Dhading District.

2. Objectives

The objectives of the study were as follows:

- to investigate the food insufficiency status in the Chepang community,
- to investigate the production of indigenous food crops, particularly the local maize, millet and buckwheat, and
- to identify the coping strategies adopted by the Chepang Community at the time of food shortage.

3. Methodology

A. Approach, Methods and Data Types

Taking into consideration the nature of the study, both quantitative and qualitative approaches, methods and data were used to carry out the study. Desk review, household survey, focused group discussions, and the key Informant Interviews were the key methods of the study. Firstly, relevant reports and documents were reviewed for collection of the required secondary data and information. Secondly, a structured questionnaire for household survey was developed, tested, revised and used to collect the required fresh qualitative and quantitative data and information from household level. Thirdly, sixteen focused groups discussions (two in each Palika) were carried out to collect information about the current situation of the community. And lastly, a few key Informant Interviews with ward/palika chairpersons and thematic field officials of the province government were carried out in Makawanpur, Chitwan and Dhading Districts to validate the collected data and information and to explore new insights that the study team was unable to collect from the review of existing documents and household survey.

B. Sample Size

Based on the subjective judgement of the study team, altogether 200 Chepang households (HHs) were selected for the study from different settlements of the eight *Palikas* that belong to the Chepang Special Protected Area, namely; Manahari, Raksirang and Kailash Rural Municipalities of Makawanpur District; Rapti and Rapti Municipalities and Ichhakamana Rural Municipality of Chitwan District, and Gajuri and Benighat Rorang Rural Municipalities of Dhading District. Out of 200 samples, the size of the samples for each *Palika* were determined proportionately based on the proportion of the Chepang HHs of respective Palika (Table 2).

Table 2: Size and Distribution of the sample households

| SN | Palikas | Chepang Population | Population Proportion | Distribution of Sample HHs |
|----|---------------|--------------------|-----------------------|----------------------------|
| 1 | Ichchhakamana | 10,338 | 0.150 | 30 |
| 2 | Kalika | 8,806 | 0.128 | 26 |
| 3 | Rapti | 11,913 | 0.173 | 35 |
| 4 | Gajuri | 4,603 | 0.067 | 13 |

| SN | Palikas | Chepang Population | Population Proportion | Distribution of Sample HHs |
|-------------------------|-----------------|--------------------|-----------------------|----------------------------|
| 5 | Benighat Rorang | 11,815 | 0.172 | 34 |
| 6 | Kailash | 5,021 | 0.073 | 15 |
| 7 | Raksirang | 11,427 | 0.166 | 33 |
| 8 | Manahari | 4,944 | 0.072 | 14 |
| Study Area Total | | 68,867 | 1.000 | 200 |

Source: Nepal Population and Housing Census, 2021, National Statistics Office, Kathmandu, Nepal.

C. Data Analysis and Presentation

Data collected from the HHs Survey were analyzed in SPSS 23 and generated required tables and charts for analysis and presentation. Simple arithmetic mean, and percent were used to interpret and draw inferences.

4. Results and Discussion

a. Main Source of Family Income

Out of 200 households, agriculture and livestock was the main source of family income for 174 (87 %) households, daily wage labor was the main source of income for 22 households (11 %), and domestic employment, foreign employment, social security allowance and others were the main sources of family income for 4 (2 %) households (Table 3).

Table 3: Main Source of Family Income

| Palikas | Agriculture & Livestock | Daily Wage Labor | Domestic Emp. | Foreign Emp. | Social Security Allowance | Others | Total |
|-----------------|-------------------------|------------------|---------------|--------------|---------------------------|------------|--------------|
| Ichchhakamana | 22 | 8 | 0 | 0 | 0 | 0 | 30 |
| Kalika | 27 | 0 | 0 | 0 | 0 | 0 | 27 |
| Kailash | 12 | 3 | 0 | 0 | 0 | 0 | 15 |
| Gajuri | 5 | 8 | 0 | 0 | 0 | 0 | 13 |
| Benighat Rorang | 34 | 0 | 0 | 0 | 0 | 0 | 34 |
| Manahari | 13 | 0 | 0 | 1 | 0 | 0 | 14 |
| Raksirang | 28 | 2 | 1 | 0 | 0 | 1 | 32 |
| Rapti | 33 | 1 | 0 | 0 | 1 | 0 | 35 |
| Total | 174 | 22 | 1 | 1 | 1 | 1 | 200 |
| Percent | 87.0 | 11.0 | 0.5 | 0.5 | 0.5 | 0.5 | 100.0 |

Source: Households Survey, 2024

b. Peasant Households

In the study area, there are 50,248 peasant households (NSO, National Agriculture Census, 2021). According to the population and housing census, 2021, there are total 68,257 households in the study area (NSO, Nepal Population and Housing Census, 2021). On this basis, it seems that there are 73.6 percent peasant households in the study area (Table 4 and Figure 1).

Table 4: Peasant Households

| Population and Sample | Total HHs | Peasant HHs | % of Peasant HHs | % of Non-Peasant HHs |
|--------------------------------|-----------|---------------------|------------------|----------------------|
| Population Households (Census) | 68,257* | 50,248 [§] | 73.6 | 26.4 |
| Chepang Households (Sample) | 200 7 & | 197 & | 98.5 | 1.5 |

Sources:

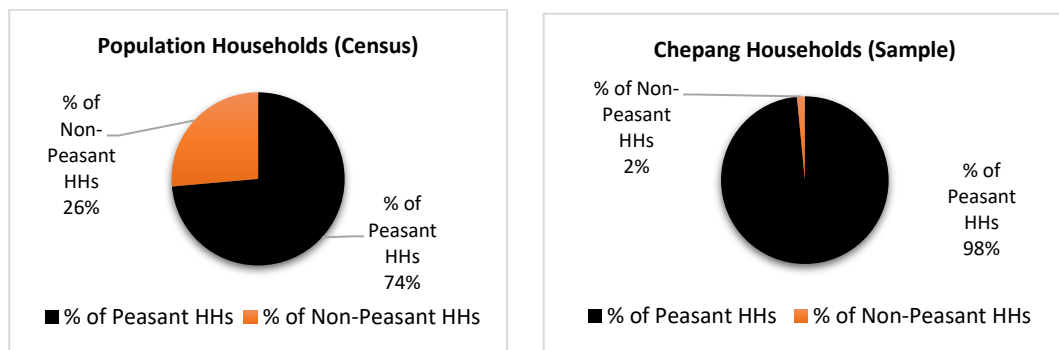
* = Nepal Population and Housing Census, 2021, National Statistics Office, Kathmandu, Nepal.

§ = National Agriculture Census, 2021, National Statistics Office, Kathmandu, Nepal.

& = Household Survey, 2024.

However, in the case of the Chepang Community, out of 200 households, 197 (98.5%) households belongs to the peasant families while only 3 (1.5%) households belongs to non-peasant families (Table 4 and Figure 1).

Figure 1: Peasant Households



c. Food Insufficiency Status

According to the National Agriculture Census, in the case of all castes and ethnic groups of the study area, their own production is not sufficient throughout the year for 45.1 percent of the peasant families (Table 5 and Figure 2).

Table 5: Food Insufficiency Status

| Population and Sample | Not Sufficient for 1-3 Months | Not Sufficient for 4-6 Months | Not Sufficient for 7-8 Months | Not Sufficient for 9-12 Months | Food Not Sufficient HHs | Food Sufficient HHs | Farmers' Total HHs |
|--|-------------------------------|-------------------------------|-------------------------------|--------------------------------|-------------------------|---------------------|--------------------|
| Population Households (Census) # | 5811 | 10881 | 4567 | 1337 | 22596 | 27650 | 50248 |
| Percent (Census) # | 11.6 | 21.7 | 9.1 | 2.7 | 45.1 | 54.9 | 100.0 |
| Chepang Households (Sample) [§] | 42 | 58 | 22 | 14 | 136 | 64 | 200 |

| Population and Sample | Not Sufficient for 1-3 Months | Not Sufficient for 4-6 Months | Not Sufficient for 7-8 Months | Not Sufficient for 9-12 Months | Food Not Sufficient HHs | Food Sufficient HHs | Farmers' Total HHs |
|-----------------------|-------------------------------|-------------------------------|-------------------------------|--------------------------------|-------------------------|---------------------|--------------------|
| Percent (Sample) ‡ | 21.0 | 29.0 | 11.0 | 7.0 | 68.0 | 32.0 | 100.0 |

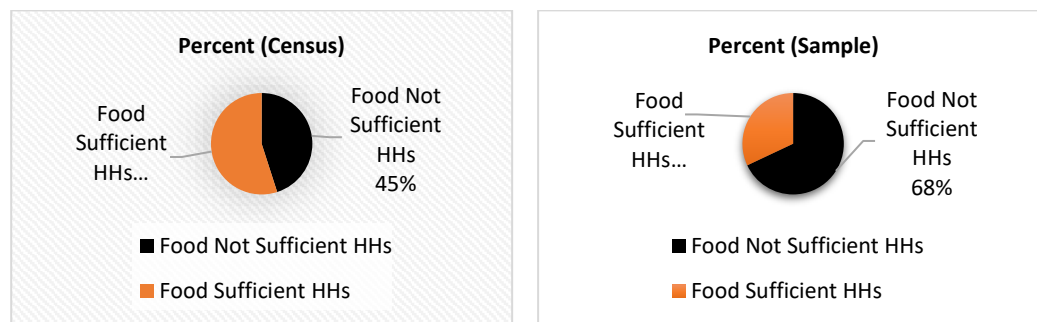
Source:

= National Agriculture Census, 2021, National Statistics Office, Kathmandu, Nepal

‡ = Household Survey, 2024

However, in the case of the Chepang community, their own production is not sufficient throughout the year for 68 percent of the peasant families (Table 5 and Figure 2). In means that the Chepang community is more vulnerable to food deficiency than the non-Chepang Communities.

Figure 2: Food Insufficiency Status



d. Households Involved in Production of Indigenous Food Crops

Of total peasant families of all castes and ethnic groups, 63.2 percent peasant families produce local maize while 33 and 3.6 percent peasant families produce millet and buckwheat respectively (Table 6 and Figure 3).

Table 6: HHs Involved in Production of Indigenous Food Crops.

| Population and Sample | Maize | Millet | Buckwheat | Total HHs |
|----------------------------------|-------|--------|-----------|-----------|
| Population Households (Census) # | 31773 | 16585 | 1796 | 50248 |
| Percent (Census) # | 63.2% | 33.0% | 3.6% | |
| Chepang Households (Sample) ‡ | 157 | 130 | 52 | 197 |
| Percent (Sample) ‡ | 79.7% | 66.0% | 26.4% | |

Source:

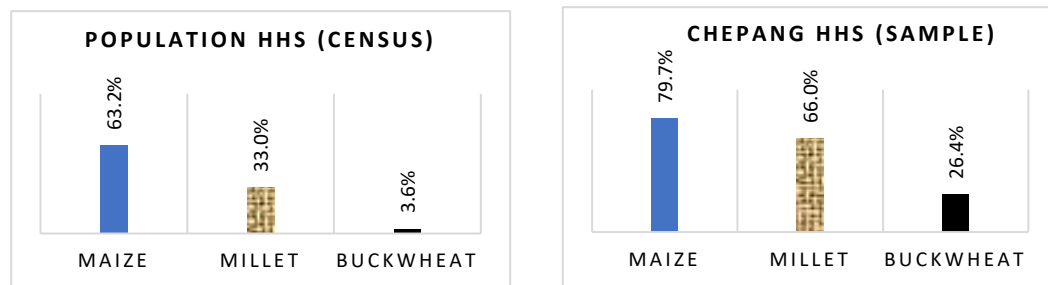
= National Agriculture Census, 2021, National Statistics Office, Kathmandu, Nepal

‡ = Household Survey, 2024

On the other hand, in the case of the Chepang Community, 79.7 percent of the Chepang peasant families produce local maize and 66 percent of them produce millet. Only 26.4 percent peasant families produce

buckwheat. Hence, the study shows that the majority of the Chepang families are engaged in production of local maize and millet. The engagement of the Chepang families in the production of local maize, millet and buckwheat is relatively higher than the engagement of the families of all castes and ethnic groups of the study area (Table 6 and Figure 3).

Figure 3: HHs Involved in Production of Indigenous Food Crops.



e. Reasons behind Production of Indigenous Food Crops

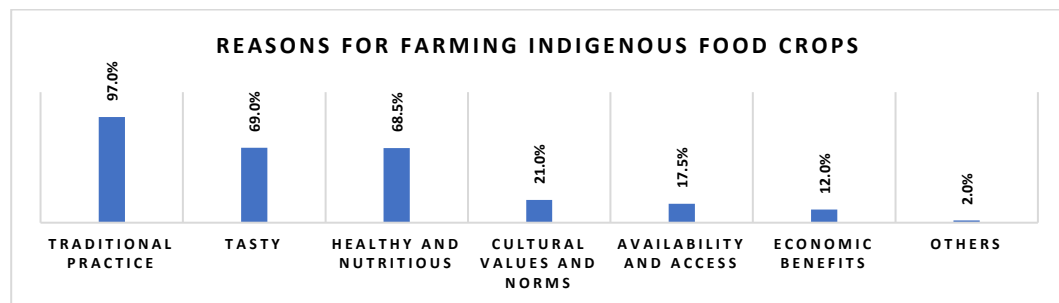
The survey results show that the majority of the Chepang families produce indigenous food crops mainly for three reasons: a) indigenous farming is their traditional practice which is easy for them, b) the traditional food crops are tastier than the high-breed crops, and c) the indigenous food crops are healthier and more nutritious than the high-breed crops. There are also some other reasons such as the indigenous crops have close linkage with their cultural values and norms, they are available and accessible to them when they needed, and they make take economic benefits from the crops (Table 7 and Figure 4).

Table 7: Reasons for Farming Indigenous Crops

| Chepang Households | Traditional Practice | Tasty | Healthy and Nutritious | Cultural Values and Norms | Availability and Access | Economic Benefits | Others |
|--------------------|----------------------|-------|------------------------|---------------------------|-------------------------|-------------------|--------|
| Households | 194 | 138 | 137 | 42 | 35 | 24 | 4 |
| Percent | 97.0% | 69.0% | 68.5% | 21.0% | 17.5% | 12.0% | 2.0% |

Source: Households Survey, 2024

Figure 4: Reasons for Farming Indigenous Crops.



f. Coping Strategies of the Chepang Community at the time of Food Shortage

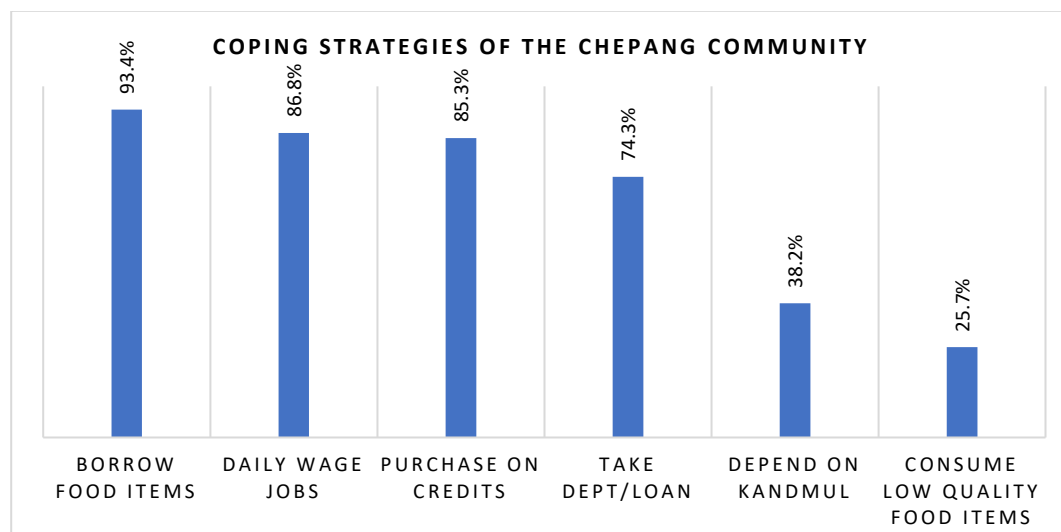
The study shows that 68 percent of the Chepang families face food shortage problems (Table 5). At the time of food shortage, they normally use multiple coping strategies to address the problem. For example, majority of them borrow food items from their neighbors and relatives, go for daily wage jobs for income, purchase food items on credit and take debt/loan to buy food items they needed. Besides these, they also depend on *Kandmul*, and consume low quality food items (Table 8 and Figure 5).

Table 8: Key Coping Strategies

| Chepang Households | Borrow Food Items | Daily Wage Jobs | Purchase on Credits | Take dept/loan | Depend on <i>Kandmul</i> | Consume Low Quality Food Items |
|-----------------------|-------------------|-----------------|---------------------|----------------|--------------------------|--------------------------------|
| Households in Number | 127 | 118 | 116 | 101 | 52 | 35 |
| Households in Percent | 93.4% | 86.8% | 85.3% | 74.3% | 38.2% | 25.7% |

Source: Households Survey, 2024

Figure 5: Key Coping Strategies of the Chepang Community at the time of Food Shortage



In addition, a few families sometimes skip meal, feed the children only, depend on relatives, and consume available fruits at the time of food shortage (Table 9).

Table 9: Other Coping Strategies

| Chepang Households | Skip Meal | Feed Children Only | Depend on Relatives | Depend on Fruits | Others |
|-----------------------|-----------|--------------------|---------------------|------------------|--------|
| Households in Number | 9 | 6 | 6 | 5 | 7 |
| Households in Percent | 6.6 % | 4.4 % | 4.4 % | 3.7 % | 5.1 % |

Source: Households Survey, 2024

5. Conclusion and Recommendation

A. Conclusion

The conclusions of the study are as follows:

- a. In total, there are 73.6 percent peasant households while there are 98.5 percent peasant households in the case of the Chepang Community which is higher than the overall percent of peasant households. In addition, agriculture is the main source of family income for 87 percent Chepang households. Once again, it shows that the Chepang Community is predominantly an agricultural community.
- b. In total, for 45.1 percent of the peasant families, their own production is not sufficient throughout the year while, in the case of the Chepang Community, their own production is not sufficient throughout the year for 68 percent peasant families. It shows that the Chepang peasant families are more vulnerable to food insecurity.
- c. In total, 63.2, 33 and 3.6 percent peasant families produce local maize, millet and buckwheat respectively while 79.7, 66 and 26.4 percent Chepang peasant families are active in local maize, millet and buckwheat production respectively. It shows that the Chepang Community is more active in local maize, millet and buckwheat production.
- d. The survey results show that 93.4 percent Chepang households borrow food items from neighbours and relatives, 86.8 percent households go for daily wage jobs, 85.3 percent households purchase food items on credit and 74.3 percent households take debt/loan for buying food items at the time of food shortage. Hence, it seems that borrowing of food items, daily wage jobs, purchase on credit and seeking debt/loan for buying foods are the top four coping strategies of the Chepang households at the time of food shortage.

B. Recommendation

The key recommendations for economic upliftment of the Chepang Community are as follows:

- As stated earlier, the Chepang community is the predominantly an agricultural community. Hence, solutions for the economic upliftment of the community should be sought around agriculture and livestock development. It may help reduce the food deficiency problem in the community.
- In comparison to the other communities of the study area, the Chepang Community is relatively more engaged in production of local indigenous food crops specially the local maize, millet and buckwheat that have relatively higher market values. Production of these indigenous crops may be increased by providing appropriate inputs. Such inputs, but not limited to them, may be provisioning technology transfer, fertilizers, seeds, training, production-based grants, soft-loan, and market linkage etc.
- They mostly rely on borrowing of food items, purchase of food items on credit and taking of loan. It means that they lack cash and other sources of income for survival at the time of food shortage. The government may design one or more integrated program/s that help increase their food production as well other sources of income.

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कृषकको जीवनस्तर उकास्न अर्थराजनीतिक कृषि विकासको ढाँचा

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सारांश

यस अध्ययनको मुख्य उद्देश्य नेपालको हावापानी र भूगोलअनुसार दिगो कृषि विकासको ढाँचा तयार गर्नु हो । यस कार्यका लागि उपलब्ध साहित्यहरूको समीक्षा, स्थलगत अवलोकन, मुख्य उत्तरदाताहरूसँग अन्तरवार्ता आदि विधि अपनाइएको छ । नेपालको कुल गार्हस्थ्य उत्पादनमा कृषिको योगदान २४ प्रतिशत छ भने बागमती प्रदेशमा १२ प्रतिशत रहेको पाइन्छ । आगामी ५ देखि १० वर्षमा कृषि, उद्योग र सेवा क्षेत्रको योगदान क्रमशः २०, २५ र ५५ प्रतिशतमा कायम राख्न सकेमा सन्तुलित दिगो अर्थतन्त्रको विकास हुन सक्ने देखिन्छ । नेपालको सन्दर्भमा कृषि नै विकासको इन्जिनको रूपमा रहेको छ । नेपाल विविध हावापानी, हिमाल, पहाड, भित्री मधेश, तराई मधेश, भावर आदि भौगोलिक अवस्था, फरक पर्यावरण र पारिस्थितिक प्रणाली भएको देश भएकाले यहाँको कृषि विकासको ढाँचा अन्य देशकोभन्दा फरक हुनु स्वाभाविक देखिन्छ ।

मूल शब्दहरू: कृषि विकासको ढाँचा, जनजीविका, जलवायु परिवर्तन, दिगो अर्थतन्त्र, पारिस्थितिक प्रणाली

१ परिचय

१.१ पृष्ठभूमि

वेदमा भनिएको छ 'कृषि मूलश्चः जीवनम्' अर्थात् कृषि नै जीवनको मूल आधार हो । त्यसैले सनातन संस्कृतिमा 'उत्तम खेती, मध्यम व्यापार र अधम नोकरी' भन्ने मान्यता स्थापित रहँदै आएको छ । मानिसलाई जिउन अन्न, तरकारी, फलफूल, माछा, मासु, दूध, दही र घिउ नभई हुँदैन । अति आवश्यक खाद्यान्न, कपडा, आवास, औषधिमूलो, रोजगारी र उद्योगका लागि चाहिने कच्चा पदार्थ पनि कृषिबाट नै प्राप्त हुन्छ ।

कृषिमा जलवायु परिवर्तनको कारणले बोट विरुवा र वन्यजन्तुको बासस्थान नै परिवर्तन हुँदै गएको छ । वातावरण तथा जलवायुसम्बन्धी अध्ययन अनुसार जलवायु परिवर्तनको असर नेपालको तराईमाभन्दा पहाडमा, पहाडमाभन्दा हिमाली भेगमा र हिमाली भेगभन्दा हिमालपारिको क्षेत्रमा बढी देखिएका छन् । समग्र नेपालको औसत तापमान वृद्धिदर प्रति वर्ष ०.०६ डिग्री सेल्सियस छ भने हिमालयभन्दा उत्तरमा त्यो वृद्धिदर ०.०९ डिग्री सेल्सियससम्म पुगेको छ । जलवायु परिवर्तनको कारणले नेपालको जी.डी.पी.मा २.४ प्रतिशतले कमी आएको छ । नेपालमा पहिल्यैदेखि शिक्षा, स्वास्थ्य लगायतका मानव विकासको सूचकाङ्कमा पछाडि पर्दै आएको सिमान्तकृत समुदायलाई हिजोआज जलवायु परिवर्तन जस्ता विश्वव्यापी समस्याले पनि बढी जोखिममा पारेको छ (थापा, २०८०) । विश्वको कूल हरितगृह ग्यासको करिब ०.०२५ प्रतिशत मात्र उत्सर्जन गरे पनि नेपालले वायुमण्डलीय तापक्रम वृद्धिबाट उत्पन्न चुनौती झेलिरहेको छ । यद्यपि अन्तराष्ट्रिय सम्झौता खास गरी पेरिस सम्झौताअनुसार जलवायु परिवर्तनका असर न्युनिकरणका लागि तोकिएका लक्ष्य पुरा गर्न नेपालले प्रतिवद्धता जनाएको छ । जलवायु

परिवर्तन र कृषि कर्मप्रतिको उदासिनताको कारण कृषि पछि पर्दै गएको छ । कृषि क्षेत्रमा नवीनतम प्रविधिको प्रयोग पनि पर्याप्त मात्रामा हुन सकेको छैन जसले गर्दा उत्पादन र उत्पादकत्व बढ्न सकेको छैन ।

देशभित्र रोजगारीका अवसर नहुँदा झन्डै ५० लाख युवा वैदेशिक रोजगारीमा गएका छन् । अझ भारततिर गएका श्रमिकको तथ्याङ्क नै छैन । वैदेशिक रोजगारीबाट पठाएको विप्रेषण रकम ५६ प्रतिशत परिवारमा भित्रिने गरेको छ । विप्रेषण रकमको झन्डै ८०-८५ प्रतिशत रकम उपभोग्य क्षेत्रमा खर्च भएको नेपाल राष्ट्र बैङ्कको अनुसन्धानले देखाएको छ । युवाशक्ति विदेसिएपछि खेतीयोग्य जमिन बाँझो बन्दै गएको छ । उत्पादनमा हास आएका कारण चामल, तरकारी आदिको आयातमा वृद्धि भएको छ । व्यापार घाटामा बढोत्तरी भएको छ । विप्रेषणबाट भित्रिएको विदेशी मुद्राको ठुलो परिमाण सुन, मदिरा, खाद्यान्न, विलासिताका वस्तु, पेट्रोलियम पदार्थ लगायतका वस्तु आयातका लागि उपयोग भइरहेको छ । मुलुकको अर्थतन्त्रलाई स्वनिर्भर बनाउन, औद्योगिक गतिविधिलाई अगाडि बढाएर प्रत्यक्ष कर प्रणालीमा वृद्धि गर्ने राजस्व परिचालनको नीति हुन आवश्यक छ तर व्यवहारतः अहिले कुल राजस्व परिचालनमा प्रत्यक्ष करको अंश ३३-३४ प्रतिशत मात्रै छ । यो राजस्व परिचालनको दृष्टिले नकारात्मक प्रवृत्ति हो (खनाल, २०८०) । आफ्नै कृषि उत्पादनबाट वर्षभरी खान पुग्ने परिवार ४५ प्रतिशतमात्र रहेको छ (कृषि गणना, २०७८) ।

१.२ कृषिको विद्यमान अवस्था

नेपालले कृषि विकास रणनीति बनाई लागु गरेको छ । यसले लक्ष्यहरू पहिचान गरेको छ र लक्ष्य प्राप्त भए नभएको मापन गर्ने सूचक समेत सुझाएको छ । कृषि विकास रणनीतिले आगामी २० वर्षका लागि नेपालको कृषि क्षेत्रसँगै कृषि व्यवसायको पनि अभिवृद्धि हुने अपेक्षा गरेको छ ।

गरिवी निवारण, खाद्य सुरक्षा, रोजगारी र अर्थतन्त्रको मुख्य आधार पनि कृषि नै हो । कृषि, सिंचाइ, जलस्रोत, आपूर्ति, उद्योग, सहकारी, स्थानीय विकास, भौतिक पूर्वाधार र शहरी विकास, अर्थ र शिक्षा लगायतका मन्त्रालयहरू प्रत्यक्ष वा अप्रत्यक्ष रूपमा कृषिसँग सम्बन्धित छन् । यी निकायबिचको समन्वय विना कृषि सफल हुन सक्दैन ।

कृषिमा संलग्न भएका र नभएका सबैलाई खाद्य सुरक्षा प्रदान गर्न अत्यन्त जरुरी छ । तुलनात्मक लाभको बालीको उत्पादन गरी विशाल दुई छिमेकी मुलुकमा निर्यात गर्न सकिने सम्भावना रहेको छ । यसका लागि किसानको जमिनमाथि स्वामित्वको प्रत्याभूति, कृषि उत्पादनका साधन स्रोतमा कृषकको सहज पहुँच, कृषि लगानीमा वृद्धि, सीमान्त किसानलाई कृषि उत्पादन लागतमा कम्तीमा ५० प्रतिशत अनुदानको सुनिश्चितता, कृषक ऐन र कृषि श्रमिक ऐनको नयाँ व्यवस्था, यथोचित भौतिक पूर्वाधार, बजारको प्रत्याभूति र त्यसको नियमन कृषि रणनीतिको अनिवार्य आवश्यकता हो । नेपालको कृषि जल, जमिन, जङ्गलसँग जोडिएको मौलिक पद्धति हो र नेपालको पहिचान, संस्कृति र राष्ट्रियतासँग यसको अन्योन्यासित सम्बन्ध छ । बाँझो जमिनको उपयोग, भु-खण्डीकरण रोकौ कृषि उत्पादन वृद्धि गर्ने र व्यवसायीकरण गर्ने चुनौति रहेका छन् । यसमा चक्लावन्दी, सामूहिक र सहकारी मार्फत खेती गर्नु र कृषिको व्यवसायीकरण गर्नु नै उत्पादन वृद्धिको लागि महत्वपूर्ण विषय हो ।

१.३ बागमती प्रदेशमा कुल गार्हस्थ्य उत्पादनमा क्षेत्रगत मूल्य अभिवृद्धिको योगदान

आ.व. २०८०/०८१ मा कुल गार्हस्थ्य उत्पादनमा कृषि क्षेत्र मूल्य अभिवृद्धि योगदानको अपेक्षा १०.३ प्रतिशत रहेको छ भने आधार वर्ष २०७५/०७६ को स्थिति १३ प्रतिशत रहेको थियो । साथै आ.व. २०८०/०८१

मा कृषि तथा वनको लक्ष १०.२ प्रतिशत र मत्स्यपालनको अपेक्षा ०.१ प्रतिशत रहेको छ भने आधार वर्ष २०७५/०७६ को स्थिति क्रमशः १३ प्रतिशत र ०.१ प्रतिशत रहेको थियो । त्यसैगरी, आ.व. २०८०/०८१ मा गैरकृषिको लक्ष्य ८९.७ प्रतिशत रहेको छ भने आधार वर्ष २०७५/०७६ को स्थिति ८७ प्रतिशत थियो ।

यस प्रदेशको कुल क्षेत्रफलको करिब १७ प्रतिशत जमिन खेतीयोग्य छ र सोमध्ये ७३ प्रतिशत क्षेत्रफलमा मात्र खेती गरिएका छ । प्रदेशको कुल खेतीयोग्य भूमिको ४९.५ प्रतिशत भूमि सिचाइयोग्य छ र सोको पनि ५८.८ प्रतिशत जमिन मात्र सिञ्चित छ । कुल दुग्ध उत्पादनको १५ प्रतिशत कम्पनीहरूमा, ३५ प्रतिशत होटल तथा रेष्टुरेण्टमा र ५० प्रतिशत घरायसी उपभोगमा खपत हुने गर्दछ । नेपालमा उत्पादन हुने कुखुरा र हाँसको कुल अण्डा उत्पादनमा प्रदेशको उत्पादन क्रमशः ५४ र १४ प्रतिशत छ । नेपालमा रहेको पुष्प खेती फार्ममध्ये ६१ प्रतिशत फार्म यस प्रदेशमा छन् । बागमती प्रदेशको कृषि क्षेत्रले कुल कृषि गार्हस्थ्य उत्पादनमा १७.६ प्रतिशत र प्रादेशिक कूल गार्हस्थ्य उत्पादनमा १२ प्रतिशत योगदान पुऱ्याएको छ ।

१.४ उद्देश्य

यस अध्ययनका उद्देश्य देहायबमोजिम रहेका छन्:

- नेपाली किसानको आर्थिक सामाजिक रुपान्तरण गर्न नेपालको हावापानी र भौगोलिक स्थानअनुसार उपयुक्त दिगो कृषि विकासको ढाँचा तयार गर्ने,
- कृषि तथा पशुपन्छी विकासका कृषि उपजको मूल्य शृङ्खला, अवसर, सिकाइहरू र चुनौतीहरूको पहिचान गर्ने ।

१.५ अध्ययन विधि

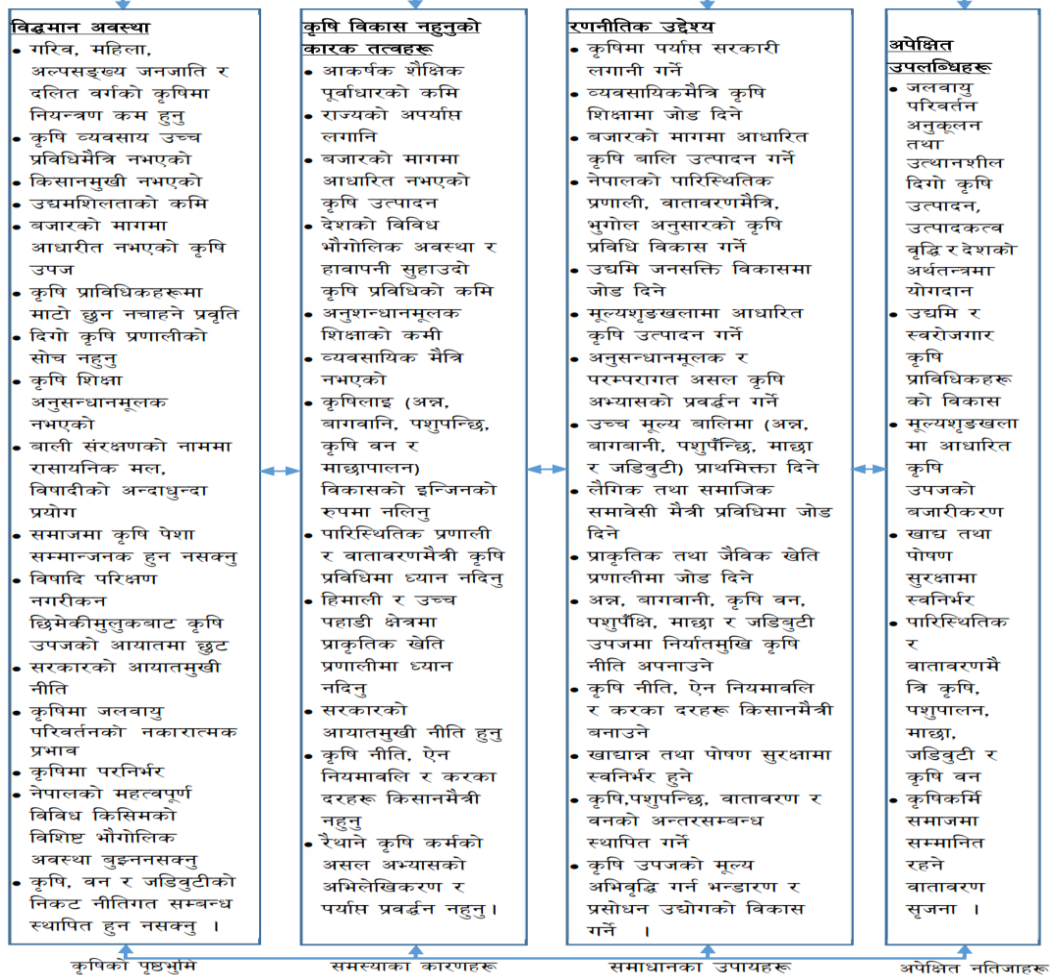
नेपालको संविधान, प्रदेश नीति तथा योजना आयोगबाट योजना तर्जुमाको बखत तयार गरिएको वडास्तरीय कृषि तथा पशुपन्छी बाली वस्तुको तथ्याङ्क, मन्त्रालयहरूबाट प्रकाशित प्रतिवेदनहरू, राष्ट्रिय कृषि गणना, २०७८, कृषि ज्ञान केन्द्र, कृषि पूर्वाधार विकास तथा कृषि यान्त्रीकरण प्रवर्द्धन केन्द्र, हरिहरभवन, ललितपुर (<https://caidmp.gov.np/>) बाट प्रकाशित प्रतिवेदनहरू, राष्ट्रिय कृषि नीति २०६१, कृषि विकास रणनीति (सन २०१५ देखि सन २०३५), कृषि तथा पशुपन्छी विकास मन्त्रालयका पूर्व अध्ययन प्रतिवेदनहरू, कृषि सम्बन्धी विभिन्न उच्चस्तरीय आयोगका प्रतिवेदनहरू, यस कार्यसँग मेल खाने लेख तथा रचना लगायतका विभिन्न सन्दर्भ सामग्रीहरूको समीक्षा गरिएको छ । यसका अतिरिक्त स्थलगत अवलोकन र मुख्य उत्तरदाताहरूसँग अन्तरवार्तासमेत गरिएको छ । कृषि विकासको सरल ढाँचा तयार गर्नको लागि अर्थराजनीतिक दृष्टिसकोण अपनाइएको छ ।

२. कृषि विकासको ढाँचा

नेपालको कृषि विकासको ढाँचा अन्य देशको भन्दा फरक छ । नेपाल विविध हावापानी, हिमाल, पहाड, भित्री मधेश, तराई मधेश, भावर आदि भौगोलिक अवस्था, फरक पर्यावरण र पारिस्थितिक प्रणाली भएको मुलुक हो । त्यसकारण नेपालको कृषि विकासको मोडेल पनि यही अनुरूप भए मात्र सुहाउँदो र दिगो हुन्छ । नेपालको कृषि विकासको ढाँचा “कारण-प्रभाव-समाधानका उपाय” को आधारमा विकास भएको निम्नलिखित रूपमा प्रस्तुत गरिएको (चित्र १) छ । यस मोडेलमा कृषिको विद्यमान अवस्था, समस्याका कारणहरू, समाधानका उपायहरू र अपेक्षित

नतिजाहरू के के हुन सक्छन् भन्ने कुराहरू प्रस्तुत गरिएको छ। यो चित्रमा देखाइएका धेरै कुराहरू प्रारम्भिक परिच्छेदमै उल्लेख भइसकेको छ। यो कृषि विकासको ढाँचा नेपालको वस्तुगत परिस्थितिसँग मेल खान्छ।

चित्र १: नेपालमा कृषि विकासको ढाँचा



बागमती प्रदेशको हकमा प्रदेशको कुल गार्हस्थ्य उत्पादनमा कृषि, उद्योग र सेवा क्षेत्रको योगदान क्रमशः ११.९ प्रतिशत, १०.७ प्रतिशत र ७७.४ प्रतिशतको रहेको छ। यो दिगो अर्थतन्त्रको लागि राम्रो तस्विर होइन। आगामी ५ देखि १० वर्षमा कृषि, उद्योग र सेवा क्षेत्रको योगदान क्रमशः २० प्रतिशत, २५ प्रतिशत र ५५ प्रतिशतमा कायम राख्न सकेमा सन्तुलित दिगो विकास हुन सक्ने देखिन्छ। यसका लागि समग्र नेपालको कृषि क्षेत्रको उत्पादकत्व बढ्ने गरी बजेट विनियोजन र प्रविधिको विस्तार गरी आउँदो दशकसम्म यसको योगदानलाई १६ देखि २० प्रतिशतको हाराहारीमा पुऱ्याउनु पर्ने देखिन्छ। सेवा क्षेत्रको योगदानलाई विशेषगरी उद्योग क्षेत्रमा लैजाने गरी संरचनागत, संस्थागत र नीतिगत परिवर्तन गर्नु पर्छ।

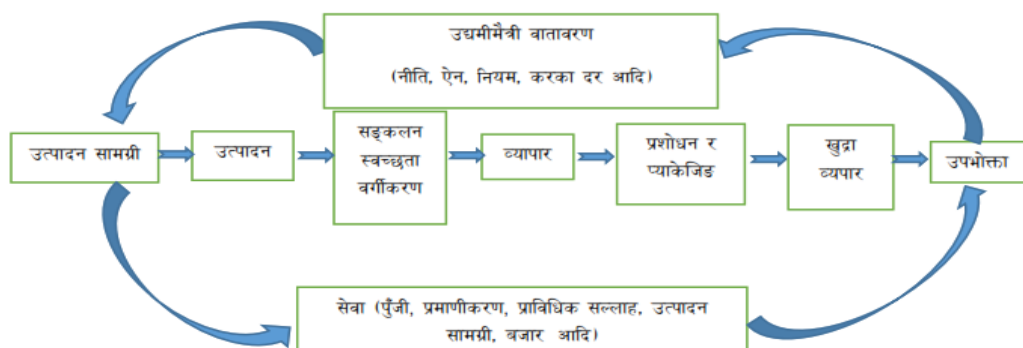
विद्यमान समस्या र त्यसका कारणहरू गहिरोसँग विश्लेषण गर्न जरूरी छ । आइन्स्टाइनको अनुसार “यदि मसँग यो संसारलाई बचाउनका निम्ति एक घण्टाको समय छ भने मैले समस्या विश्लेषणमा ५५ मिनेट र समस्याको समाधान पत्ता लगाउनमा केवल पाँच मिनेट मात्र खर्च गर्नेछु” । आइन्स्टाइनको यस भनाइले समस्या समाधानका उपायमा सोझै हाम फाल्नुभन्दा पहिले समस्याको बारेमा हाम्रो बुझाइलाई गहन बनाउन समय र शक्ति लगाउनुपर्छ भन्ने कुरामा जोड दिन्छ । समस्यालाई अपेक्षित अवस्था र वास्तविक मौजुदा अवस्थाको अन्तर हो भनेर पनि व्याख्या गर्न सकिन्छ ।

- “के छ ? को तुलनामा “के हुनु पर्ने हो ?
- “के उपलब्ध छ ? को तुलनामा के आवश्यक छ ?

विद्यमान अवस्था र चाहेको अवस्थाको बिचको भिन्नतालाई समस्याको रूपमा परिभाषित गर्न सकिन्छ । समस्याको स्पष्ट बुझाइका लागि विभिन्न उपायहरू छन् ती मध्ये “समस्या वृक्ष विश्लेषण” पनि समस्याको गहिरो विश्लेषण गर्न सहयोग गर्ने एक विधि हो । यसले समस्याका कारण र असरहरूको तार्किक विश्लेषण गरी समस्याको समग्र बुझाईमा प्रष्टता ल्याउँछ ।

३. कृषि उपजको मूल्यशृङ्खला

कृषि उपजको मूल्य शृङ्खलाको मार्गचित्र निम्नलिखित रूपमा प्रस्तुत गरिएको छ (चित्र २: कृषि उपजको मूल्य शृङ्खला, थापा, २०८०)



थापा (२०८०) का अनुसार कृषि उपजको मूल्य शृङ्खलामा आधारित भएर कार्यक्रमको ढाँचा तयार गर्न सकेको खण्डमा मात्र किसानले ५-१० गुणासम्म बढी मुनाफा आर्जन गर्न सक्दछ । शुद्ध कच्चा पदार्थ विक्री वितरण गरेर खासै आम्दानी वृद्धि हुन सक्दैन । कम्तीमा पनि अर्धप्रशोधनसम्म गर्न सकेको खण्डमा केही बढी आय आर्जन हुन सक्दछ (थापा, २०८०) । कुनै व्यवसाय सञ्चालन गर्दा सबभन्दा पहिले त व्यावसायिक वातावरण हुन आवश्यक छ त्यसपछि कृषि सामग्रीको उपलब्धता हुनु पर्‍यो अनि उत्पादन सुरु गर्ने । उत्पादित वस्तुको सङ्कलन, स्वच्छता, भण्डारण र वर्गीकरण गरेपछि अनि व्यापार गर्ने । त्यसपछि उक्त वस्तुको प्रशोधन र प्याकेजिङ गर्ने र खुद्रा पसलेहरूको माध्यम वा आफ्नै आउटलेटको माध्यमबाट उपभोक्ता सामु बजारमा तैयारी सामान पुऱ्याउने । मूल्य शृङ्खलामा जति धेरै उत्पादकको नियन्त्रण हुन्छ त्यति धेरै आय आर्जन हुन्छ । अहिले किसानले कच्चा पदार्थमात्र विक्री वितरण गर्ने हुँदा मुनाफा अरुले नै लिँदैछन् । अब नेपालीले आफ्ना उत्पादनको सङ्कलन, भण्डारण, व्यापार, प्रशोधन, ब्रान्डिङ र तैयारी सामानको उत्पादन गरी बजारमा विक्री वितरण गर्न जोड दिनुपर्ने छ ।

बजार जहिल्यै पनि प्रतिष्पर्धी हुन्छ । बजारमा आफ्नो सामान विक्री गर्नका लागि गुणस्तर र सुपथ मूल्यमा ध्यान दिनुपर्छ । यसका लागि उपयुक्त ज्ञान, सिप, पुँजी, प्रविधि, उद्योगको विकास र राष्ट्रिय तथा अन्तरराष्ट्रिय बजारमा सम्पर्क हुनुपर्छ । यसमा तीनै तहका सरकारको सहयोग र अनुकूल नीति, ऐन कानून, निर्देशिका, सहूलियतपूर्ण करका दर र उद्यमीमैत्री बजारको आवश्यकता पर्छ । उत्पादन दिगो, दरिलो र विश्वासिलो भएको खण्डमा मात्र बजारमा वस्तु र सेवाको माग बढ्छ ।

४. अवसर तथा चुनौतीहरू

४.१ अवसर

बागमती प्रदेश भौगोलिक दृष्टिले कृषिकर्मका लागि उपयुक्त ठाउँ हो । यहाँ हिमाल, पहाड, भित्री मधेस, गतिर र अन्य सूक्ष्म जलवायु भएका ठाउँ भएको हुँदा सबै किसिमका बालीनालीका लागि उपयुक्त छ । यहाँको उर्वर माटो, वर्षमा ३०० दिन सम्म घाम लाग्ने, पर्याप्त वर्षा, सदावहार नदी नालाहरू, उच्च हिमाली तथा पर्वतीय अन्न (धान, मकै, गहुँ, कोदो, फापर, जौ), भटमास, मास, मस्याङ, गहत, बोडी, सिमी, केराउ, तोरी, सरस्यु, तरकारी; फलफूलमा (जुनार, सुन्तला, कागती, ओखर, चुचे ओखर, किवी, एभोकाडो, आँप, केरा, अम्वा, लिची, भूइकटहर, रुख कटहर, स्याउ, नास्पाती आदि), कफी, चिया, कन्दमूल (तरुल, पिडालु, कासाभा), आलु, ओल, जडिवुटी, पशु (भैंसी, गाई, बाखा, भेडा, कुखुरा, कालीज), माछा, मासुको राष्ट्रिय तथा अन्तरराष्ट्रिय बजारमा धेरै माग हुनु आदि कारणले कृषिमा व्यावसाहिकरण गर्न सक्ने प्रचुर अवसरहरू देखिन्छ । प्रकृतिले त साथ दिएकै हो । प्रदेश सरकारले कृषि क्षेत्रमा लगानी गरे छिट्टै प्रतिफल प्राप्त हुने, प्रदेशमै रोगगारी सिर्जना हुने, गरिबी निवारणमा समेत टेवा पुग्ने देखिन्छ । यहाँको कृषिलाई पर्यटनसँग जोड्न सके अझ थप रोजगारी सिर्जना गर्न सक्ने सम्भावना छ । प्रदेश सरकारको किसान मैत्री नीति, सुसाशन, चुस्त व्यवस्थापन, महिलामैत्री प्रविधीको विकास, कृषि यान्त्रिकरण, कार्यक्षेत्र मै अनुसन्धानमा आधारित कृषि शिक्षा, पर्याप्त कृषि दक्ष जनशक्ति, र यथेष्ट बजेटको भने टड्कारो आवश्यकता देखिन्छ । धानको उत्पादन बढाउन चैते धान खेतीमा जोड दिनु पर्ने देखिन्छ ।

धानको उत्पादन सूर्यबाट प्राप्त गर्ने रापमा भर पर्छ । यस प्रदेशमा चैत, वैशाख, जेठ प्रचण्ड घाम लाग्ने अर्थात् अत्यधिक राप प्राप्त हुने महिना हुन् । धान विज्ञ भोलामान सिंह वस्नेतले हर्दिनाथमा गरेको एक अनुसन्धानमा फूल फुलेपछि चैते धानले ६ सय क्यालोरी प्रतिदिन प्रतिसेन्टिमिटर राप पाएको पत्ता लगाए । वर्षे अर्थात् असारमा रोपिने धानले प्रतिदिन प्रतिसेन्टिमिटर पाँच सय क्यालोरी मात्र राप पाउछ । घामको रापको सय क्यालोरी फरकले धानको उत्पादकत्व प्रतिहेक्टर २० देखि २५ प्रतिशतसम्म फरक पार्दछ । वर्षे धानभन्दा चैते धान २५ प्रतिशतसम्म बढी उत्पादन हुन सक्छ । धानको उत्पादकत्व बढाएर प्रदेश नै धानमा स्वनिर्भर हुने, भोकमरी रोक्ने, धान-चामल निर्यात गर्ने र प्रदेशको आर्थिक वृद्धिदर बढाउने एउटा प्रमुख माध्यम चैते धान हुन सक्छ ।

आ.व. २०८०/०८१ को तथ्याङ्क अनुसार बागमती प्रदेशमा जम्मा धानको क्षेत्रफल १०५१७४ हे. छ भने उत्पादन जम्मा ४२३५८५ मे. टन रहेको छ । कुनै पनि धान बालीमा सधन धान खेती प्रविधि (सिस्टम अफ राईस इन्टेसिफिकेशन) अपनाएको खण्डमा दुई देखि तीन गुणा सम्म उत्पादन बढाउन सकिने कुरा अध्ययनले बताएको छ । यस प्रविधिमा धुले व्याडमा राखेको १० दिनको वेर्ना चिसो मात्र भएको खेत खनजोत गरेर कोदो रोपे जस्तै गरेर धान रोप्न सकिन्छ । यस प्रविधिमा थोरै पानी भए पनि पुग्छ । तर झारपात चाहिँ धेरै आउने हुँदा गोडमेल खर्च भने बढ्न सक्छ, तर उत्पादन वृद्धिको तुलनामा यो लागत नगन्य नै मानिन्छ ।

४.२ चुनौतीहरू

कृषि क्षेत्रको समस्या करिव दुई तिहाई ग्रामीण जनताको मुख्य जीविकोपार्जनको श्रोतका रूपमा रहेको नेपालको कृषि क्षेत्रले तेस्रो आवधिक योजनाबाट नै विकासको प्राथमिकतामा पर्न सफल भएता पनि अपेक्षाकृत विकास हुन सकेको छैन। कृषि क्षेत्रको विकास नीति र रणनीतिहरूमा प्राथमिकतामा परे पनि राज्यबाट हुने लगानीको प्राथमिकतामा कहिल्यै परेको देखिएन। कृषि विकासको जिम्मा पाएका निकायहरूको समयानुकूल क्षमता अभिवृद्धि हुन नसक्दा र सुशासन सुनिश्चित गर्न नसक्दा कृषि विकास कार्यक्रमबाट परिलक्षित उपलब्धिहरू हासिल हुनसकेको देखिदैन। जसको परिणाम विगतमा खाद्यान्न निर्यात गर्ने मुलुक आज खाद्यान्न आयात गर्नु पर्ने अवस्थामा पुगेको छ। भु-खण्डीकरण, प्राकृतिक प्रकोपलाई व्यवस्थापन गर्न सक्ने राज्यको अपर्याप्त क्षमता, राज्यको अस्थिर भू-नीति जस्ता कारणले कृषि क्षेत्रमा पर्याप्त मात्रामा निजी क्षेत्रको लगानी आकर्षित हुन सकेको छैन। पर्याप्त नीतिगत पूर्वाधारहरूको अभावमा व्यवसायिक कृषि तथा यसको औद्योगिकरणमा अन्तर्राष्ट्रिय लगानी समेत आकर्षित हुन सकिरहेको छैन। हालसम्म पनि कृषि क्षेत्र उद्यमको रूपमा स्थापित हुन सकेको छैन। प्राकृतिक प्रकोप तथा अन्य जोखिमबाट हुने क्षतिलाई न्यूनिकरण गर्नका लागि र क्षतिपूर्तिको उचित व्यवस्था एवं विमामा सबै कृषकहरूको सहज र सरल पहुँच हुन सकेको पाइदैन।

नेपालमा कृषि अनुसन्धानको क्षेत्रमा राज्यको लगानी कृषि गार्हस्थ उत्पादनको करिव ०.४ प्रतिशत छ, जुन अत्यन्त न्यून हो। कृषि अनुसन्धान कृषकहरूको माग, राष्ट्रिय आवश्यकता र भौगोलिक तथा पारिस्थितिक प्रणालीगत सम्भावनाहरूलाई सम्बोधन गर्ने गरी केन्द्रित हुन सकिरहेका छैनन् भने अर्कोतिर अनुसन्धानबाट सृजित प्रतिफलहरू सही समयमा सही ढङ्गले कृषक समक्ष प्रसारित हुन सकिरहेको छैन। कृषि अनुसन्धान, कृषि प्रसार र कृषि शिक्षाका विचमा समन्वय हुन सकेको छैन। कृषि अनुसन्धान र प्रसार गाउँपालिका तथा नगरपालिकास्तरसम्म पुग्न सकिरहेको छैन। कृषि उत्पादनको मुख्य आधारको रूपमा रहेको विउ, सिंचाई, नश्वहरूको विकास तथा विस्तार हुन नसक्दा र आवश्यक पूर्वाधार (सडक, शित भण्डार, बजार) एवं मलको उपलब्धताको अभावले उत्पादन र उत्पादकत्व वृद्धि गर्ने तीन तहका (सङ्घीय, प्रदेश र स्थानीय) सरकारको लक्ष्य हासिल हुन सकिरहेको छैन।

प्रचुर मात्रामा पानी भएता पनि सीमित खेतीयोग्य जमिनमा मात्र सिंचाईको सुविधा छ। अधिकांश खेती योग्य जमिन आकासे पानीमा निर्भर छ। कृषि उत्पादन तथा उत्पादकत्व वृद्धिको सिंचाईको अभाव नै मुख्य व्यवधानको रूपमा देखापरेको छ। यसका अलावा सिंचाई परियोजनाको ढाँचा, बजेट विनियोजन तथा व्यवस्थापनले पनि समयमै परियोजना सम्पन्न हुने/नहुने निर्धारण गर्छ। कृषि क्षेत्रको पूर्वाधारका लागि बजेट निक्षेपण भए तापनि अन्य विभिन्न सरकारी निकाय बीच समन्वयको अभावका कारण कृषि क्षेत्रको नयाँ पूर्वाधार निर्माणको जिम्मेवारीका सन्दर्भमा द्विविधा देखिन्छ। अपर्याप्त प्राविधिक तथा व्यवस्थापन क्षमताका कारण स्थानीय स्तरमा सिंचाई परियोजना हस्तान्तरण गरिदैन अनि केन्द्रीकृत निणर्य प्रणालीले ठुला परियोजनालाई मात्र केन्द्र विन्दुमा राखेको पाइन्छ।

कृषि सडकका नाममा ग्रामीण सडकलाई प्राथमिकता दिए पनि उत्पादन सामग्रीको पहुँच र कृषि उपजको सहज बजारीकरणमा नकारात्मक प्रभाव पर्न गई उत्पादनशील जमिनहरू बाँझो रहन गएको छ। आन्तरिक र बाह्य आप्रवासनका कारण कृषि क्षेत्रमा कृषि मजदुरहरूको अभाव देखिन थालेको छ। कृषि मजदुरको अभाव र ज्याला महङ्गो भएको कारण नकारात्मक असर पर्न गई उत्पादन लागत बढ्न गईरहेको छ। कृषि उपजहरू जस्तै धान प्रशोधन गर्न प्रशोधनशालाहरू पर्याप्त र नवीन प्रविधिका नहुँदा धान भारत निकासी हुने र सोही धान प्रशोधन पश्चात् अत्यन्तै महङ्गो मूल्यमा आयात हुने अवस्था श्रृजना भएको छ। आलु, प्याज, लसुन, तरकारी तथा

फलफूल जस्ता कृषि उपजहरूको लागि उचित भण्डारण सुविधा नहुँदा उत्पादन हुने मौसममा सडेर जाने वा न्यून मूल्यमा निर्यात हुने तथा बेमौसममा अत्यन्तै महङ्गो मूल्यमा आयात हुँदा कृषि उत्पादनमा अपेक्षित विकास नहुनुका साथै राष्ट्रको व्यापार घाटा समेत दिनानुदिन बढ्दै गईरहेको छ । गुणस्तरीय कृषि उपजहरूको उत्पादन, प्रशोधन तथा प्याकेजिङ, प्रविधिको विकास, बिस्तार र नियमन हुन नसक्दा निर्यात भईरहेका कृषि उपजहरू समेत निरन्तर घट्दै गएका र निर्यात हुनबाट वञ्चित हुन थालेका छन् ।

राज्यले विगत केही वर्षहरूबाट मलमा अनुदान उपलब्ध गराउन सुरु गरे तापनि राष्ट्रिय आवश्यकताको सानो अंशलाई मात्र सम्बोधन गर्न सकेको छ । मल वितरण प्रणाली समानुपातिक तथा समतामूलक बन्न सकेको छैन । दूर दराजमा रहेका कृषकहरू यस सुविधाबाट वञ्चित भएको देखिन्छ । राज्यले उचित परिमाणमा, उचित समयमा र उचित स्थानहरूमा मल वितरण गर्न नसक्दा कृषि उत्पादनमा अपेक्षाकृत बढोत्तरी हुन सकेको छैन । देशमा मलको अपर्याप्तताले गर्दा भारत बाट महङ्गोमा चोरी निकासीका माध्यमबाट मल आयात हुने र त्यस्तो मलको गुणस्तर कमसल हुने तथा म्याद गुजिसकेका मलहरू भित्रिने समस्या रहेको छ । मलको गुणस्तरीयतालाई नियमन गर्ने निकाय तथा प्रकृया प्रभावकारी नहुँदा राज्य तथा कृषकहरूको सीमित श्रोत र श्रम खेर गईरहेको छ ।

कृषिको विकास नै ग्रामीण क्षेत्रको दिगो आर्थिक रूपान्तरणको प्रमुख आयाम भएता पनि कृषि क्षेत्रमा नीतिगत तथा पूर्वाधार विकेन्द्रीकरण हुन नसक्दा समग्र ग्रामीण विकासलाई नै प्रभावित गरेको छ । राज्यका तर्फबाट कृषि सेवा प्रदान गर्ने निकाय र विज्ञ जनशक्तिहरूको ठुलो जमात राजधानी र जिल्ला सदरमुकाममा सीमित भएर बस्ने हालको व्यवस्थाले नवीन र वैज्ञानिक कृषि प्रविधिहरू ग्रामीण क्षेत्रमा पुग्न सकिरहेको छैन । अनुगमन तथा मूल्याङ्कन प्रणाली मार्फत राज्यबाट भएको लगानी देखिने गरी सेवा प्रवाहको उचित प्रतिफल झल्किन नसक्दा कृषि विकासको समग्र सेवा प्रवाह, पारदर्शिता र सुशासनमा समेत प्रश्न उठ्न थालेको छ । प्रदेश सरकारका नीति, ऐन नियम किसानमुखी हुनुपर्छ, समस्त वास्तविक किसानमा सकारात्मक प्रभाव पार्ने किसिमको हुन आवश्यक छ । नेपालको कृषि विकास तथा कृषि उत्पादनका आधार भनेका जल, जमिन, जङ्गल, जैविक विविधता र कृषि पूर्वाधारको विकास, अनुसन्धान, कृषि प्रसार, प्रविधि, लगानी र बजारको न्यायोचित सम्बर्धनबाट नै कृषकमैत्री कृषिको रूपान्तरण हुनसक्छ । कृषि उत्पादनलाई पनि विविधिकरण, प्रतिस्पर्धी र बजारमुखी बनाउन सकिएको छैन । कृषिको सफलता ऐन, नियमसँग पनि जोडिएको विषय भएकोले नीतिको आधारमा समयानुकूल ऐन, कानूनको संशोधन र किसानमैत्री कृषि विकास ऐन, नियम हुन आवश्यक देखिन्छ ।

जुन दिनदेखि धान दिवसको दिनमा सङ्घीय कृषि मन्त्रीले गमलामा धान रोपेर असार १५ मनाए त्यस दिनदेखि कृषि मन्त्रालय कुर्सीमुखी हुन सुरु भयो । साथै कृषि मन्त्रालयका कृषि प्राविधिकहरू पनि कृषक, धानका बोट, उर्वर भूमि, दही, चिउरा, आलुको घिउमा तारेको तरकारी, विरौला, गोलभेडाको अचार, गाई, भैसी, बाखाको गोठबाट अलगिएर अनि त्यसै दिनदेखि झोला र तालुमा आलु फलाउने प्रस्ताव पेश गर्ने विचौलियाहरूको विग्विगी सुरु हुन थाल्यो । अहिले त कृषि विज्ञ, पशुपालन विज्ञ, कृषि प्रसार कार्यकर्ताहरू र पशु चिकित्सकहरू कृषक, कृषि भूमि, गोठ र फलफूलका बोटमा भन्दा कार्यालयका कुर्सी, सोफा र तारे होटेलहरूमा पो भेटीन थाले । अनि के, कहाँ, कसरी कृषिको विकास र कृषकको भलो हुनु । अनि अर्को कुरा पनि बुझी राखौं जुन दिनदेखि विदेशबाट चामलका बोरा नेपालको सहयोगको नाममा भित्राइए त्यसै दिनदेखि नेपालीको परनिर्भरता, खाद्य संकट र गरिबीका दिन सुरु भए र नेपालीले हजारौं वर्ष लगाएर विकास गरेको सभ्यता, गौरवशाली सास्कृतिक विरासतको जग भत्कन थाल्यो । अब कृषिको विकास, कृषकको आर्थिक सामाजिक रूपान्तरण, खाद्यान्नमा स्वनिर्भर, स्वाधिन अर्थतन्त्रको विकास, दिगो पर्यावरणिय कृषि, स्वस्थ र आरोग्य जीवन जिउन चाहने हो भने जहाङ्ग र जुन भागमा रोग लाग्यो त्यहीबाट मानसिक

रोगको मनोपरामर्श र शारीरिक अङ्गको लागि शल्यक्रियाद्वारा कृषि विकासको उपाय निकाल्ने उपचार सुरु गर्नु पर्छ (थापा र अरुहरू, २०८०) ।

धान, मकै, गहुँ, कोदो, फापर जौ, तरकारी, फलफूल आदिको बोटसँग कुरा नगर्ने, बाली नालीको रोप्ने प्रकृतिको सिजन थाहा नपाउने कृषि विज्ञ, गाई, भैसी, बाखा, भेडा, चोरी, र कुखुराको भाषा नबुझ्ने पशु चिकित्सक, बजारमा कृषि उपजको मूल्य थाहा नपाउने कृषि अर्थ विज्ञ, रैथाने प्राविधिक ज्ञान थाहा नपाउने कृषि वैज्ञानिक, धान बाली पाकेपछि समयमै खरिद नगर्ने र रोपाइको वेलासम्म मल उपलब्ध गराउन नसक्ने कृषि सामग्री कम्पनी, ठीक समयमा नीति, ऐन कानून र निर्णय गर्न नसक्ने मन्त्रालय र समयमै प्रभावकारी सेवा प्रवाह गर्न नसक्ने कृषि विभाग र पशु सेवा विभागबाट कसरी कृषि विकास हुने हो । नीति निर्माता र निर्णयकर्ताहरूलाई यो कुरा गम्भीर रूपमा सोच्नु बाध्य पारेको छ । नोबल पुरस्कार विजेता नर्मन ई. बोर्लागका अनुसार “विरुवाहरूले मानिसहरूसँग बोल्छन् तर उनीहरू मात्र अनुभूति गर्न सक्छन् जो विरुवासँग सधैं नजिक रहन्छन् ।” यस भनाइले माथिका कुराहरूको पुष्टि गर्दछ ।

५. सिकाइ

अध्ययनको क्रममा निम्नलिखित सिकाइ अनुभूति भएको छः

- ५.१ **कृषि श्रमको सम्मान:** खेत बारीमा रुझि-भिजी हिलो, महिलो, धुलो, पशुपन्छीको गोठमा काम गरेर अन्न उब्जाउने कृषकको श्रमको सम्मान न सरकारले दिन सकेको छ न त समाजले नै । प्रदेश सरकारले समेत कृषि जस्तो बाँचनको लागि नभइ नहुने खाद्य सुरक्षा र पोषणको आपूर्ति गर्ने किसानको सम्मान यथेष्ट रूपमा नगरेको पाइयो । समाजमा कृषि व्यवसायमा संलग्न कृषकहरूलाई तल्लो स्तरको नागरिकको रूपमा हेर्ने चलन बढ्दै गएको देखिन्छ । समाजमा उनीहरूको सामाजिक मर्यादा कम भएकोले प्रायः मानिसहरू गैर कृषि पेसामा काम गर्न रुचाउँछन् । तर किसानको अमूल्य परिश्रम र पसिनाले उब्जाएको अन्नले हरेक मानिसको हात मुख जोडिने हुनाले किसानको योगदानलाई जति सम्मान गरे पनि पुग्दैन । किसान त अन्न दाता हुन् र राष्ट्रको अर्थतन्त्र धात्रे खम्बा हुन् ।
- ५.२ **कृषक परिचय पत्र:** अन्य पेसाका धेरै जसो पेसा कर्मीहरूले आफ्नो पेसा अनुसारको परिचय पत्र पाएको देखिन्छ । तथापी, अन्न बाली, पशुपालन र बागवानी व्यवसायमा काम गर्ने कृषकहरूले राज्यबाट आफ्नो परिचय पत्र पाएको देखिएन । वास्तवमा पहिचानको मानक भनेको योगदान हो । स्पष्ट परिचय पत्र नभएकोले राज्यबाट पाउने सेवा, सुविधा तथा अनुदान वास्तविक कृषि उत्पादनमा योगदान पुऱ्याउने किसान भन्दा प्रत्यक्ष रूपमा कृषि पेसामा संलग्न नभएका व्यक्तिले लिएको पाइयो ।
- ५.३ **कृषि प्रसार, कृषि अनुसन्धान र कृषककोबिच सम्बन्ध:** यी तीन कृषिसँग सम्बन्धीत प्रत्यक्ष सरोकारवाला निकाय र व्यवसायीहरूकोबिच प्रविधिको विकास, र हस्तान्तरण सहजताको लागि जीवित सम्पर्क, सहकार्य र समन्वय हुनु पर्नेमा आ-आफ्नै तरिकाले कार्य गरेको पाइयो । परिणामस्वरूप कृषि उत्पादन तथा उत्पादकत्व जनताको माग अनुसार तुलनात्मक रूपमा बढ्न नसकेको देखियो ।
- ५.४ **कृषि अनुदानको प्रभाव:** कृषि व्यवसायलाई मर्यादित र जनजीविकाको प्रमुख स्रोतको रूपमा विकास गर्न र उत्पादन र प्रति एकाई उत्पादकत्व वृद्धि गर्न कृषि अनुदान उपलब्ध गराउने नीति लिएको देखिन्छ । तर वास्तविक किसान भन्दा अन्य व्यक्तिले यो अनुदान लिने गरेको देखिएकाले यसले कृषि उत्पादन र

उत्पादकत्व बढाउन खासै योगदान पुन्याउन सकेको पाइएन । त्यसैले सङ्घीय, प्रदेश सरकार र स्थानीय सरकारले अनुदानको विधि तथा प्रक्रियामा गम्भीर रूपमा समीक्षा गर्नु पर्ने आवश्यकता देखिन्छ ।

- ५.५ **युवा वर्गको कृषि कर्मप्रतिको दृष्टिकोण:** अहिले युवा वर्गको कृषि कर्मप्रति आकर्षण कमी भएको पाइएको छ । बागमती प्रदेशमा शहरीकरण तीव्र रूपमा बढ्दै गएकोले र भूमण्डलीकरणको प्रभावले युवा वर्गको इच्छा-आकाङ्क्षा र नयाँ नयाँ प्रविधिको प्रयोग बढ्दो अवस्थामा रहेको हुँदा परम्परागत कृषि पेसाबाट यी माग पूरा नहुने भएपछि युवा वर्गहरू नयाँ अवसरको खोजीको सिलसिलामा कृषि व्यवसाय परिवर्तनतिर लागेको देखिन्छ । कृषि व्यवसायले पनि प्रसस्त आम्दानी दिन सक्छ भन्ने विश्वास युवा वर्ग बिच जगाउन कृषिलाई वैज्ञानिकीकरण, व्यवसायिकीकरण र बजारीकरण गर्दै जनजीविकाको भरपर्दो र आकर्षक स्रोतको रूपमा विकास गर्नु पर्ने आवश्यकता देखिएको छ ।
- ५.६ **निर्वाहमुखी कृषिबाट व्यवसायिकीकरण:** बागमती प्रदेशको कृषि अझै पनि परम्परागत ढङ्गबाट नै चलेकोले मूल्य श्रृङ्खलामा आधारित भई मूल्य अभिवृद्धि गरी आम्दानीको भरपर्दो र आकर्षक पेसाको रूपमा विकास हुन नसकेको बास्तविकता प्रष्टै छ । बागमती प्रदेशमा शहरी जनसङ्ख्या तीव्र रूपमा बढ्दै गएकोले खाद्य तथा पोषणको लागि अन्न, तरकारी, फलफूल, दूध तथा दूग्धजन्य पदार्थको माग पूरा गर्नका लागि अरुसँग भर पर्नु पर्ने आवश्यकता छ । त्यसैले परम्परागत निर्वाहमुखी कृषि प्रणालीमा व्यापक परिवर्तन गरी कृषिमा व्यवसायिकीकरण तथा मूल्य श्रृङ्खलामा आधारित बजारीकरण गर्नु पर्ने देखिन्छ ।
- ५.७ **कृषि बाली, पशुपालन र वन सम्पदाको सम्बन्ध:** कृषि बाली, पशुपालन र वन एक अर्कासँग अन्त्योन्याश्रित छन् । यी तीन अवयव दिगो कृषि प्रणाली तथा एकीकृत जैविक खेतीको लागि कृषकको पहुँचमा हुनु पर्दछ । तर अहिले कृषि बाली, पशुपालन र वनको प्रत्यक्ष सम्बन्ध टुट्दै गएको छ । कृषि जैविक प्रणालीबाट कृषि सामग्रीको प्रयोग (रासायनिक मल, विषादी, मेसिन, वर्णशंकर बीऊ आदि) मा बढी परनिर्भर हुँदै गएको छ । कृषि सामग्रीहरूको आपूर्ति, बजारको व्यवस्थापन र कृषि उपजको मूल्य निर्धारण व्यापारी तथा बहुराष्ट्रिय कम्पनीहरूले गर्दछन् । बास्तविक कृषक त बहुराष्ट्रिय कम्पनीहरूका श्रमिकको रूपमा परिणत हुँदैछन् । कृषिलाई कृषककै पहुँच र नियन्त्रणमा राख्न कृषकमुखी नीति नियम, ऐन, कृषि सहकारीमा जोड र राज्यले अपेक्षित कृषि उत्पादन तथा उत्पादकत्व वृद्धि गर्न आगामी दिनमा लगानी बढाउनु पर्ने देखिन्छ ।
- ५.८ **खेतीयोग्य जमिन बाँझो पल्टिदै:** बागमती प्रदेशमा तीव्र शहरीकरण र युवाहरूको बैदेशिक रोजगारीप्रति मोह बढ्नाले करीव एक चौथाई खेतीयोग्य जमिन बाँझो पल्टिदै छन् । खेतीयोग्य जमिन बाँझो हुनबाट रोक्न र उत्पादनमा उपयोग गर्न प्रदेश सरकारको नीति नियम, ऐन र क्रियान्वयन पक्ष प्रभावकारी हुनु पर्ने देखिन्छ ।
- ५.९ **जलवायु परिवर्तनले कृषिमा परेको प्रभाव:** सबभन्दा बढी जलवायु परिवर्तनको नकारात्मक प्रभाव कृषि क्षेत्रमा नै परेको देखिन्छ । लामो सुख्खा, खडेरी, अधिक वर्षा, बाढी, पहिरो, नयाँ रोग तथा कीराको प्रकोप, वन्य जन्तुबाट क्षति, तापक्रम वृद्धिले जलवायुमा आएको परिवर्तनले अन्न बाली, तरकारी, पशुपन्छी र वागवानी व्यवसायमा धेरै क्षति व्योहोर्नु परेको छ ।

- ५.१० **कृषि उपजमा व्यापारीको नियन्त्रण:** अन्न, तरकारी, फलफूल र माछा, मासु, दुध र दूग्धजन्य पदार्थको उत्पादन गर्ने कृषक तर कृषि उपजको मूल्य निर्धारण गर्ने चाहिँ व्यापारी भएको हुँदा किसान वर्ग शोषणमा परेका छन् । कतिपय बालीको त उत्पादन परल मूल्य पनि नउठेको अवस्था देखिन्छ । उत्पादकले पाउने मूल्य र उपभोक्ताले बजारमा खरिद गर्ने मूल्यमा पाँच देखि दश गुणासम्म फरक भएको देखिन्छ । यस्तो शोषणको अन्त्य गर्न बजारमा सरकारको नियमन प्रभावकारी ढङ्गले लागू गर्न प्रदेश सरकार र स्थानीय सरकारले पहल गर्नु पर्ने आवश्यकता देखिन्छ ।
- ५.११ **कृषि बालीमा मूल्य अभिवृद्धि:** अहिलेसम्म कृषि तथा पशुपन्छी विकास मन्त्रालयको कार्यक्रम कृषि बाली, पशुपन्छी र बागवानीको उत्पादन वृद्धितर्फ केन्द्रित भएको छ । यो कार्यक्रम आफैमा महत्वपूर्ण भए पनि कृषि उपजको मूल्य अभिवृद्धि गर्न मूल्य श्रृङ्खलामा आधारित भई बजारीकरण नगरी आसातित रूपमा कृषकको आमदानी बढाउन सकिदैन । त्यसैले कृषि उपजको उत्पादन देखि सङ्कलन, ग्रेडिङ, प्रशोधन र बजारीकरणसम्म कृषकहरूको सहभागिता सुनिश्चित गर्न समुदायमा आधारित सहकारीमार्फत कृषि व्यवसाय सञ्चालन गर्नु पर्ने आवश्यकता छ ।
- ५.१२ **सडक करिडोरमा व्यवसायिक कृषि:** बागमती प्रदेशमा उत्तर-दक्षिण, पूर्व-पश्चिम र एक जिल्लाबाट अर्को जिल्ला र एउटा पालिकाबाट अर्को पालिकासम्म जोड्ने राम्रो सडक सञ्जाल तयार भई सकेको छ । बजार पनि पर्याप्त भएकोहुँदा अब सडक करिडोरमा व्यवसायिक कृषि जस्तै अन्न बाली, तरकारी खेती, फलफूल, पशुपालन, दुग्ध तथा दुग्धजन्य उद्योग, मत्स्य व्यवसाय, अन्नको पकेट क्षेत्रमा कृषि व्यवसाय केन्द्रित गर्दा कृषकहरू लाभान्वित हुनेछन् । कृषिमा नवीनतम प्रविधिको प्रयोग गरेर सडकका छेउछाउमा कृषिमा आधारित उद्योग सञ्चालन गर्न नीजी क्षेत्रलाई प्रोत्साहित गरेमा कृषकको आय छिट्टै बढाउन सकिने पूर्वाधार तयार भएको छ । सडक निर्माणको उद्देश्य “कनेक्टीभिटी” मात्र होइन आर्थिक समृद्धिको आधार हो र हुनु पनि पर्छ । गाउँबाट शहर प्रवेश गर्ने सवारी साधनहरू कृषि उपज दुवानी गरेर भरीभराऊ आउनु पर्छ अनि मात्र प्रदेश र स्थानीय तहमा बसोबास गर्ने जनताको जीवनमा आर्थिक-सामाजिक रूपान्तरण तथा दिगो समृद्धि हासिल हुन सक्छ ।
- ५.१३ **कृषिमा आधारित उद्योगको विकास:** सुरु सुरुमा नेपाल जस्तो विकासउन्मुख देशको लागि कृषिमा आधारित उद्योग जस्तै डेरी उद्योग, बेकरी उद्योग, चीनी उद्योग, सखर उद्योग, आटा तथा मैदा उद्योग, चामल उद्योग, जुस उद्योग, चीया तथा कफी प्रशोधन उद्योग, साना इरेलु उद्योग, आलु चिप्स उद्योग, गाजा, केरा र अल्लोका रेशाजन्य तयारी पोशाक उद्योग, छालाका जुता, चप्पल, पेटी उद्योग आदि सञ्चालन गर्न सकेमा कृषकको आमदानी बढ्नुको साथै राष्ट्रिय अर्थतन्त्रमा समेत सुधार हुने देखिन्छ ।
- ५.१४ **जल, जमिन, जैविक मल र युवा जनशक्ति:** नेपाल जल, जमिन, जडीवुटी, जैविक विविधतामा धनी देश भएकोले यी प्राकृतिक संपदाको अधिक उपयोग गरी मूल्य श्रृङ्खलामा आधारित भई उद्योग व्यवसाय सञ्चालन गर्न युवा जनशक्तिलाई प्रोत्साहन गरी रोजगारी सिर्जना गर्न सकेमा अर्थतन्त्रको विकास हुने देखिन्छ । साथै बैदेशिक रोजगारीबाट फर्केका युवा वर्गलाई कृषि उद्यममा संलग्न गर्न प्रोत्साहन गर्नु पर्ने आवश्यकता छ ।
- ५.१५ **कृषि बालीमा विषादीको प्रयोग:** अन्धाधुन्द तरिकाले तरकारी, अन्न बाली र फलफूल खेतीमा विषादी र रासायनिक मलको प्रयोग गर्नाले जन स्वास्थ्यमा नकारात्मक असर परी नसर्ने रोग जस्तै क्यान्सर, स्वास

प्रश्वास सम्बन्धी रोग, रक्त नली सम्बन्धी रोग, मिर्गौला सम्बन्धी रोग, नसा सम्बन्धी रोग, मधुमेह, उच्च रक्तचाप आदि रोगको प्रकोप बढ्दै गएकोले स्वास्थ्यमा राज्यले धेरै लगानी बढाउनु परेको छ । त्यसैले कृषि बालीमा विषादीको प्रयोग गर्दा सचेत हुनु पर्ने देखिन्छ । आजकाल बजारमा जैविक विषादीको उपलब्धता पनि भएकोले यस्ता विषादिको सुरक्षित प्रयोग गर्नु पर्ने आवश्यकता छ । साथै पशुपालनमा प्रतिजैविक (एण्टिबायोटिक) औषधिको व्यापक प्रयोग हुन थालेकाले पशुपन्छीमा रोग प्रतिरोधी क्षमता कम हुँदै गएको अध्ययनहरूले उल्लेख गरेका छन् । यसतर्फ पनि सरकार सचेत हुनु पर्ने आवश्यकता छ ।

५.१६ **कृषिमा नयाँ रोजगारीको अवसर:** अन्नबाली, तरकारी, फलफूल, पशुपालन, जडीबुटी, रेसाजन्य पदार्थको प्रयोग गरेर धेरै प्रकारका कृषिमा आधारित उद्योगहरू सञ्चालन गरी नयाँ रोजगारीका अवसरहरू सिर्जना गर्न सकिने प्रचुर सम्भावना देखिन्छ । यसतर्फ प्रदेश सरकारले लगानी बढाई हरित अर्थतन्त्रको विकास गर्न सकिने देखिएको छ । केही लोभलाग्दा उदाहरणहरू देख्न सकिने, भन्न सकिने, सुन्न सकिने र गर्व गर्न सकिने अवस्थामा विकास भइ सकेका छन् । अर्थराजनीतिक दृष्टिकोणले बुझ्न मात्र सक्नु पर्‍यो ।

५.१७ **तीन तहको सरकारबिच सहयोग, सहकार्य र समन्वय:** सङ्घीय लोकतान्त्रिक गणतन्त्रमा तीन तहको सरकारबिच प्रभावकारी सहयोग, सहकार्य र समन्वय गर्न सकेमा कृषिमा आयत प्रतिस्थापन गरी हरित अर्थतन्त्रको विकास हुने देखिन्छ । प्रभावकारी रूपमा हरित अर्थतन्त्रको विकास गर्न प्रदेश र स्थानीय सरकारको क्षमता विकास, जनशक्ति, बजेटको यथेष्ट व्यवस्था र कानूनी सहजता हुनु पर्ने देखिन्छ । स्थानीय तहमा कार्यरत कृषि तथा पशु विकास प्राविधिक जनशक्तिको होराइजेण्टल सम्बन्ध प्रदेश सरकार र कृषि अनुसन्धान फार्महरूमा हुनु पर्ने आवश्यकता छ ।

५.१८ **सहकारी वा समुदायमा आधारित कृषि कार्यक्रम:** अहिले सङ्घीय, प्रदेश तथा स्थानीय सरकारबाट संचालित कृषि, पशुपालन, बागवानी, भेटेरीनरी सेवा छरपष्ट गरी सञ्चालन भएकोले यसको प्रतिफल प्रष्टसँग देखिएको छैन । कृषि तथा पशुपन्छी, बागवानी कार्यक्रमहरू सहकारी वा समुदायमा आधारित भई व्यवसायिकीकरण गरी कृषि उद्यमको रूपमा सञ्चालन गर्न सकेमा यसको आर्थिक प्रतिफल छोटो अवधि (३ देखि ६ महिना) मै देख्न सकिन्छ । कृषि व्यवसाय विकासको इन्जिन हो । यसले धेरै गरिब तथा मध्यम वर्गका महिला तथा पुरुषहरूले लाभको बाँडफाड पनि एकैचोटी प्राप्त गरी रोजगारीको अवसर पाउन सक्छन् । थोरै लगानीमा कृषिमा जति चाडो रोजगारी सिर्जना भई आम्दानी बढ्न सक्ने अन्य व्यवसाय कम्पै पाइन्छ ।

५.१९ **अन्न बाली, तरकारी, फलफूल, पशुपन्छी तथा माछापालन व्यवसायको बिमा:** प्रदेश सरकारले कृषि बाली, तरकारी, फलफूल तथा पशुपन्छी, माछा व्यवसायलाई खडेरी, अधिक वर्षा, बाढी, पहिरो, भूकम्प, पशुजन्य महामारी रोग, कृषि बालीमा रोग कीराको प्रकोप, जलवायु परिवर्तनजन्य समस्या आदिको क्षतिबाट कृषकहरूलाई जोखिम हस्तान्तरण गर्न बिमा एक प्रभावकारी उपाय हो । यस्तो कार्यक्रमहरू प्रभावकारी बनाउन र कृषकहरू माझ कृषि व्यवसाय गर्न विश्वास जगाउन बिमा कार्यक्रम लोकप्रिय औजारको रूपमा देखिएको छ ।

५.२० **कृषिलाई गरिबी निवारण, रोजगारी, उद्योग, पर्यटन, शिक्षा, स्वास्थ्य र आर्थिक समृद्धिसँग जोड्ने:** कृषि एउटा बहुआयमिक, जनजीविका र खाद्य तथा पोषण सुरक्षाको आधार हो । कृषि व्यवसाय गरिबी निवारण, रोजगारी सिर्जना, उद्योग, पर्यटन र आर्थिक समृद्धिसँग प्रत्यक्ष रूपमा जोडिएको सवाल हो । कृषि नविकरणीय

प्राकृतिक स्रोत हो । यो यस्तो व्यवसाय हो जहाँ पढे लेखेका, उद्योपति र निरक्षर भूइतहका जनतासम्मले गरी खान सक्ने, कमाउन सक्ने, जिउन सक्ने, रोजगारी सिर्जना गर्न सक्ने, छिट्टै आमदानी हुने, भोकमरी, आर्थिक मन्दी र गरिबीको दुष्चक्रबाट छुटकारा दिलाउने दिगो रूपमा मानिसको मुहारमा मुस्कान ल्याउन सक्ने पुर्नउत्पादन भई रहन सक्ने प्राकृतिक सम्पदा हो । जसले कृषिको बहुआयामिक शक्तिलाई बुझ्न सक्छ उसैले नै जीवनमा स्वाभिमानपूर्वक दिगो रूपले तरक्की गर्न सक्छ । जसको भोजनको थाल आफ्नै हातको मुठीमा हुन्छ उसले कसैको गुलामी बन्नु पर्दैन । दिगो तथा स्वनिर्भर खाद्य तथा पोषण सुरक्षा जीवन र जगतको अमूल्य स्वतन्त्रता, स्वाधिनता, सक्ली लोकतन्त्र, गौरवशाली ऐतिहासिक विरासत् र मानव अधिकारको अभ्यासमा जीवन्त औजार हो । स्वस्थ माटो-स्वस्थ विरुवा-स्वस्थ जनावर-स्वस्थ मानव हुन्छ, यो चक्र धरतीमा निरन्तर चलिरहनु पर्छ ।

६. निष्कर्ष तथा सुझाव

सरकारका हरेक कृषि तथा पशुपन्छी विकास कार्यक्रम रोजगारी केन्द्रित हुनुपर्ने देखिन्छ । यसका लागि तत्काल कृषि उपज बिक्रीको ग्यारेन्टी गर्नु पर्छ । कृषि यस्तो क्षेत्र हो, जहाँ बचतसहित उत्पादन बिक्रीको ग्यारेन्टी हुने हो भने ६ महिनाभित्रै बेरोजगारी समस्या समाधान हुन सुरु हुन्छ । नेपालको सबैभन्दा ठूलो सम्पदा भूमि हो र सबैभन्दा ठूलो जनशक्ति किसान हुन् । त्यसको निम्ति वैज्ञानिक भूमिसुधार भनेर संविधानमै उल्लेख भएको छ तर त्यसको व्यावहारिक रूपान्तरणको लागि खासै काम हुन सकेको छैन । नेपालको उद्योगधन्दा पनि राम्रोसँग विकास भएको छैन । स्वदेशभित्रै रोजगारी सिर्जना गर्नको निम्ति कृषिमा केन्द्रित भएर विशेष योजनाहरू ल्याउनु आवश्यक छ । हाल आएर भारतले कृषि हरित क्रान्तिमार्फत ठूलो मात्रामा खाद्यान्न उत्पादन गरेको छ । त्यसमा पनि धेरै अनुदान दिएकाले नेपाली कृषकले भारतीय किसानसँग प्रतिस्पर्धा गर्न सक्दैनन् । यसबाट नेपालको कृषि पनि फस्टाउन सकेन र कृषिमा आश्रित जनशक्ति गाउँबाट शहर लखेटियो । शहरमा पर्याप्त उद्योग धन्दाको विकास नभएपछि युवाहरू रोजगारीको लागि विदेश पलायन हुन बाध्य भएका छन् । त्यसैले श्रम पलायनलाई रोकेर देशभित्र राष्ट्रिय औद्योगीकरण, कृषिको वैज्ञानिकीकरण र व्यवसायिकीकरण गर्ने बरु बाहिरबाट पुँजी र प्रविधि ल्याएर भए पनि भारत र चीनसँग प्रतिस्पर्धा गर्ने नीति तथा कार्यक्रम ल्याउनु पर्ने आवश्यकता देखिन्छ ।

दीगो विकास लक्ष्य प्राप्ति गर्न विश्व नै लम्किरहेको वर्तमान अवस्थामा सार्वजनिक, निजी र सहकारी क्षेत्रको संयुक्त प्रयास बिना यो सबै कार्य अपूर्ण हुन्छ । यता किसानको पक्षबाट हेर्दा नेपालमा ठूलो सङ्ख्यामा साना किसानवर्गको उपस्थिति रहेको हुनाले उनीहरूको उत्पादन वृद्धि गराउनेदेखि बजारीकरणको लागि समेत सहकारीको भूमिका बढाउनु पर्छ । कृषि उत्पादनको मूल्य श्रृङ्खलामा उत्पादन तथा बजारमा कृषि सहकारीको प्रभावकारी संलग्नता अबको आवश्यकता हो । वातावरणमैत्री, दिगो, जलवायु परिवर्तन उत्थानशील कृषि प्रणालीको विकास, खडेरी प्रतिरोधात्मक बालीका जातको विकास, किसानमैत्री बजारीकरण, अध्ययन अनुसन्धान, कृषि पेसाबाट नै रोजगारी सिर्जना आदिको विकास हुन आवश्यक देखिन्छ ।

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Control over Resources and Agricultural Decision-making: Gendered Evidence from Kavreplanchowk District, Nepal

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ABSTRACT

In Nepal, the migration of rural men has increased women's responsibilities in traditionally male-dominated roles. Despite their critical contributions, women face unequal access to essential resources particularly income, credit, agricultural information, and technology. Existing studies provide a broad overview of women's household decision-making and the challenges they face, but they do not adequately address women's access to and control over resources, which influence their level of participation in decision-making. This study aims to assess women's access to and control over resources, specifically income, credit, agricultural information, and technology, and to examine how access to and control over these resources influences their level of participation in agricultural decision-making. The findings highlight that access to and control over these resources directly influence women's decision-making ability. By examining the intersection between resource access, control, and decision-making, policymakers can formulate effective strategies to promote gender equality and women's economic empowerment. The study underscores the necessity of policy interventions to ensure women's equal access to and control over resources.

Keywords: Gender; Decision-making; Agricultural activities; Access & control over resources

1. Introduction

Women in developing countries play a crucial role in agriculture, contributing significantly to production, processing, and household food security. In Nepal, the migration of rural men for employment has led to the feminization of agriculture, with women assuming traditionally male roles, such as ploughing. This shift has increased women's workloads but also made them primary drivers of agricultural production. Studies indicate that men's migration positively impacts women's community involvement, reshaping social roles and responsibilities (Zacharia & Ranjan, 2001; Karki & Bhattarai, 2004) and providing opportunities for active participation in community institutions. Despite their critical role in achieving food security, women face unequal access to essential resources like agricultural inputs, credit, land, information, and technology compared to men (USAID, 2013). Women remain undervalued and often invisible as active participants, predominantly perceived as caregivers, which significantly constrains their participation in agricultural decision-making processes. Prevailing gender norms perpetuate inequality in gender relations, affecting access to and control over productive resources. Consequently,

men retain dominant roles due to greater decision-making power and land ownership (A. Joshi and D. Kalauni, 2018).

Women's lack of access to resources hinders their participation in agricultural decision-making. To empower women and promote economic development, it is essential to recognize their role in decision-making processes. The 2015 Constitution of Nepal guarantees women's social, economic, and political rights and encourages their participation. The Agricultural Development Strategy 2015-2035 also aims to increase women's roles in cash crop activities. Although various initiatives, such as skills development programs, exposure visits, and start-up grants for women farmers, have been implemented (FAO, 2019), only a limited number of women have benefited.

Resources are fundamental for human development, but in many developing countries, women and men face unequal control over these resources, leading to gender inequality (FDRE, 2002). Despite Nepal's 2015 constitution guaranteeing equal property rights, women still encounter significant barriers in claiming these rights. Only 19.71% of households have women as land and property owners (CBS, 2011), limiting their access to essential resources such as income, credit, technology, and agricultural inputs. This restriction results in lower productivity for women. Numerous studies have examined women's household decision-making and its relationship with socio-demographic factors and household nutritional adequacy (Galiwango, H. et al, 2023; Balayar & Mazur, 2023). These studies provide a broad overview of decision-making, the challenges faced by women farmers, and the influence of factors such as age, caste/ethnicity, and education. However, they do not sufficiently address women's access to and control over resources, which significantly impact their decision-making status. Therefore, detailed research is needed to fill this gap and comprehensively understand how access to resources influences women's participation in agricultural decision-making at household level.

Although both men and women significantly contribute to agricultural production, women have limited access to resources like improved seeds, fertilizer, modern technologies, credit, pesticides, and marketing facilities (FAO, 2010; Ibnouf, 2011). Even when women have access, they often lack decision-making authority. Government and organizational efforts to address these inequalities, such as policies for equal representation and affirmative action, do not adequately focus on providing women with equal opportunities to access and control resources. This lack of targeted policies and gender-responsive approaches hinders inclusive and equitable development.

2. Research objectives

This study aims to assess the participation of women farmers in agricultural decision-making and investigate how women's access to and control over resources—specifically income, credit, agricultural information, and technology—influence their level of participation. This research is crucial for understanding gender dynamics and developing strategies to promote gender equality and women's economic empowerment.

3. Methodology

The study was conducted in Namobuddha Municipality, Kavrepalanchowk District, Nepal, situated in Bagmati Province. This area, predominantly inhabited by the Tamang and Parbate Hill communities, is

known for high vegetable production due to favorable climatic conditions and proximity to market centers. Various agricultural development programs further support the region's agricultural activities, presenting opportunities for women to enhance their quality of life through vegetable production.

A sample of 303 vegetable farmers was selected using a multi-stage random sampling technique, and face-to-face interviews were conducted with a pre-tested semi-structured questionnaire. The data were analyzed with SPSS version 26.0, focusing on the intersection between access to and control over resources-income, credit, agricultural information, and technologies- and women's decision-making. Cross-tabulations were used to examine this intersection, providing valuable insights for future policy interventions aimed at improving women's participation in agricultural decision-making.

4. Results and discussion

4.1 Social characteristics of respondents

The social characteristics of respondents, such as sex, caste/ethnicity, age, education, and farming experience, were analyzed. Most respondents (53%) identified as Brahmin, though Janajati dominates the municipality, with the largest age group being 46-60 years old. Nearly half, (49%) had secondary education and 26% had 10-20 years of farming experience. These findings highlight the influence of age, education, and farming experience on decision-making, emphasizing the value of experience and the need to promote education and training to enhance farmers' adaptation to new technologies and sustainable practices.

4.2 Women's participation in agricultural activities

Agricultural production activities involve both men and women working together on most tasks, including physically demanding and labor-intensive ones. Over 50% of respondents reported joint participation in production and post-harvest activities (Table 2). This aligns with Devkota and Pyakuryal's (2017) findings on changing gender roles in agriculture, showing increasing collaboration between men and women. The study highlights the joint involvement of men and women in various agricultural activities, supported by similar findings from Devkota et al. (2018). Although national data on gender distribution in crop production and post-harvest activities is unavailable, a study in Lubhu village, Lalitpur district, found that women's involvement in these areas was twice that of men (Joshi, 2000, cited by FAO, 2019). However, these findings may not represent the entire country. Studies consistently show that women are more involved in labor-intensive activities.

The study found that over 40% respondents highlighted women's roles in planting, weeding, harvesting, storage, and sorting and grading activities. Conversely, men were predominantly responsible for marketing tasks. About 51% noted minimal female involvement in marketing activities such as market identification, buyer interaction, pricing, and promotion. These findings highlight the gendered nature of agricultural work, emphasizing the need to recognize and value women's contributions to promote gender equality in the sector. Thus, promoting equal participation of both genders across agricultural activities is crucial for enhancing livelihoods and ensuring food security (Lemke & Bellows, 2015).

Table 1: Women's involvement in agriculture-related activities (n=303)

| Activities | | None | | Solo | | Joint | |
|----------------------|---|------|----|------|----|-------|----|
| | | N | % | N | % | N | % |
| Production & harvest | Seed collection | 85 | 28 | 59 | 19 | 159 | 52 |
| | Collection of other input materials | 93 | 31 | 58 | 19 | 152 | 50 |
| | Preparing for plantation | 38 | 13 | 92 | 30 | 173 | 57 |
| | Plantation | 15 | 5 | 133 | 44 | 155 | 51 |
| | Weeding | 13 | 4 | 145 | 48 | 145 | 48 |
| | Irrigation | 47 | 16 | 87 | 29 | 169 | 56 |
| | Harvesting | 21 | 7 | 125 | 41 | 157 | 52 |
| Post-harvest | Storing | 21 | 7 | 130 | 43 | 152 | 50 |
| | Sorting / Grading / Packaging | 32 | 11 | 126 | 42 | 145 | 48 |
| | Identifying Markets | 154 | 51 | 48 | 16 | 101 | 33 |
| | Marketing / dealing with buyers/pricing | 156 | 51 | 37 | 12 | 110 | 36 |

Source: Field survey, 2022

4.3 Access to and control of resources

The study's findings illustrate significant disparities in women's access to and control over resources compared to men. Men generally have greater access to and control over income, information, technology, markets, and credit. Women's access and control in these resources is limited, except for expenditure where they have more control. However, more than 50% of both genders reported joint access to income and expenses, and over 40% shared access to information, technology, and credit. Men dominate market access (52%). Women face particular challenges in accessing technology, with only 11% reported access compared to 48% for men. The introduction of new technologies primarily benefits men, perpetuating gender disparities in knowledge and skill development. Consequently, women face challenges in accessing knowledge, technology, and training related to agriculture (FAO, 2010). Women-friendly agricultural technologies exist but face low adoption due to cost, technical knowledge barriers, and limited information. Government subsidies and technical support are crucial to promote technology adoption among women farmers.

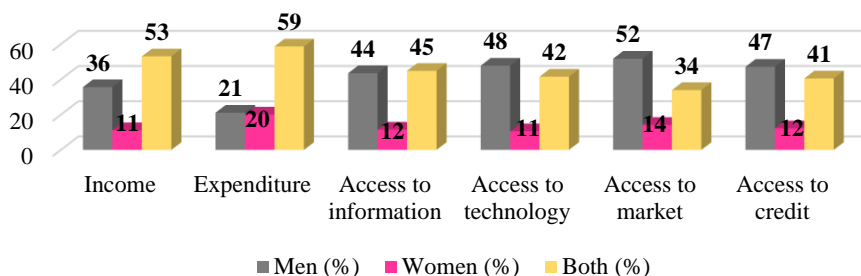


Figure 1: Access to and control over resources by men and women

Source: Field survey, 2022

4.4 Women's involvement in decision-making

The analysis shows women's independent involvement in decision-making across various farm activities is generally low, accounting for less than 25% (Table 3). However, Nina B. Holmelin's study (2019) presents contrasting findings, indicating that women solely make decisions on overall farm management in 45% of households, compared to 25% where men solely make decisions, with joint decisions in the remaining 30% of households. Specific areas where women's independent decision-making is notably limited include finance sourcing, agricultural inputs application, and crop/livestock insurance policy, which align with the findings of Sharma et al. (2013). Women's partial participation in decision-making for various farm activities is impressive. Research indicates that in Environmental Conservation Agriculture, both men and women typically make decisions together (Maharjan, Singh, Gonzalvo, 2023). Majority, around 88% of respondents, participate jointly with their husbands or family members in decisions concerning energy use and irrigation systems, including technologies like drip irrigation and solar energy. Additionally, about 68.6% are involved jointly in decisions regarding technology adoption, such as agricultural apps and ICT. This trend suggests an increasing in terms of partial inclusion of women in decision-making processes, where husbands and male family members now include women in discussions about crop selection, labor management, investment, and credit. Women typically hold limited influence (14.5%) in financial matters such as credit, loans, and investments, despite jointly making most household financial decisions (68%). They often need male permission to travel for training but can usually persuade their husbands. Studies by Balayar & Mazur (2021), Bajracharya (1994), and Acharya & Bennett (1981) confirm women's partial involvement in joint decision-making regarding agricultural activities. In contrast, Zewdu et al. (2016) observed that men predominantly control household decisions in Ethiopia, illustrating regional and cultural variations in decision-making dynamics. Income, training access, peer learning, exposure visits, and program grants are critical for empowering women in decision-making (Balayar & Mazur, 2021). However, 93% of women in the study lack technical or financial support, limiting their independent decisions. Although joint decision-making with spouses is common, the absence of support impedes women's autonomy. Increased decision-making power among women can be facilitated through conservation agricultural practices (Maharjan, Singh, Gonzalvo, 2023). Providing resources, training, and support can significantly enhance women's decision-making capacity and foster gender equality in agriculture.

Table 2: Women’s involvement in decision-making in agriculture-related activities

| Activities | Men | % | Women | % | Both | % |
|---|-----|------|-------|------|------|------|
| Area for production | 83 | 27.4 | 56 | 18.5 | 164 | 54.1 |
| Crop identification | 80 | 26.4 | 60 | 19.8 | 163 | 53.8 |
| Seed selection | 89 | 29.4 | 65 | 21.5 | 149 | 49.2 |
| Use of other agri. Inputs | 110 | 36.3 | 47 | 15.5 | 146 | 48.2 |
| Use of credit | 127 | 41.9 | 44 | 14.5 | 132 | 43.6 |
| Technology use (Use of Agri app, ICT, social media) | 75 | 24.8 | 20 | 6.6 | 208 | 68.6 |
| Use of labor | 89 | 29.4 | 46 | 15.2 | 168 | 55.4 |
| Use of energy (zero tillage, solar energy) | 23 | 7.6 | 12 | 4.0 | 268 | 88.4 |

| Activities | Men | % | Women | % | Both | % |
|--|-----|-----|-------|-----|------|------|
| Use of irrigation system (drip, sprinkler, RW harvest) | 22 | 7.3 | 14 | 4.6 | 267 | 88.1 |

Source: Field survey, 2022

4.5 Intersection between women's access to and control over resources and their level of participation in agricultural decision-making

This study assessed the intersection between level of women's participation in agricultural decision-making and access to and control over resources particularly - income, credit, information and technology and are briefly discussed below.

4.5.1 Women's access to and control over Income and their level of participation in decision-making

Women's involvement in agricultural decision-making hinges on their access to and control over income. In rural communities, women who control income are more likely to participate in decisions regarding land use, crop/seed selection, inputs, credit use, technology adoption, labor and energy use for farming activities. Conversely, when women have limited control over income, their influence over these decisions diminishes. Table 4 illustrates that over 70% of women who control income make decisions independently across farm activities, except for technology, labor, energy, and irrigation systems, which often involve joint decision-making. There is a significant contrast in decision-making autonomy between women with and without income control, with less than 14% of those with limited access to income influencing agricultural decisions. Roy et al. (2017) observed similar patterns in their study conducted in Mymensingh, Bangladesh.

Table 4: Women's access and control over **Income** and their participation in **decision-making**

| Decision making in Agricultural Activities | Decision making | Access and control in income by women | | | |
|--|-----------------|---------------------------------------|------|------------|------|
| | | No (n=269) | % | Yes (n=34) | % |
| Area for production | Solo | 28 | 10.4 | 28 | 82.4 |
| | Joint | 159 | 59.1 | 5 | 14.7 |
| Crop identification | Solo | 33 | 12.3 | 27 | 79.4 |
| | Joint | 158 | 58.7 | 5 | 14.7 |
| Seeds selection | Solo | 38 | 14.1 | 27 | 79.4 |
| | Joint | 145 | 53.9 | 4 | 11.8 |
| Use of other agriculture inputs | Solo | 22 | 8.2 | 25 | 73.5 |
| | Joint | 139 | 51.7 | 7 | 20.6 |
| Use of credit | Solo | 19 | 7.1 | 25 | 73.5 |
| | Joint | 125 | 46.5 | 7 | 20.6 |
| Technology use (Use of Agriculture app including other ICT , social media) | Solo | 6 | 2.2 | 14 | 41.2 |
| | Joint | 190 | 70.6 | 18 | 52.9 |
| Use of labor | Solo | 24 | 8.9 | 22 | 64.7 |
| | Joint | 158 | 58.7 | 10 | 29.4 |

| Decision making in Agricultural Activities | Decision making | Access and control in income by women | | | |
|---|-----------------|---------------------------------------|------|------------|------|
| | | No (n=269) | % | Yes (n=34) | % |
| Use of energy (Zero tillage, solar energy) | Solo | 4 | 1.5 | 8 | 23.5 |
| | Joint | 242 | 90.0 | 26 | 76.5 |
| Use of irrigation system (drip irrigation, sprinkler, rainwater harvest) | Solo | 5 | 1.9 | 9 | 26.5 |
| | Joint | 242 | 90.0 | 25 | 73.5 |

Source: Field survey, 2022

This study finding suggest that control over income empower women to participate more actively in decision-making processes. Research by Becker et al. indicates that women engaged in paid employment are more likely to participate in decision-making compared to those not employed or employed without pay, highlighting a direct link between women's employment and decision-making autonomy. Economic factors significantly influence women's decision-making roles both directly/indirectly, with greater economic participation correlating with increased decision-making power (Acharya & Bennett, 1981). Participation in income-generating programs also enhances women's autonomy in decision-making within households and communities (Baba et al., 2015; Doss & Meinzen-Dick, 2015).

4.5.2 Women's access to and control over credit and their participation in decision-making

Access to and control over credit significantly influence women's autonomy in agricultural decision-making. Women with credit access can invest in quality seeds, fertilizers, new technologies, and irrigation systems like drip irrigation and rainwater harvesting, enabling informed decisions on crop management and production strategies. Conversely, women without credit access often have limited influence over agricultural decisions.

Table 3: Women's access to and control over **Credit** and their participation in **Decision-making**

| Decision making in Agricultural Activities | Decision making | Access and control in Credit by women | | | |
|---|-----------------|---------------------------------------|------|-------------|------|
| | | No (n=143) | % | Yes (n=160) | % |
| Area for production | Solo | 12 | 8.4 | 44 | 27.5 |
| | Joint | 71 | 49.7 | 93 | 58.1 |
| Crop identification | Solo | 15 | 10.5 | 45 | 28.1 |
| | Joint | 72 | 50.3 | 91 | 56.9 |
| Seeds selection | Solo | 16 | 11.2 | 49 | 30.6 |
| | Joint | 63 | 44.1 | 86 | 53.8 |
| Use of other agriculture inputs | Solo | 8 | 5.6 | 39 | 24.4 |
| | Joint | 49 | 34.3 | 97 | 60.6 |
| Use of credit | Solo | 9 | 6.3 | 35 | 21.9 |
| | Joint | 37 | 25.9 | 95 | 59.4 |
| Technology use (Use of Agriculture app including other ICT, social media) | Solo | 1 | 0.7 | 19 | 11.9 |
| | Joint | 78 | 54.5 | 130 | 81.3 |

| Decision making in Agricultural Activities | Decision making | Access and control in Credit by women | | | |
|--|-----------------|---------------------------------------|------|-------------|------|
| | | No (n=143) | % | Yes (n=160) | % |
| Use of labor | Solo | 12 | 8.4 | 34 | 21.3 |
| | Joint | 61 | 42.7 | 107 | 66.9 |
| Use of energy (Zero tillage, solar energy) | Solo | 2 | 1.4 | 10 | 6.3 |
| | Joint | 124 | 86.7 | 144 | 90.0 |
| Use of irrigation system (drip irrigation, sprinkler, rainwater harvest) | Solo | 1 | 0.7 | 13 | 8.1 |
| | Joint | 124 | 86.7 | 143 | 89.4 |

Source: Field survey, 2022

In the study area, while most women farmers collectively make farming decisions, those with access and control over credit exhibit higher autonomy. About 50% of these women reported autonomy in agricultural decisions, whereas less than 12% influence all activities independently (Table 5). This highlights the pivotal role of credit access in enhancing women's decision-making autonomy for effective agricultural management and production. Research by Kochar et al. (2022) emphasizes that improved access to financial resources, particularly substantial loans, enhances women's decision-making roles within households, underscoring financial access as a key factor in women's empowerment. Studies, such as Martina Giulia Daelli's Master's thesis (2018) and research by Galiwango et al. (2023), further support that access to credit is a strong predictor of women's participation in agricultural decision-making, contributing to their self-confidence and household autonomy.

4.5.3 Women's access to Information and their participation in Decision-making:

Access to agricultural information plays a crucial role in empowering women farmers by equipping them with the knowledge, skills, and innovations necessary for active participation in decision-making. Table 6 shows that a significant number of respondents (56.4%) in the study areas have access to agricultural information. Among these, over 60% reported making decisions about agricultural activities and management jointly with their husbands or other male family members, indicating a collaborative decision-making process. This implies though these women are not solely responsible for agricultural decisions, they are at least partial involved in decision-making alongside male family members. Approximately 20% of women with access information have autonomy in making solo decisions for all agricultural activities, except for specific areas like credit, technology, energy, and irrigation systems. In contrast, only less than 10% of women without access to agricultural information have autonomy in solo decision-making for these activities. This underscores that access to information significantly determines women's involvement in agricultural decision-making processes.

Table 4: Women's access to Information and their participation in Decision-making

| Decision making in Agricultural Activities | Level of involvement | Access to information by women | | | |
|--|----------------------|--------------------------------|-----|-------------|------|
| | | No (n=132) | % | Yes (n=171) | % |
| Area for production | Solo | 10 | 7.6 | 46 | 26.9 |

| Decision making in Agricultural Activities | Level of involvement | Access to information by women | | | |
|---|----------------------|--------------------------------|------|-------------|------|
| | | No (n=132) | % | Yes (n=171) | % |
| Crop identification | Joint | 57 | 43.2 | 107 | 62.6 |
| | Solo | 11 | 8.3 | 49 | 28.7 |
| Seeds selection | Joint | 59 | 44.7 | 104 | 60.8 |
| | Solo | 18 | 13.6 | 47 | 27.5 |
| Use of other agriculture inputs | Joint | 52 | 39.4 | 97 | 56.7 |
| | Solo | 7 | 5.3 | 40 | 23.4 |
| Use of credit | Joint | 43 | 32.6 | 103 | 60.2 |
| | Solo | 11 | 8.3 | 33 | 19.3 |
| Technology use (Use of Agri apps, ICT, social media) | Joint | 36 | 27.3 | 96 | 56.1 |
| | Solo | 0 | 0 | 20 | 11.7 |
| Use of labor | Joint | 74 | 56.1 | 134 | 78.4 |
| | Solo | 11 | 8.3 | 35 | 20.5 |
| Use of energy (Zero tillage, solar energy) | Joint | 65 | 49.2 | 103 | 60.2 |
| | Solo | 2 | 1.5 | 10 | 5.8 |
| Use of irrigation system (drip, sprinkler, rainwater harvest) | Joint | 113 | 85.6 | 155 | 90.6 |
| | Solo | 2 | 1.5 | 12 | 7 |
| | Joint | 114 | 86.4 | 153 | 89.5 |
| | Solo | | | | |

Source: Field survey, 2022

4.5.4 Women's access to Technology and their level of participation in Decision-making:

Access to technology can reduce physical burden, improve yields, and produce quality, thereby increasing women's income and economic independence. According to Table 7, women with access to technology are more than twice as likely to make independent decisions about agricultural activities compared to those without such access. In patriarchal societies, men typically purchase agricultural equipment and make decisions as household heads. However, women with access to technology are significantly more likely to engage in joint decision-making, highlighting that technology access enhances women's decision-making power.

Furthermore, technologies like mobile apps and online platforms provide women direct access to markets, price information, and supply chain management, enabling better decisions regarding the sale and distribution of their products. Technology tools also help manage resources such as water, soil, and seeds more effectively, promoting sustainable agricultural practices. With control over these resources, women can make critical decisions that enhance the long-term productivity of their farms.

Table 5: Women's access to Technology and their participation in Decision-making

| Decision making in Agricultural Activities | Level of involvement | Access and control over Technology | | | |
|---|----------------------|------------------------------------|------|-------------|------|
| | | No (n=145) | % | Yes (n=158) | % |
| Area of production | Solo | 14 | 9.7 | 42 | 26.6 |
| | Joint | 65 | 44.8 | 99 | 62.7 |
| Crop identification | Solo | 15 | 10.3 | 45 | 28.5 |
| | Joint | 68 | 46.9 | 95 | 60.1 |
| Seeds selection | Solo | 19 | 13.1 | 46 | 29.1 |
| | Joint | 62 | 42.8 | 87 | 55.1 |
| Use of other agriculture inputs | Solo | 10 | 6.9 | 37 | 23.4 |
| | Joint | 48 | 33.1 | 98 | 62.0 |
| Use of credit | Solo | 13 | 9.0 | 31 | 19.6 |
| | Joint | 40 | 27.6 | 92 | 58.2 |
| Technology use (Use of Agr app, ICT , social media) | Solo | 0 | 0.0 | 20 | 12.7 |
| | Joint | 85 | 58.6 | 123 | 77.8 |
| Use of labor | Solo | 9 | 6.2 | 37 | 23.4 |
| | Joint | 73 | 50.3 | 95 | 60.1 |
| Use of energy (Zero tillage, solar energy) | Solo | 2 | 1.4 | 10 | 6.3 |
| | Joint | 125 | 86.2 | 143 | 90.5 |
| Use of irrigation system (drip, sprinkler irrigation, RW harvest) | Solo | 2 | 1.4 | 12 | 7.6 |
| | Joint | 126 | 86.9 | 141 | 89.2 |

Source: Field survey, 2022

5. Conclusions and recommendations:

The decision-making process in family resource management is crucial and influenced by cultural norms and gender roles (Holmelin, 2019). This study conducted in Namobuddha municipality, underscores the significant but often overlooked role of women in agriculture. The findings show that despite their substantial contributions to the sector, women encounter barriers in accessing and controlling key agricultural resources. While men's migration has shifted gender roles, allowing women to take on more responsibilities, entrenched gender norms still constrain their decision-making power. This study reveals that women are actively engaged in various agricultural activities, from production to post-harvest tasks, either independently or collaboratively. However, their involvement in decision-making remains limited. Increasing women's participation in agricultural decision-making not only empowers them but also enhances agricultural productivity and food security. Addressing these gender disparities is crucial for Nepal's economic development and the empowerment of its women farmers.

Women have limited access to and control over essential agricultural resources compared to men, which hampers their influence on agricultural decisions. Cultural norms, lack of knowledge, training, resources, and heavy household responsibilities often discourage women from participating in decision-making. This study emphasizes that access to and control over resources— income, credit, information, and technology—significantly determine women's involvement in agricultural decision-making. Women with such access are more than twice as likely to make decisions on their own about agricultural activities compared to those who do not. Therefore, investing in training and women-centric programs to enhance resource access is crucial. Implementing policies ensuring women's equal access to these resources is essential for enhancing agricultural productivity and achieving economic growth. This approach can boost agricultural productivity, promote gender equality, and foster sustainable development.

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बागमती प्रदेश सरकारद्वारा सञ्चालित व्यावसायिक तथा सिप विकास तालिमको उपयोगिताको अवस्था

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सारांश

बेरोजगार नागरिकहरूलाई रोजगारी दिलाउन बागमती प्रदेश सरकारले व्यावसायिक तथा सिपमूलक तालिमको व्यवस्था गरेको छ। यस अध्ययनको मुख्य उद्देश्य आ.व. २०७४/७५ देखि आ.व. २०७८/७९ सम्मका पाँच वर्षको अवधिमा बागमती प्रदेश सरकारद्वारा सञ्चालित व्यावसायिक तथा सिप विकास तालिमहरूको उपयोगिताको अवस्था पत्ता लगाउनु रहेको छ। यो अध्ययन कुल ३८१ जना प्रशिक्षार्थीहरूसँग लिइएको अन्तर्वातामा आधारित छ। यस अध्ययन अनुसार पाँच वर्षमा औसत ३४.४ प्रतिशत प्रशिक्षार्थीहरूले मात्र आफ्नो काममा तालिमबाट प्राप्त ज्ञान र सिपको उपयोग गरेको देखिन्छ। तालिमबाट प्राप्त ज्ञान र सिपलाई उपयोग गर्नेको अनुपात ज्यादै कम देखिएकोले सोको कारण पत्ता लगाई आगामी दिनमा सञ्चालन गरिने तालिमलाई थप प्रभावकारी बनाउनु पर्ने देखिन्छ।

मुख्य शब्दहरू: व्यावसायिक, सिप विकास, तालिम, उपयोगिता, प्रदेश सरकार, बागमती प्रदेश।

१. परिचय

१.१ व्यावसायिक तथा सिप विकास तालिम

प्रज्ञा नेपाली बृहत् शब्दकोशले 'तालिम'लाई कुनै काम वा विषयमा व्यवस्थित रूपमा दिइने शिक्षा, प्रशिक्षण आदि भनी परिभाषित गरेको छ (नेपाल प्रज्ञा प्रतिष्ठान, २०२३)। क्याम्ब्रिज शब्दकोशले 'तालिम'लाई विशेष काम वा गतिविधिको लागि आवश्यक सिप र ज्ञान सिक्ने वा सिकाउने गतिविधि भनी परिभाषित गरेको छ (Cambridge University, 2023)। दुवै शब्दकोशहरूको परिभाषाअनुसार कुनै विषय वा कामको बारेमा ज्ञान र सिप प्रदान गर्न सञ्चालन गरिने क्रियाकलापहरूको समुच्चयलाई तालिम भन्न सकिन्छ। यस परिभाषालाई आधार मानेर भन्ने हो भने 'व्यावसायिक तथा सिप विकास तालिम' भन्नाले व्यवसाय सञ्चालन वा रोजगारी प्राप्त गर्न चाहने मानिसहरूलाई

आवश्यक पर्ने ज्ञान र सिप प्रदान गर्नका लागि सञ्चालन गरिने तालिमलाई बुझाउँछ। व्यवसाय वा कामको प्रकृतिअनुसार तालिमको विषयवस्तु, विधि र अवधि फरक-फरक हुन सक्दछन् ।

१.२ व्यावसायिक तथा सिप विकास तालिमको आवश्यकता

केही विद्वानहरूका अनुसार बजार विनिमयको माध्यमबाट बजारको माग र प्रवृत्तिलाई ध्यानमा राखी आफ्नो उत्पादनशील क्षमतालाई विकास गर्न सक्ने कामदार र उद्यमी दुवैलाई बजारले रोजगारीको अवसर प्रदान गर्छ, जसबाट उनीहरूले आफ्नो लागि स्रोत जुटाउन सक्छन् तर यसको मतलब बजारले अवसरमात्र दिन्छ भन्ने होइन बरु जसले बजारको आवश्यकताअनुसार उत्पादनशील क्षमता विकास गर्न सक्दैन उसलाई बजारले अवसरबाट वञ्चितसमेत गर्दछ (Musterd & Ronald, 2000) । अर्कोतर्फ प्रविधिमा आउने परिवर्तनले उत्पादन प्रणालीमा नै परिवर्तन ल्याइदिन्छ जसका कारण हिजो रोजगारीका लागि 'योग्य' ठानिएकाहरू आज 'अयोग्य' सावित हुन सक्छन्। उदाहरणका लागि टाइपराइटर चलाउनेहरू कम्प्युटर चलाउन नजान्ने हुनु आदि। यसैगरी मानिसको खानपान, रहनसहन र चाहना, राज्यका नीतिहरूमा आएका परिवर्तन र पुँजी तथा श्रमशक्तिको एक स्थानबाट अर्को स्थानमा हुने प्रवाहले सिर्जना गरेका खाडल र अवसरहरूले श्रमशक्ति तथा वस्तु र सेवाको मागमा हुने निरन्तरको परिवर्तनले धेरै कामदार र उद्यमीहरूलाई सीमान्तकृत बनाइदिन सक्दछ।

अर्थशास्त्रमा नोबेल पुरस्कार विजेता प्राध्यापक अमर्त्य सेनले गरिबीलाई मूल रूपमा क्षमताको अभावको रूपमा परिभाषित गर्नुभएको छ (पृष्ठ ८७) (Sen, Development As Freedom, 2000) । उहाँको मतअनुसार यदि गरिबीलाई सम्बोधन गर्ने हो भने गरिबको क्षमता विकासमा जोड दिनुपर्दछ। उहाँले सामाजिक बहिष्करणलाईसमेत क्षमता गरिबीको अवधारणाभित्र राखेर बुझनुपर्छ भन्नु भएको छ (Sen, Social Exclusion: Concept, Application, and Scrutiny, 2000) । उहाँकाअनुसार गरिब हुनु भनेको क्षमताको अभाव हुनु हो, क्षमताको अभाव हुनु भनेको सामाजिक बहिष्करणमा पर्नु हो र सामाजिक बहिष्करणमा पर्नु भने थप गरिब हुनु हो। यसरी बजार, गरिबी र सामाजिक बहिष्करणका कारण सीमान्तकृत भएका वर्ग र समुदायलाई पुनः बजार विनिमयको मूल प्रवाहमा ल्याउनु लोककल्याणकारी राज्यको एक महत्त्वपूर्ण जिम्मेवारी हो। यसका लागि राज्यले नीति र कार्यक्रमिक रूपमा उनीहरूको क्षमता विकास गर्न आवश्यक छ । क्षमता विकासका धेरै आयामहरूमध्ये व्यावसायिक तथा सिपमूलक तालिम पनि एक हो।

१.३ व्यावसायिक तथा सिप विकास तालिम केन्द्रहरूको स्थापना र सञ्चालन

व्यावसायिक तथा सिप विकास तालिम प्रतिष्ठानका अनुसार वि.सं. १९९३ सालमा विराटनगर जुटमिल स्थापना भए पश्चात् दक्ष श्रमिक आपूर्तिको आवश्यकता महसुस हुँदै आएको र वि.सं. २०१३ सालमा योजनाबद्ध विकासको थालनी भएपछि वि. सं. २०१६ सालमा विराटनगरमा व्यावसायिक प्रशिक्षण केन्द्र स्थापना गरी तालिम दिई दक्ष जनशक्ति उत्पादन गर्न थालनी भएको हो (व्यावसायिक तथा सिप विकास तालिम प्रतिष्ठान, २०२३) । व्यावसायिक तथा सिप विकास तालिम केन्द्र, हेटौँडाका अनुसार देशमा विद्यमान बेरोजगार युवा जनशक्तिहरूलाई श्रम बजार अनुकुलको ज्ञान र सिप प्रदान गरी रोजगारी र स्वरोजगारीका अवसरहरू सिर्जना गर्न तत्कालीन श्रम

विभाग माताहत रहने गरी हेटौँडामा नारायणी अञ्चल कार्य क्षेत्र रहने गरी आ.व. २०३३/०३४ मा 'श्रमिक आपूर्ति केन्द्र'को स्थापना भएको थियो। तत्पश्चात् आ.व. २०५०/०५१ देखि उक्त तालिम केन्द्र 'सिप विकास तालिम केन्द्र' र आ.व. २०६२/०६३ देखि 'व्यावसायिक तथा सिप विकास तालिम केन्द्र'को रूपमा सञ्चालन हुँदै आएको छ (व्यावसायिक तथा सिप विकास तालिम केन्द्र, हेटौँडा, २०२३)। यसैगरी, आ.व. २०६६/०६७ देखि धादिङ जिल्लाको गजुरीमा 'व्यावसायिक तथा सिप विकास तालिम केन्द्र' सञ्चालन हुँदै आएको छ। देशमा सङ्घीयता लागु भएपछि हेटौँडा र गजुरीस्थित दुवै तालिम केन्द्रहरू बागमती प्रदेश सरकारको सामाजिक विकास मन्त्रालय (विचको केही समय श्रम, रोजगार तथा यातायात मन्त्रालय) मातहत सञ्चालन हुँदै आएको छ।

१.४ व्यावसायिक तथा सिप विकाससम्बन्धी प्रादेशिक नीतिहरू

बागमती प्रदेशको पहिलो आवधिक योजनाले विशिष्टीकृत सेवा र मानव पुँजीको विकासलाई विकासको एक प्रमुख चालक मानेको छ (प्रदेश नीति तथा योजना आयोग, २०७६)। यसैगरी उक्त योजनाले 'मानवीय क्षमताको विकास र सम्भावनाको उपयोग गर्ने' रणनीति लिएको देखिन्छ जसमा सिपमूलक तालिमहरूको व्यवस्थालाईसमेत समेटेको देखिन्छ। प्रदेश सरकारले सिपमूलक तालिमहरूको व्यवस्थालाई हरेक वर्ष निरन्तरता दिँदै आएको छ। उदाहरणका लागि आर्थिक वर्ष २०७५/०७६ को नीति तथा कार्यक्रमको बुँदा नं. ५ मा सक्षम जनशक्ति विकास गर्ने, रोजगारी सिर्जना गर्ने र बुँदा नं. मा उद्यमशीलता एवम् सिप विकास गरी आत्मनिर्भरता कार्यक्रम सञ्चालन गर्ने गरिएका छन् (मुख्यमन्त्री तथा मन्त्रीपरिषद्को कार्यालय, २०७५) आर्थिक वर्ष २०७६/०७७ को नीति तथा कार्यक्रमको बुँदा नं. १४६ मा दक्ष जनशक्तिको उत्पादनमा जोड दिने (मुख्यमन्त्री तथा मन्त्रीपरिषद्को कार्यालय, २०७६), आर्थिक वर्ष २०७७/०७८ को नीति तथा कार्यक्रमको बुँदा नं. ७३ मा सिप तथा उद्यमशीलता विकास (मु.म. तथा म.प.को कार्यालय, २०७७) र आर्थिक वर्ष २०७८/०७९ को नीति तथा कार्यक्रमको बुँदा नं. १४ मा उद्यमशीलता र स्वरोजगार विकास गर्न सिपमूलक तालिम लगायतका उद्यमी क्षमता अभिवृद्धि गर्ने विषयहरू उल्लेख गरिएका छन् (मुख्यमन्त्री तथा मन्त्रीपरिषद्को कार्यालय, २०७८)। यसभन्दा पछिल्ला वर्षका नीति तथा कार्यक्रमहरूमा पनि यस विषयले प्राथमिकता पाएको देखिन्छ।

१.५ उद्देश्य

यस अध्ययनका उद्देश्यहरू देहाय बमोजिम रहेका छन्:-

- क. तालिममा सिकेको सिपलाई हाल गरिरहेको जागिर वा व्यवसायमा पूर्ण वा आंशिक रूपमा उपयोग गर्नेहरूको अनुपात पत्ता लगाउने,
- ख. जागिर वा व्यवसाय गर्न मन पराउनेहरूमध्येमा हाल जागिर वा व्यवसाय गरिरहेकाहरूको अनुपात पत्ता लगाउने।

२. अध्ययन विधि

२.१ अध्ययन गर्नुपर्ने जनसङ्ख्या (स्याम्पल फ्रेम)

बागमती प्रदेश सरकारले मातहतका व्यावसायिक तथा सिप विकास तालिम केन्द्रहरूबाट आ.व. २०७४/७५ देखि आ.व. २०७८/७९ को पाँच वर्षको अवधिमा तालिम प्राप्त गरेका १००९४ प्रशिक्षार्थीहरूमध्ये सम्पर्क फोन/मोबाइल नम्बर भएका ७,८७५ प्रशिक्षार्थीहरूलाई अध्ययन गर्नुपर्ने जनसङ्ख्या (स्याम्पल फ्रेम) मानेर यो अध्ययन गरिएको छ।

२.२ नमुना (स्याम्पल)को आकार

अमेरिकी तथ्याङ्क शास्त्री रोबर्ट स्लोभिनद्वारा विकास गरिएको सूत्रलाई प्रयोग गरी नमुनाको सङ्ख्या निर्धारण गरिएको छ (Glen, 2023)। यस सूत्रले ज्ञात जनसङ्ख्याबाट तथ्याङ्कीय रूपमा अर्थपूर्ण नतिजाहरू प्राप्त गर्न आवश्यक पर्ने नमुनाको सङ्ख्या निर्धारण गर्न सहयोग गर्दछ। देहाय बमोजिमको उनको सूत्रले ज्ञात जनसङ्ख्या आकार (N) र स्वीकार्य त्रुटि मान (e) प्रयोग गरेर नमुना आकार (n) निर्धारण गरिएको छ।

$$n = N / (1 + Ne^2)$$

यहाँ, n ले अध्ययनका लागि आवश्यक नमुना सङ्ख्या, N ले अध्ययन गर्नुपर्ने जनसङ्ख्या (स्याम्पल फ्रेम) र e ले स्वीकार्य त्रुटिमान (९५ प्रतिशत कन्फिडेन्स इन्टरभलमा ०.०५) लाई जनाउँछ। यसअनुसार अध्ययनका लागि छनोट गर्नुपर्ने सङ्ख्या $n = 7,875 / (1 + 7,875 * 0.05^2) = 379$ देखिन्छ।

२.३ नमुना छनोट विधि

आ.व. २०७४/७५ देखि आ.व. २०७८/७९ सम्ममा सञ्चालित तालिमहरू हेटौँडा र गजुरीमा रहेका दुई ओटा तालिम केन्द्रहरूबाट महिला र पुरुषका लागि ७५ ओटा तालिमहरू सञ्चालन भएको देखिन्छ। उक्त तालिमहरूमा बागमती र अन्य प्रदेशका नागरिकहरू पनि प्रशिक्षार्थीको रूपमा सहभागी भएको देखिन्छ। यी तथ्यहरूलाई मध्यनजर गर्दा अध्ययनका लागि छनोट गर्नुपर्ने नमुनाले तालिम केन्द्र, प्रदेश, लिङ्ग र तालिमको क्षेत्र सबैको प्रतिनिधित्व हुनेगरी निष्पक्ष नमुना छनोट गर्न 'स्ट्र्याटिफाइड न्यान्डम स्याम्पलिङ टेक्निक' को प्रयोग गरिएको छ। यसका लागि सर्वप्रथम स्याम्पल फ्रेममा रहेका ७,८७५ प्रशिक्षार्थीहरूलाई तालिम केन्द्र, प्रदेश, लिङ्ग र तालिमको क्षेत्रअनुसार वर्गीकरण गरी तिनीहरूको अनुपातका आधारमा ३८१ नमुनालाई वितरण गरी सोही दायराभित्र रही नमुना छनोट गरिएको छ।

२.४ सूचना सङ्कलन र विश्लेषण विधि

अध्ययनका लागि नमुना छनोट गर्दा एकपक्षीयता नहोस् भन्ने मनसायले निष्पक्ष नमुना छनोट विधि (न्यान्डम स्याम्पलिङ टेक्निक) अपनाईएको छ। छनोट भएको उत्तरदाता भेट नहुन पनि सक्ने सम्भावनालाई ध्यानमा राखी न्यान्डम स्याम्पलिङ टेक्निकबाट नै एकभन्दा बढी बैकल्पिक उत्तरदाताहरूको सूची तयार गरिएको थियो। पहिलो उत्तरदाता नभेटिएमा वा उत्तर दिन नचाहेमा बैकल्पिक सूचीमा रहेका दोस्रो वा सो पनि नभेटिए वा उत्तर

दिन नचाहेमा तेस्रो उत्तरदाताबाट सूचना सङ्कलन गरिएको छ। अन्तरवार्ताका लागि तयार गरिएको प्रश्नावली, अन्तरवार्ता शैली र वैकल्पिक उत्तरदाताहरूको आवश्यकताका सम्बन्धमा सुधार गर्नुपर्ने विषयहरू थाहा पाउनका लागि नमुनामा नपरेका २० जना प्रशिक्षार्थीहरूसँग फोन/मोबाइलबाट परीक्षण अन्तरवार्ता (फिल्ड टेस्ट) गरिएको थियो। उक्त परीक्षण अन्तरवार्ताको सिकाइको आधारमा निर्धारित प्रश्नावली र अन्तरवार्ता शैलीमा सामान्य परिमार्जन गरिएको थियो। सङ्कलित सूचनालाई माइक्रोसफ्ट एक्सेस डाटाबेसमा प्रविष्टि गरी सोबाट एसपीएसएसमा सारी त्यसको वर्गीकरण र तालिकाकरण/प्रस्तुतीकरण गरी विश्लेषण गरिएको छ। सर्वसाधारणले समेत सहज रूपमा बुझ्न सहज होस् भन्ने हेतुले सङ्कलित सूचनाहरूलाई सामान्य तालिका, चित्र र अङ्क गणितीय औजारहरूको प्रयोग गरी प्रस्तुत र विश्लेषण गरिएको छ।

३. अध्ययनको नतिजा र छलफल

३.१ उत्तरदाताहरूको आधारभूत जानकारी

नमुनाको आधार र अनुपातको दायराभित्र कुल ३८१ जना उत्तरदाताहरूसँग अन्तरवार्ता लिइएको थियो जसमा गजुरी तालिम केन्द्रबाट ११७ जना र हेटौँडा तालिम केन्द्रबाट २६४ जना प्रशिक्षार्थीहरूको सहभागिता रहेको थियो। थप विवरण तालिका १ मा प्रस्तुत छ।

तालिका १: तालिम केन्द्रअनुसार प्रस्तावित तथा वास्तविक उत्तरदाताहरूको विवरण

| तालिम केन्द्रहरू | प्रस्तावित नमुना | | वास्तविक नमुना* | |
|-------------------|------------------|------------|-----------------|------------|
| | सङ्ख्या | प्रतिशत | सङ्ख्या | प्रतिशत |
| गजुरी, धादिङ | ११६ | ३०.४ | ११७ | ३०.७ |
| हेटौँडा, मकवानपुर | २६५ | ६९.६ | २६४ | ६९.३ |
| जम्मा | ३८१ | १०० | ३८१ | १०० |

स्रोत: *फोन/मोबाइल अन्तरवार्ता, २०८०

यसै गरी, कुल उत्तरदाताहरूमध्ये ९०.६ प्रतिशत उत्तरदाताहरू वागमती प्रदेशका रहेका देखिन्छन् भने ९.४ प्रतिशत उत्तरदाताहरू अन्य प्रदेशका रहेका देखिन्छ। प्रदेश नखुलेका प्रशिक्षार्थीहरूको आकार सानो भएकोले यस अध्ययनमा उनीहरूलाई समावेश गरिएको छैन। लैङ्गिकताको आधारमा पुरुष र महिला उत्तरदाताहरूको हिस्सा क्रमशः २९.४ र ७०.६ प्रतिशत रहेका छन् जुन प्रस्तावित नमुनाको दायराभित्र रहेको देखिन्छ।

कुल उत्तरदाताहरूमा प्राथमिक (कृषि तथा पशुपक्षी) क्षेत्र, द्वितीय (उद्योग) क्षेत्र र तृतीय (सेवा) क्षेत्रको हिस्सा क्रमशः ६.६ प्रतिशत, १३.४ प्रतिशत र ८०.१ प्रतिशत रहेको देखिन्छ। प्रस्तावित नमुनाको तुलनामा कृषि तथा पशुपक्षी क्षेत्रको केही लक्षित उत्तरदाताहरू नभेटिएका कारणले उद्योग क्षेत्रको हिस्सामा केही थप हुन गएको छ। वास्तविक उत्तरदाताको हिस्सामा सामान्य परिवर्तन भएको देखिए तापनि वास्तविक नमुना प्रस्तावित नमुनाको करिब करिब दायराभित्र नै देखिन्छ।

तालिम केन्द्रहरूबाट प्राप्त प्रशिक्षार्थीहरूको अभिलेखमा उमेरसम्बन्धी जानकारी नभएकोले उनीहरूको उमेरसम्बन्धी केही भन्न नसके तापनि कुल उत्तरदातामा १८-२७ वर्ष उमेर समूहको हिस्सा ४९.१ प्रतिशत रहेको देखिन्छ जस्मा सोही उमेर समूहका महिलाहरूको हिस्सा ३४.१ प्रतिशत रहेको छ। यसै गरी, २८-३७ वर्ष उमेर समूहको हिस्सा ३५.२ प्रतिशत रहेको छ जस्मा सोही उमेर समूहका महिलाहरूको हिस्सा २४.९ प्रतिशत रहेको छ। कुल उत्तरदातामा ४८ वर्ष माथिका उत्तरदाताहरूको हिस्सा केवल २.४ प्रतिशत रहेको छ। यस तथ्यले सिप विकास तालिममा युवाहरूको सहभागिता अत्याधिक रहेको देखाउँछ। थप विवरण तालिका २ मा प्रस्तुत छ।

तालिका २: उमेर समूह र लिङ्गको आधारमा उत्तरदाताहरूको विवरण

| उमेर समूह | पुरुष | | महिला | | जम्मा | |
|--------------|------------|-------------|------------|-------------|------------|--------------|
| | सङ्ख्या | प्रतिशत | सङ्ख्या | प्रतिशत | सङ्ख्या | प्रतिशत |
| १८-२७ वर्ष | ५७ | १५.० | १३० | ३४.१ | १८७ | ४९.१ |
| २८-३७ वर्ष | ३९ | १०.२ | ९५ | २४.९ | १३४ | ३५.२ |
| ३८-४७ वर्ष | ११ | २.९ | ४० | १०.५ | ५१ | १३.४ |
| ४८-५७ वर्ष | ४ | १.० | २ | ०.५ | ६ | १.६ |
| ५८-६७ वर्ष | १ | ०.३ | २ | ०.५ | ३ | ०.८ |
| जम्मा | ११२ | २९.४ | २६९ | ७०.६ | ३८१ | १००.० |

स्रोत: फोन/मोबाइल अन्तरवार्ता, २०८०

पुरुष र महिला उत्तरदाताहरूको औसत उमेर (मिन इयर्स अफ एज) र मध्यम उमेर (मेडियन इयर्स अफ एज) करिब करिब बराबर देखिन्छ। उत्तरदाताहरूको न्यूनतम उमेर पुरुषको १८ वर्ष र महिलाको १९ वर्ष तथा अधिकतम उमेर पुरुषको ६६ वर्ष र महिलाको ६५ वर्ष देखिन्छ जुन लगभग समान देखिन्छ।

३.२ तालिममा सहभागी हुनुका उद्देश्यहरू

कुल उत्तरदाताको ४०.९ प्रतिशत उत्तरदाताले व्यवसायी बन्न, २०.७ प्रतिशतले जागिर खान, ११.० प्रतिशतले व्यवसाय र जागिर दुवै गर्ने उद्देश्यले तालिम लिएको देखिन्छ। यस दृष्टिले हेर्दा ७२.६ प्रतिशत उत्तरदाताले आयआर्जन गर्नु भनेर तालिममा सहभागी भएको देखिन्छ भने २७.३ प्रतिशत उत्तरदाताले सिकेको सिप कुनै दिन काम लाग्न सक्छ भन्ने उद्देश्यले तालिम लिएको देखिन्छ। लैङ्गिक हिसाबले हेर्ने हो भने ४६.५ महिला र २७.७ पुरुषहरू व्यवसायी बन्नका लागि तालिममा सहभागी भएको देखिन्छ। उद्यमी बन्ने हुटहुटी महिलामा बढी हुनु महिलाको आर्थिक सशक्तीकरणको हिसाबले सकारात्मक पक्ष हो। थप विवरण तालिका ३ मा प्रस्तुत छ।

तालिका ३: तालिममा सहभागी हुनुका उद्देश्यहरू

| लिङ्ग | तालिम लिनुको उद्देश्य | गजुरी, धादिङ | | हेटौंडा, मकवानपुर | | जम्मा | प्रतिशत |
|-------|----------------------------------|--------------|--------------|-------------------|--------------|------------|--------------|
| | | सङ्ख्या | प्रतिशत | सङ्ख्या | प्रतिशत | | |
| पुरुष | व्यवसाय गर्न | १० | ३१.३ | २१ | २६.३ | ३१ | २७.७ |
| | जागिर खान | ५ | १५.६ | २६ | ३२.५ | ३१ | २७.७ |
| | व्यवसाय र जागिर दुवै गर्न | ५ | १५.६ | ८ | १०.० | १३ | ११.६ |
| | सिक्रेको सिप कुनै दिन उपयोग गर्न | १२ | ३७.५ | २५ | ३१.३ | ३७ | ३३.० |
| | जम्मा | ३२ | १००.० | ८० | १००.० | ११२ | १००.० |
| महिला | व्यवसाय गर्न | ३२ | ३७.६ | ९३ | ५०.५ | १२५ | ४६.५ |
| | जागिर खान | १६ | १८.८ | ३२ | १७.४ | ४८ | १७.८ |
| | व्यवसाय र जागिर दुवै गर्न | १३ | १५.३ | १६ | ८.७ | २९ | १०.८ |
| | सिक्रेको सिप कुनै दिन उपयोग गर्न | २४ | २८.२ | ४३ | २३.४ | ६७ | २४.९ |
| | जम्मा | ८५ | १००.० | १८४ | १००.० | २६९ | १००.० |
| दुवै | व्यवसाय गर्न | ४२ | ३५.९ | ११४ | ४३.२ | १५६ | ४०.९ |
| | जागिर खान | २१ | १७.९ | ५८ | २२.० | ७९ | २०.७ |
| | व्यवसाय र जागिर दुवै गर्न | १८ | १५.४ | २४ | ९.१ | ४२ | ११.० |
| | सिक्रेको सिप कुनै दिन उपयोग गर्न | ३६ | ३०.८ | ६८ | २५.८ | १०४ | २७.३ |
| | जम्मा | ११७ | १००.० | २६४ | १००.० | ३८१ | १००.० |

स्रोत: फोन/मोबाइल अन्तरवार्ता, २०८०

३.३ रोजगारी र बेरोजगारीको अवस्था

कुल उत्तरदातामा २९.१ प्रतिशतले आफ्नै व्यवसाय सञ्चालन गरेको देखिन्छ, २३.४ प्रतिशतले जागिर खाँदै गरेको र ०.५ प्रतिशतले व्यवसाय र जागिर दुवै गरेको देखिन्छ । यसको मतलब हाल ५३.० प्रतिशत उत्तरदाताहरू कुनै न कुनै रोजगारीमा छन् भने ४७.० उत्तरदाताहरू बेरोजगार छन्। लैङ्गिकताका हिसाबले ४९.९ प्रतिशत महिला र ४०.२ प्रतिशत पुरुषहरू बेरोजगार रहेको देखिन्छ। यस तथ्यले पुरुषहरूभन्दा महिलाहरू बढी बेरोजगार रहेको देखाउँछ। थप विवरण तालिका ४ मा प्रस्तुत छ।

तालिका ४: रोजगारी र बेरोजगारीको अवस्था

| लिङ्ग | रोजगारी र बेरोजगारीको अवस्था | गजुरी, धादिङ | | हेटौंडा, मकवानपुर | | जम्मा | प्रतिशत |
|-------|------------------------------|--------------|--------------|-------------------|--------------|------------|--------------|
| | | सङ्ख्या | प्रतिशत | सङ्ख्या | प्रतिशत | | |
| पुरुष | बेरोजगार रहेका | ९ | २८.१ | ३६ | ४५.० | ४५ | ४०.२ |
| | व्यवसाय गरिरहेका | १४ | ४३.८ | १७ | २१.३ | ३१ | २७.७ |
| | जागिर खाँदै गरेका | ९ | २८.१ | २७ | ३३.८ | ३६ | ३२.१ |
| | व्यवसाय र जागिर दुवै गरेका | ० | ०.० | ० | ०.० | ० | ०.० |
| | जम्मा | ३२ | १००.० | ८० | १००.० | ११२ | १००.० |
| महिला | बेरोजगार रहेका | ४४ | ५१.८ | ९० | ४८.९ | १३४ | ४९.८ |
| | व्यवसाय गरिरहेका | २४ | २८.२ | ५६ | ३०.४ | ८० | २९.७ |
| | जागिर खाँदै गरेका | १६ | १८.८ | ३७ | २०.१ | ५३ | १९.७ |
| | व्यवसाय र जागिर दुवै गरेका | १ | १.२ | १ | ०.५ | २ | ०.७ |
| | जम्मा | ८५ | १००.० | १८४ | १००.० | २६९ | १००.० |
| दुवै | बेरोजगार रहेका | ५३ | ४५.३ | १२६ | ४७.७ | १७९ | ४७.० |
| | व्यवसाय गरिरहेका | ३८ | ३२.५ | ७३ | २७.७ | १११ | २९.१ |
| | जागिर खाँदै गरेका | २५ | २१.४ | ६४ | २४.२ | ८९ | २३.४ |
| | व्यवसाय र जागिर दुवै गरेका | १ | ०.९ | १ | ०.४ | २ | ०.५ |
| | कुल जम्मा | ११७ | १००.० | २६४ | १००.० | ३८१ | १००.० |

स्रोत: फोन/मोबाइल अन्तरवार्ता, २०८०

३.४ हालको रोजगारीमा तालिमबाट प्राप्त सिप र ज्ञानको उपयोगको अवस्था

व्यवसाय र जागिर दुवैमा गरी हाल रोजगारीमा रहेका २२.३ प्रतिशतलाई पुरै र ११.१ प्रतिशतलाई आंशिक रूपमा गरी ३४.४ प्रतिशतलाई तालिमबाट प्राप्त ज्ञान र सिपले सहयोग गरिरहेको देखिन्छ भने बाँकीलाई कुनै मदत गरेको देखिदैन। यसको मतलब रोजगारीमा तालिमको उपयोगिता हाल ३४.४ प्रतिशत मात्र छ। लैङ्गिकताका हिसाबले हाल रोजगारीमा रहेका ३३.१ प्रतिशत महिला र ३७.५ प्रतिशत पुरुषलाई तालिमबाट सिकेको सिप र ज्ञानले मदत गरिरहेको छ। यस तथ्यले तालिमले महिलालाई भन्दा पुरुषलाई रोजगारी प्राप्त गर्न बढी मदत गरेको देखिन्छ। थप विवरण तालिका ५ मा प्रस्तुत छ।

तालिका ५: हालको रोजगारीमा तालिमबाट प्राप्त सिप र ज्ञान उपयोगको अवस्था

| लिङ्ग | तालिमको उपयोग | गजुरी, धादिङ | | हेटौंडा, मकवानपुर | | जम्मा | प्रतिशत |
|-------|------------------------|--------------|--------------|-------------------|--------------|------------|--------------|
| | | सङ्ख्या | प्रतिशत | सङ्ख्या | प्रतिशत | | |
| पुरुष | पुरै उपयोग भएका | ९ | २८.१ | १७ | २१.३ | २६ | २३.२ |
| | आंशिक रूपमा उपयोग भएका | ६ | १८.८ | १० | १२.५ | १६ | १४.३ |
| | उपयोग नभएका | ८ | २५.० | १७ | २१.३ | २५ | २२.३ |
| | बेरोजगार रहेका | ९ | २८.१ | ३६ | ४५.० | ४५ | ४०.२ |
| | जम्मा | ३२ | १००.० | ८० | १००.० | ११२ | १००.० |
| महिला | पुरै उपयोग भएका | २२ | २५.९ | ३७ | २०.१ | ५९ | २१.९ |
| | आंशिक रूपमा उपयोग भएका | ७ | ८.२ | २३ | १२.५ | ३० | ११.२ |
| | उपयोग नभएका | ११ | १२.९ | ३५ | १९.० | ४६ | १७.१ |
| | बेरोजगार रहेका | ४५ | ५२.९ | ८९ | ४८.४ | १३४ | ४९.८ |
| | जम्मा | ८५ | १००.० | १८४ | १००.० | २६९ | १००.० |
| दुवै | पुरै उपयोग भएका | ३१ | २६.५ | ५४ | २०.५ | ८५ | २२.३ |
| | आंशिक रूपमा उपयोग भएका | १३ | ११.१ | ३३ | १२.५ | ४६ | १२.१ |
| | उपयोग नभएका | १९ | १६.२ | ५२ | १९.७ | ७१ | १८.६ |
| | बेरोजगार रहेका | ५४ | ४६.२ | १२५ | ४७.३ | १७९ | ४७.० |
| | कुल जम्मा | ११७ | १००.० | २६४ | १००.० | ३८१ | १००.० |

स्रोत: फोन/मोबाइल अन्तरवार्ता, २०८०

३.५ तालिमको उपयोग र उतारचढावको अवस्था

आर्थिक वर्ष २०७४/७५ भनेको सङ्घीयता कार्यान्वयनको पहिलो वर्ष थियो। उक्त वर्षको सिप विकास तालिमसम्बन्धी सबै कार्यक्रमहरू सङ्घीय सरकारबाट हस्तान्तरण भएर आएका कार्यक्रमहरू थिए। आ.व. २०७५/०७६ को कार्यक्रम प्रदेश सरकारले भर्खर काम थालेको वर्ष भएकोले हुनसक्छ उक्त वर्षको तालिमले केवल २२.४ प्रतिशतले आफ्नो काममा तालिमको उपयोग गरेको देखिन्छ जुन आ.व. २०७४/७५ को तुलनामा १४.४ प्रतिशतले कम हो। तर आ.व. २०७६/०७७ र २०७७/०७८ मा क्रमशः ३४.५ प्रतिशत हुँदै ४५.९ प्रतिशतले आफ्नो काममा तालिमको उपयोग गरेको देखिन्छ। यो अवधि भनेको कोरोना भाइरसले सबै काम ठप्प पारेको अवधि हो तै पनि तालिमको प्रभावकारीता सबैभन्दा उच्च देखिन्छ। त्यसपछि आ.व. २०७८/०७९ मा तालिम लिएकामध्ये केवल ३२.५ प्रतिशतले मात्र आफ्नो काममा तालिमको उपयोग गरेको देखिन्छ जुन आ.व. २०७४/७५ को भन्दा पनि ४.३ प्रतिशतले कमजोर देखिन्छ। आ.व. २०७८/०७९ प्रदेश सरकारको लागि राजनीतिक उतारचढावको अवस्था वर्ष थियो। अन्य कारणका अतिरिक्त राजनीतिक उतारचढावको कारणले

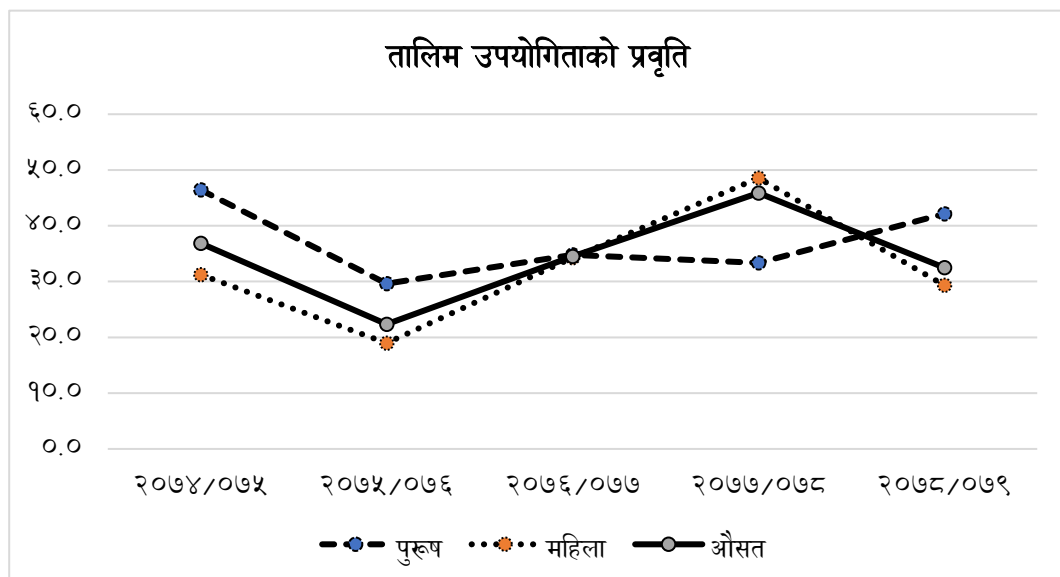
तालिमको प्रभावकारीता ४५.९ प्रतिशतबाट ३२.५ प्रतिशतमा झरेको हुन सक्छ। पाँच आर्थिक वर्षको औसत हेर्दा केवल ३४.४ प्रतिशत प्रशिक्षार्थीहरूले मात्र आफ्नो काममा तालिमको उपयोग गरेको देखिन्छ। लैङ्गिक रूपमा पाँच वर्षको औसत हेर्दा केवल ३७.५ प्रतिशत पुरुष र ३३.९ प्रतिशत महिला प्रशिक्षार्थीहरूले मात्र आफ्नो काममा तालिमको उपयोग गरेको देखिन्छ। थप विवरण तालिका ६ मा र चित्र १ प्रस्तुत छः

तालिका ६: तालिम उपयोगिताको प्रवृत्ति

| लिंग | ०७४/७५ | ०७५/७६ | ०७६/७७ | ०७७/७८ | ०७८/७९ | ५ वर्षको औसत |
|-------|--------|--------|--------|--------|--------|--------------|
| पुरुष | ४६.४ | २९.६ | ३४.८ | ३३.३ | ४२.९ | ३७.५ |
| महिला | ३९.३ | १९.० | ३४.३ | ४८.६ | २९.३ | ३३.९ |
| औसत | ३६.८ | २२.४ | ३४.५ | ४५.९ | ३२.५ | ३४.४ |

स्रोत: फोन/मोबाइल अन्तरवार्ता, २०८०

चित्र १



स्रोत: तालिका ६

३.६ तालिमको उद्देश्य र वास्तविकता

जागिर खान मन पराउनेमध्ये केवल २८.६ प्रतिशतले मात्र हाल जागिर खाइरहेका छन् भने बाँकी बेरोगार र अरू कुनै व्यवसायमा संलग्न छन्। त्यसै गरी, व्यवसाय गर्न मन पराउनेमध्ये केवल ३७.९ प्रतिशतले मात्र हाल व्यवसाय गरिरहेका छन् जुन जागिर खानेहरूको भन्दा ९.३ प्रतिशतले बढी हो। यस तथ्यले जागिर

खान चाहने ७१.४ प्रतिशतले जागिर नपाएको र व्यवसाय गर्न चाहने ६२.१ प्रतिशतले व्यवसाय गर्न नपाएको देखाउँछ।

समग्रमा व्यवसाय गर्ने उद्देश्यले तालिम लिएकाहरूमध्ये ४६.२ प्रतिशत प्रशिक्षार्थीले हाल व्यवसाय सञ्चालन गरिरहेका, १६ प्रतिशतले जागिर खाइरहेका, १.३ प्रतिशतले व्यवसाय र जागिर दुवै गरिरहेका र ३६.५ प्रतिशत चाहिँ बेरोजगार रहेका छन्। जागिर खाने उद्देश्यले तालिम लिएकाहरूमध्ये ३४.२ प्रतिशत प्रशिक्षार्थीले हाल जागिर खाइरहेका, ११.४ प्रतिशतले व्यवसाय गरिरहेका र ५४.४ प्रतिशत चाहिँ बेरोजगार रहेका छन्। व्यवसाय गर्ने र जागिर खाने दुवै उद्देश्यले तालिम लिएकाहरूमध्ये ३१ प्रतिशत प्रशिक्षार्थीले हाल जागिर खाइरहेका, ३१ प्रतिशतले व्यवसाय गरिरहेका र ३८.१ प्रतिशत चाहिँ बेरोजगार रहेका छन्। सिकेको सिप कुनै दिन उपयोग गर्ने उद्देश्यले तालिम लिएकाहरूमध्ये २३.३ प्रतिशत प्रशिक्षार्थीले हाल जागिर खाइरहेका, १६.५ प्रतिशतले व्यवसाय गरिरहेका र ६०.२ प्रतिशत चाहिँ बेरोजगार रहेका छन्। थप विवरण तालिका ७ मा प्रस्तुत छ।

तालिका ७: तालिमको उद्देश्य र वास्तविकता

| लिङ्ग | तालिम लिनुको उद्देश्य | हालको पेसा (प्रतिशतमा) | | | | जम्मा |
|-------|--------------------------------|------------------------|-------------|----------------------------|----------------|--------------|
| | | व्यवसाय गरेका | जागिर गरेका | व्यवसाय र जागिर दुवै गरेका | बेरोजगार रहेका | |
| पुरुष | व्यवसाय गर्न | ६१.३ | १९.४ | ०.० | १९.४ | १००.० |
| | जागिर खान | १२.९ | ३८.७ | ०.० | ४८.४ | १००.० |
| | व्यवसाय र जागिर दुवै गर्न | १५.४ | ४६.२ | ०.० | ३८.५ | १००.० |
| | सिकेको सिप कुनै दिन उपयोग गर्न | १६.२ | ३२.४ | ०.० | ५१.४ | १००.० |
| | जम्मा | २७.७ | ३२.१ | ०.० | ४०.२ | १००.० |
| महिला | व्यवसाय गर्न | ४२.४ | १५.२ | १.६ | ४०.८ | १००.० |
| | जागिर खान | १०.४ | ३१.३ | ०.० | ५८.३ | १००.० |
| | व्यवसाय र जागिर दुवै गर्न | ३७.९ | २४.१ | ०.० | ३७.९ | १००.० |
| | सिकेको सिप कुनै दिन उपयोग गर्न | १६.४ | १७.९ | ०.० | ६५.७ | १००.० |
| | जम्मा | २९.७ | १९.७ | ०.७ | ४९.८ | १००.० |
| दुवै | व्यवसाय गर्न | ४६.२ | १६.० | १.३ | ३६.५ | १००.० |
| | जागिर खान | ११.४ | ३४.२ | ०.० | ५४.४ | १००.० |
| | व्यवसाय र जागिर दुवै गर्न | ३१.० | ३१.० | ०.० | ३८.१ | १००.० |

| लिङ्ग | तालिम लिनुको उद्देश्य | हालको पेसा (प्रतिशतमा) | | | | जम्मा |
|-------|--------------------------------|------------------------|-------------|----------------------------|----------------|--------------|
| | | व्यवसाय गरेका | जागिर गरेका | व्यवसाय र जागिर दुवै गरेका | बेरोजगार रहेका | |
| | सिकेको सिप कुनै दिन उपयोग गर्न | १६.३ | २३.१ | ०.० | ६०.६ | १००.० |
| | जम्मा | २९.१ | २३.४ | ०.५ | ४७.० | १००.० |

स्रोत: फोन/मोबाइल अन्तरवार्ता, २०८०

४. निष्कर्ष

यस अध्ययनका प्रमुख निष्कर्षहरू देहायबमोजिम रहेका छन्:

- क. आ.व. २०७४/७५ देखि आ.व. २०७८/०७९ सम्मको पाँच वर्षमा तालिमको प्रभावकारितामा उतारचढाव देखिन्छ। निष्कर्षमा भन्नुपर्दा पाँच वर्षको औसत हेर्दा केवल ३४.४ प्रतिशत प्रशिक्षार्थीहरूले मात्र आफ्नो काममा तालिमको उपयोग गरेको देखिन्छ।
- ख. व्यवसाय गर्ने उद्देश्यले तालिम लिएका १० जनामा ६.३ जनाले कुनै न कुनै रोजगारी गरेका छन् भने ३.७ जना बेरोजगार रहेका छन्। निष्कर्षमा भन्नुपर्दा व्यवसाय गर्ने उद्देश्यले तालिम लिएकाहरूको ठुलो हिस्साले रोजगारी प्राप्त गरेका छन्।
- ग. जागिर खाने उद्देश्यले तालिम लिएका १० जनामा ४.६ जनाले कुनै न कुनै रोजगारी गरेका छन् भने ५.४ जना बेरोजगार रहेका छन्। निष्कर्षमा भन्नुपर्दा जागिर खाने उद्देश्यले तालिम लिएकाहरूको ठुलो हिस्सा बेरोजगार रहेका छन्।
- घ. व्यवसाय गर्ने र जागिर खाने दुवै उद्देश्यले तालिम लिएका १० जनामा ६.२ जनाले कुनै न कुनै रोजगारी गरेका छन् भने ३.८ जना बेरोजगार रहेका छन्। निष्कर्षमा भन्नुपर्दा व्यवसाय गर्ने र जागिर खाने दुवै उद्देश्यले तालिम लिएकाहरूले दुवै व्यवसाय एकसाथ नगर्दा रहेछन्।
- ङ. सिकेको सिप कुनै दिन उपयोग गर्ने उद्देश्यले तालिम लिएका १० जनामा ४ जनाले कुनै न कुनै रोजगारी गरेका छन् भने ६ जना बेरोजगार रहेका छन्। निष्कर्षमा भन्नुपर्दा तालिम लिनुको उद्देश्य प्रस्ट नभएकाहरू सबैभन्दा बढी बेरोजगार रहेका छन्।

५. सुझावहरू

अध्ययनबाट प्राप्त निष्कर्षको आधारमा सम्बन्धित निकायले आगामी दिनमा निम्न विषयहरूमा ध्यान दिनुपर्ने देखिन्छ:

- क. व्यावसायिक तथा सिप विकास तालिम केन्द्रहरूबाट तालिम लिएकाहरूमध्ये पाँच वर्षमा औसत ३४.४ प्रतिशत प्रशिक्षार्थीहरूले मात्र आफ्नो काममा तालिमबाट प्राप्त ज्ञान र सिपको उपयोग गरेको देखिएको

छ । अर्को अर्थमा झन्डै दुई तिहाइले तालिमको उपयोग गरेको देखिदैन । यसका कारणहरू पत्ता लगाई तालिमको उपयोगिता बढाउन आवश्यक छ ।

- ख. व्यवसाय गर्ने उद्देश्यले तालिम लिएकाहरूमध्ये ४६.२ प्रतिशत व्यवसाय गरिरहेको देखिन्छ । यो हिस्सालाई बढाउन व्यावसायिक तथा सिप विकास तालिम केन्द्रहरूबाट तालिम लिएकाहरूलाई प्रदेश सरकारको सहूलियत दरको ऋण कार्यक्रम जोड्न सके राम्रो हुन सक्दछ ।
- ग. जागिर खाने उद्देश्यले तालिम लिएका ५४.४ जना बेरोजगार रहेको देखिएकोले श्रम बजारको माग अध्ययन गरेरमात्र तालिम सञ्चालन गर्नु उपयुक्त देखिन्छ ।

स्वीकारोक्ति

यस अध्ययनका तालिमका प्रशिक्षार्थीहरूको अभिलेख र आवश्यक सूचना उपलब्ध गराउने व्यावसायिक तथा सिप विकास तालिम केन्द्र हेटौँडाका तत्कालीन कार्यालय प्रमुख श्री युवराज गरूड र कर्मचारी नवराज सापकोटा तथा व्यावसायिक तथा सिप विकास तालिम केन्द्र गजुरीका कार्यालय प्रमुख श्री पुरुषोत्तम पाण्डे र दुवै केन्द्रका कर्मचारीहरू विशेष आभार व्यक्त गर्दछौँ । उहाँहरूको अमूल्य सहयोग बिना यो अध्ययन कार्य सम्पन्न हुने थिएन ।

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COVID19 containment in Nepal: A Success Story of newly practiced Decentralization

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Abstract

The diverse ethnic, linguistic, cultural, socio-economic and topographical nature of Nepal implies that each local area faces a unique set of challenges and opportunities. Hence, a central or a single set of activities may not work well for emergency management of all but need unique local levels efforts during calamities or pandemics, like COVID-19. The unique local nature urges implementation of central plan and policy creatively but differently. Nepal model of combating COVID-19 became successful out of limited resources, health facilities and infrastructures of Nepal due to centralized policy and decentralized implementation. COVID-19 pandemic entered Nepal exactly when it was creeping towards decentralized health system. Decentralizing health system supported combating COVID-19 and the act of combating COVID-19 bolstered up decentralization of health system in Nepal. COVID-19 crisis management, hence, justified the devolution of health administration and decentralized health system in Nepal.

Key words: COVID-19, Pandemic, Decentralization

1. Background

Constituent Assembly of Nepal promulgated the new constitution on September 2015 and declared Nepal as the Federal Republic with three tiers of government; Federal, Provincial and Local level (Commission, 2015). The Constitution recognizes local governments as an integral part of federalism in Nepal and provides them ample space to safeguard their political, fiscal and administrative autonomy; making them responsible for delivering essential basic services to the people as authorized and directed by the Local Government Operation Act, 2017 (Khanal, 2023).

Decentralization, envisioned by the new constitution, started shaping itself after the first election of all three tiers, viz. federal, provincial and local levels in 2017. The newly elected federal and provincial parliament formed governments in early 2018; and start federal functioning from scratch (Acharya, 2018).

As Nepal was preparing to devolve and move towards decentralized system, China informed WHO China country office the cases of pneumonia of unknown etiology in Wuhan city of Hubei Province on 31 December 2019 (Huang et al 2020); which later regarded as COronaVirus Disease 2019 (COVID-19). Nepal observed first COVID-19 case on January 23, 2020 in a 31 years old Nepalese male student who returned from the Wuhan City of China (Government, 2021). The man returned to spend winter holidays in Nepal had prior knowledge about the outbreak in China and visited

voluntarily the Sukraraj Tropical and Infectious Disease Hospital (STIDH) in Kathmandu. Considering his travel history, he was isolated and was given supportive treatment with broad-spectrum antibiotics and the throat swab sample of the person was sent to the WHO Collaborating Center, Hong Kong due to lack of such facilities in Nepal; which tested positive for COVID-19 (Ranish Shrestha, 2020). He later recovered and tested negative on reverse transcription polymerase chain reaction (RT-PCR) assessed in January 31 (Government, 2021).

Many countries, in fear of threatening transmission of the outbreak, announced to evacuate their citizens from the epicenter of the outbreak, the Wuhan city in spite of the statement of WHO Director-General Dr. Tedros Adhanom Ghebreyesus on 28 January, 2020 stating confidence in China's capabilities to curb the virus and arguing no necessity to evacuate foreigners from Wuhan (Xinhua, 2020). But South Korea, Australia, Japan, USA and European countries started evacuation (CNN World, 2020), that pressurized the relatively less capable countries, like Nepal to evacuate its citizen. All those nations planned 14 days' quarantine to evacuated citizen before they expose to society freely (Kofi Ayittey F., 2019).

Nepal responded earlier in comparison with many other countries; in spite of its constrains on health services and logistics. While Nepal was just beginning decentralized health care system in the light of federalism envisioned by new constitution of Nepal 2015, it had to tackle COVID-19 pandemic related issues. Nepal banned influx of travelers from the most affected regions (Europe, Gulf countries, Malaysia, South Korea and Japan) on March 18 when Nepal had only one confirmed case (Pratik Adhikary, 2021). Nepal evacuated 175 Nepali students from Wuhan City on February 15, 2020 and took to Kharipati isolation center promptly managed by Nepal Army. This was the first but successful attempt of Nepal government to act in protecting people against COVID-19 pandemic. None had symptoms nor tested positive for RT-PCR after 14 days of isolation in quarantine (Nepal government, 2021).

Nepal rapidly and vigorously adopted many readiness and response-related initiatives at the federal, provincial, and local levels to fight against COVID-19 pandemic. The government soon set health desks at the international airport and allocated spaces for quarantine purposes and at the borders, crossing points of entry (PoE) with India and China to withstand the influx of possible infected individuals (Bhattarai, 2021).

The second case was revealed only after more than a month on March 23, 2020 in a 19-years-old female student returning from France. As of 23 March, when only the second case tested positive in Nepal, more than 332,000 cases and over 14,500 deaths have been reported in 189 countries (IOM, 2020). The planned and controlled activities of Nepal government contributed to resist COVID-19 enter inside its boarder for such long time. With the report of the second case on March 23, Nepal promptly announced the nationwide lockdown from March 24 when Nepal had just reported two confirmed cases from 610 RT-PCR (Kusum Sharma, 2021). Nepal government formed High-Level Coordination Committee for Prevention and Control of COVID19 under the chairmanship of then-honorable Deputy Prime Minister Ishwar Pokhrel on 25 March 2020 in order to effectively carry out the plans and programs to combat against the pandemic. The committee,

which later converted into COVID19 Crisis Management Committee (CCMC), promptly exercised optimal efforts and announced fight against COVID19 as the first priority of the nation out of low economic resources, health manpower and health facilities (Government, 2021).

Nepal and India had implemented a lockdown strategy at similar times (mid-March). But unexpectedly India eased travel restrictions after two months, and hundreds of thousands Nepali migrants in India started returning home. The hill and mountain areas of Nepal, including Kathmandu valley, were relatively less affected up to that stage (Pratik Adhikary, 2021). The Nepali migrants from India injected the virus in most part of Nepal (Kusum Sharma, 2021). Nepal saw its first case of local transmission on April 4, 2020 when 34-years-old women from Kailali district having no prior history of travel tested positive for COVID-19; marking Nepal to be at the second stage of infection (Marahatta SB, 2020).

COVID-19 pandemic exhibited unusual attribute that this pandemic mainly hit richer countries first irrespective to other recent viral epidemics like Zika or Ebola. The virus was widespread in South Korea, Italy, and then in the United Kingdom and the United States, before entering Low and middle-income countries, other than China, where it was observed the first. Returnee from the richer countries brought the virus into South Asia (Edward Miguel, 2022).

With all the efforts, Nepal only managed to delay the spread, and did not succeed in preventing the transmission of the virus through the population when influx of Nepali migrants (most of them untested for COVID-19) in India rushed back to home without health measures needed to prevent COVID-19 transmission (Pratik Adhikary, 2021).

Nepal continued lockdown and forcefully allow citizens follow health measures to combat COVID-19 pandemic (Kusum Sharma, 2021). Country indeed suffered from nationwide lockdown restricted socioeconomic activities and livelihood. Many people lost their jobs and businesses; mainly relying on informal sector. Hence, lockdown impacted more vulnerability to poor people (UNDP, 2020).

Nepal had to combat COVID-19 and provide not only healthcare services but also economic relief to people and sectors that were hardest hit. Nepal's federal system, although new, and lack enough resources, performed well in the critical management of COVID-19 pandemic with the coordinated effort of three tiers of government (Kandel, 2022).

Regarding healthcare services during the pandemic, not only the low-income countries like Nepal, but high-income countries too lack adequate Personal Protective Equipment (PPE) for health care workers, contact tracing arrangements, testing facilities, reagents, equipment (Suja Giri, 2023). With the committed leadership and fully mobilized diplomatic wings that Nepal managed the necessary healthcare equipment and service enough to combat COVID-19 pandemic in Nepal.

Strict containment could be hardly achievable in daily wages workers and low-income communities since large number of these people are compelled to continue their income-generating activities for food and livelihood (Olivier Bargain, 2021). Local government managed

food and rations, shelter (quarantine and isolation centers), taking care of diagnostics, and medication along with awareness activities against the terror created by unknown disease during the 83 days of lockdown and beyond as directed by central government (Biplov Adhikari, 2020). These activities highlighted the effectiveness and importance of community-based governances to tackle national problem, like the COVID19 pandemics.

2. Centralized policy and decentralized implementation

With suggestions and recommendations from high-level coordination committees and experts, federal government enacted several measures: promoting universal personal protection, physical distancing, localized lockdowns, travel restrictions, isolation, and selective quarantine along with several guidelines/protocols for managing COVID-19 patients and later vaccination programs (Buddha Bahadur Basnet, 2021).

As the terror of the pandemic due to never known virus spread across the nation, the federal government formulated regulations and directed the provincial and local governments to remain attentive of the pandemic. The federal government directed and supported budgets to provincial and local governments to build facilities for quarantine and isolation. Local governments promptly set up quarantine and isolation centers in a matter of days and mobilized the trained rapid response teams into action (Pratik Adhikary, 2021; Biplov Adhikari, 2020).

In the beginning of lockdown, the public fear grew inexplicably to the number of confirmed cases. Absolute lockdown was very difficult and people somehow found their way back home as the lockdown hardened their livelihood. Many returnees observed closed gates in their hometown labeling them as biohazards. Quarantine centers operated by local governments proved useful to house such returnees. Public representatives managed the returnees complete quarantine of 14 days before integrating into the society. Local governments, hence, not only prevented the spread of the disease but also pacified the disproportionate fear due to lack of awareness (Biplov Adhikari, 2020).

Local representatives who have routine relationship with local people and exhibit links with key stakeholders and communities, are the best able to tackle problems, including outbreak or pandemics. It is not easy to address local management from distance (Pratik Adhikary, 2021). Nepal, hence practiced the localized policy for quarantine set up and management, isolation centers, managing food and needful to needy people. Many mayors and deputy mayors turned their official vehicle to ambulance for COVID-19 infected patients in the service of their citizens (NepalNews, 2021).

Local government worked for contact tracing, facilitating returnees from abroad up to their respective wards, establishing and managing quarantine and isolation, working in close coordination with civil societies and community-based organizations like Red Cross, and local NGOs. Civil societies found supporting and assisting in establishment of quarantine, foods and grocery supply, mobilizing local health workers and so on (Min Bahadur Shahi, 2022). The local

level representatives worked in prompt, effective and economic way in all aspects to make their municipalities a safer place (Biplov Adhikari, 2020).

Table 1: Air lifted returnees managed by local governments for transportation, quarantine, testing and necessary logistics

| Air Evacuating Airlines | Number of flights | Air evacuated passengers |
|-------------------------|-------------------|--------------------------|
| Nepal Airlines | 273 | 46303 |
| Himalayan Airlines | 225 | 31861 |
| Jajira Airlines | 62 | 8944 |
| Air Arabia | 95 | 12810 |
| Qatar Airlines | 102 | 14500 |
| Malindo Airlines | 36 | 5518 |
| Fly Dubai Airlines | 75 | 11010 |
| Malaysia Airlines | 20 | 1669 |
| Salam Airlines | 14 | 2033 |
| Korean Airlines | 9 | 1817 |
| Turkush Airlines | 22 | 3901 |
| Myanmar Air Force | 1 | 26 |
| Shree Air | 2 | 65 |
| Silk Airlines | 9 | 1257 |
| Swiss Air Force | 1 | 10 |
| Etihad | 14 | 1817 |
| Buddha Air | 1 | 5 |
| Air China | 10 | 144 |
| China Southern | 11 | 156 |
| Others | 29 | 2241 |
| Total | 1011 | 146087 |

Data source: Government of Nepal, COVID-19 Crisis Management Center

Even though Nepal observed 11 cases of suicide in quarantine centers due to depression on long isolation in the initial days of COVID-19 pandemic in Nepal (Rai, 2020) and fatal illnesses of typhoid and diarrhea, some cases of sexual assault, and of people escaping, for example in Naumule Rural Municipality in Karnali Province (BK, 2020), the overall management of quarantines by local level was satisfactory. The effectiveness and socio-economic consequences of stringent confinement policies are largely being questioned in the context of low-income countries (Edward Miguel, 2022). No report, however, observed of fatal cases due to hunger, malnutrition and other reasons related to poverty in the long lockdown. Distribution of different types of relief packages relevant to the uniqueness of the local unit to those impacted by lockdowns by local levels, have brought

significantly different scenario, even though they constrained the resources (Pratik Adhikary, 2021).

3. Milestone to Nepal's health system strengthening

The COVID-19 pandemic hit Nepal when Nepal's health system was struggling to creep. Decade-long civil war (1996-2006) and the massive earthquakes of 2015 had hindered the ambition of health system advancement (Pratik Adhikary, 2021) even after demolition of dark period of Nepal's history (1961-1990) in respect to economic development of the country (Khadka, 1994).

Health system decentralization is an important part of the Nepali state's effort to devolve greater power and resources to provinces and local governments under the 2015 constitution what used to be centralized to Ministry of Health and Population in Kathmandu (Pratik Adhikary, 2021). To address the health system decentralization, Nepal government laid foundation stones of 396 basic hospitals in 396 local units with 5, 10 or 15 beds and 7 infectious disease hospitals in 7 provinces of Nepal on same day; November 30, 2020 during the COVID-19 pandemic period (Onlinekhabar, 2020).

A country that lacked facilities for testing COVID-19 detecting RT-PCR till January 2020 and sent samples to WHO Collaborating Center, Hong Kong for the test (Ranish Shrestha, 2020) speedily developed the facilities and extended to 82 centers in different provinces of Nepal and tested more than 2 millions (2,035,301) samples within January 2021 (Government, 2021).

Table 1: RT PCR facility centers in Nepal as of January 22, 2021

| Province | Number of Laboratories | Number of Test Performed |
|-----------------------|------------------------|--------------------------|
| Koshi Province | 8 | 247,527 |
| Madhesh Province | 7 | 98,616 |
| Bagmati Province | 43 | 1,137,036 |
| Gandaki Province | 3 | 128,698 |
| Lumbini Province | 11 | 208,442 |
| Karnali Province | 4 | 96,670 |
| Sudurpakshim Province | 6 | 118,312 |
| Total | 82 | 2,035,301 |

Data source: Government of Nepal, COVID-19 Crisis Management Center

4. Conclusion and Discussion:

Political characteristics of any country determines primary health care system. A country's health status is indeed reflection of its wider political context, including the availability of resources and the exercise of good governance (WHO, 1978). Not only low income countries like Nepal, COVID-19 pandemic exposed serious inequities in health care delivery as well as lack of adequate personal

protective equipment, contract tracing arrangements, testing facilities, equipments and reagents in rich countries as well (Pratik Adhikary, 2021).

Health crises add pressure not only on already overstretched health systems, but also take away resources from existing health problems, resulting further damages (Elston JWT, 2017). Nepal, however managed the crisis in such a way that it faced no problems, during and after the pandemic. This was attributed due to centralized policy and decentralized impementation of the COVID-19 pandemic related crisis management.

Some crisis brings oppurtunities to community and country (Rohan R, 2020). The COVID-19 crisis accelerated the devolution of health administration in Nepal, that has been visioned by new constitution of Nepal, 2015. Federal government provided COVID-19 containment policy and budget to provincial and local governments, the later implemented them in creative and econmic way. Thus, Nepal witnessed COVID-19 crisis management as an oppurtunity to testify and justify its ongoing constitutional framework of health system decentralization. This demands the immediate steps to complete the devolution of health administration as an important tool in preparedness of pandemics and other health crises later.

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Sustainable Development between “Self-Governed” and “Jointly-Governed” Irrigation System in Nepal

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Abstract

Water is a strategic natural resource to drive change. Water resources are globally shrinking and becoming scarce resources for agricultural development. Asia faces a daunting water crisis that threatens its economic growth. The efficiency of revenue, efficiency of cost, effectiveness of fee collection and financial self-sufficiency are higher in Self-Governed irrigation system than Jointly-Governed irrigation system. Due to sole responsibility of farmers, they felt the canal of their own canal and they had generated their ownership in order to collect a good amount of water taxes and perform all the maintenance tasks in a cost-effective manner in Self-Governed irrigation systems in comparison to Jointly-Governed irrigation systems. For overall strengthening of the system, the operation and maintenance works are carried out in a timely manner by Water Users' Association using own collected and secured financial sources in case of Self-Governed irrigation systems, but Jointly-Governed irrigation systems were solely dependent on Department of Irrigation and other agencies.

key words: water, resource, agricultural, development and growth.

1. Background

The idea of ‘sustainable development’ is an integrating idea, and a bridge between conservation and development. Water can pose a challenge to sustainable development, but managed efficiently and equitably, water can play an enabling role in strengthening the resilience of social, economic and environmental systems in the light of rapid and unpredictable ups and downs. The sustainability of irrigation systems will depend mainly on the farmers' capacity for operation and maintenance. The sustainability is influenced by the water end-user farmers in the design, implementation and operational stages of the irrigation system. The objective of this study is to analyze the financial sustainability of the self-governed and jointly-governed irrigation systems in Nepal.

2. Methodology

For the field work, self-governed Panchakanya Irrigation System (PIS) and jointly-governed Khageri Irrigation System (KIS) of Chitwan were selected. Both quantitative and qualitative data were collected. Individual interviews were taken by using questionnaires to obtain necessary quantitative information. KII, FGD and case study, field observations and irrigation schedule were used to obtain necessary qualitative information for this research. The secondary data was collected from various unpublished

and published articles, books, journals, and websites by visiting different libraries of governmental and non-governmental organizations.

3. Results and Discussion

Revenue Mobilization Efficiency: Operating income over the expenditure is important aspects for the financial sufficiency of the irrigation system. The financial sustainability of the irrigation system can be possible if the total annual current income covers the total annual expenditure in the irrigation systems (Sener, Yuksel & Konukcu, 2007). Keeping in mind the view, following formula is used to measure the revenue mobilization efficiency:

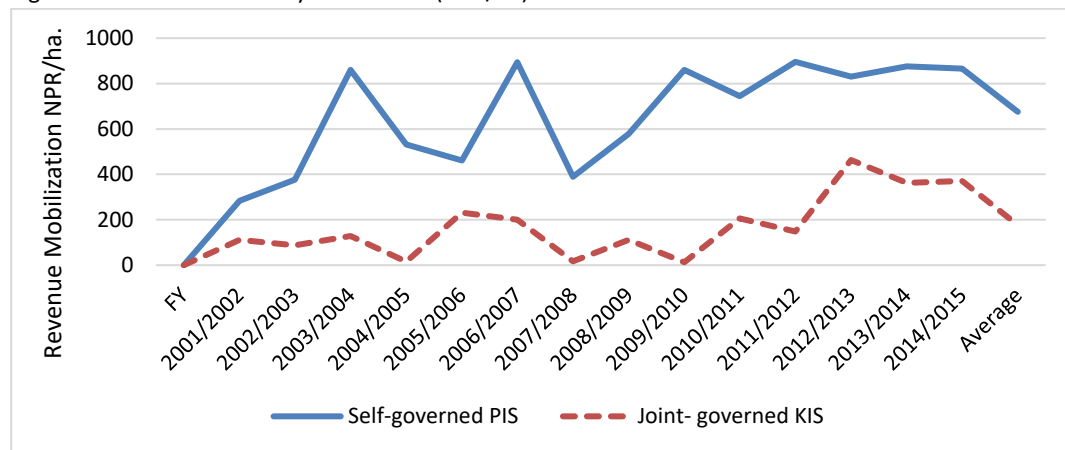
$$\text{Revenue Mobilization Efficiency} = \frac{\text{Total Operating Income}}{\text{Total Command Area}}$$

Table 1: Revenue Mobilization Efficiency (NPR/ha)

| Fiscal Year | Self-Governed Irrigation System (PIS) | | | Jointly-Governed Irrigation System (KIS) | | |
|-------------|---------------------------------------|-------------------------|------------------------------------|--|-------------------------|--------------------------------|
| | Total Operating Income (NPR) | Total Command Area (ha) | Efficiency of Revenue (NPR per ha) | Total Operating Income (NPR) | Total Command Area (ha) | Efficiency of Revenue (NPR/ha) |
| 2001/02 | 170,401.50 | 600 | 284.00 | 435,905.79 | 3900 | 111.77 |
| 2002/03 | 225,752.92 | 600 | 376.25 | 341,300.50 | 3900 | 87.51 |
| 2003/04 | 516,186.63 | 600 | 860.31 | 501,321.64 | 3900 | 128.54 |
| 2004/05 | 319,325.83 | 600 | 532.21 | 59,569.00 | 3900 | 15.27 |
| 2005/06 | 276,938.40 | 600 | 461.56 | 902,534.79 | 3900 | 231.42 |
| 2006/07 | 536,766.77 | 600 | 894.61 | 781,315.00 | 3900 | 200.34 |
| 2007/08 | 233,689.00 | 600 | 389.48 | 67,860.98 | 3900 | 17.40 |
| 2008/09 | 346,836.50 | 600 | 578.06 | 435,905.79 | 3900 | 111.77 |
| 2009/10 | 516,186.63 | 600 | 860.31 | 48,202.00 | 3900 | 12.36 |
| 2010/11 | 446,864.68 | 600 | 744.77 | 801,133.00 | 3900 | 205.42 |
| 2011/12 | 537,440.63 | 600 | 895.73 | 579,055.29 | 3900 | 148.48 |
| 2012/13 | 498,281.68 | 600 | 830.47 | 1,806,999.91 | 3900 | 463.33 |
| 2013/14 | 525,439.68 | 600 | 875.73 | 1,414,020.00 | 3900 | 362.57 |
| 2014/15 | 519,625.55 | 600 | 866.04 | 1,446,000.00 | 3900 | 370.77 |
| Average | 404,981.17 | 600 | 674.97 | 687,223.12 | 3900 | 176.21 |

Source: Field Study, 2016

Figure 1: Trends of Efficiency of Revenue (NPR/ha)



Source: Field Study, 2016

Costs-Efficiency: For this study purpose, following formula is used to measure the costs-efficiency of both irrigation systems:

$$Costs - Efficiency = \frac{Total\ Operating\ Expenses}{Total\ Command\ Area}$$

Throughout the field study key informants were inquired about the efficiency of the costs of the systems and in this regard, their responses are summarized in Table 2 and figure 2.

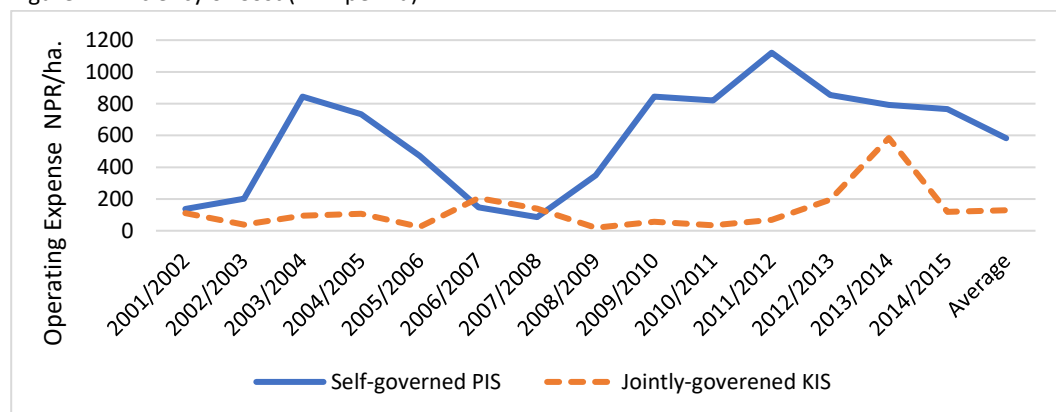
Table 2: Efficiency of Cost (NPR/ha)

| Fiscal Year | Self-Governed Irrigation System (PIS) | | | Jointly-Governed Irrigation System (KIS) | | |
|-------------|---------------------------------------|-------------------------|------------------------------|--|-------------------------|---------------------------------|
| | Total Operating Expenses (NPR) | Total Command Area (ha) | Efficiency of Cost (Percent) | Total Operating Expenses (NPR) | Total Command Area (ha) | Efficiency of Cost (NPR per ha) |
| 2001/02 | 82,403.00 | 600 | 137.34 | 429,644.43 | 3900 | 110.17 |
| 2002/03 | 120,667.53 | 600 | 201.11 | 151,415.57 | 3900 | 38.82 |
| 2003/04 | 506,168.00 | 600 | 843.61 | 370,980.08 | 3900 | 95.12 |
| 2004/05 | 439,609.46 | 600 | 732.68 | 414,539.30 | 3900 | 106.29 |
| 2005/06 | 282,989.00 | 600 | 471.65 | 93,407.00 | 3900 | 23.95 |
| 2006/07 | 87,764.00 | 600 | 146.27 | 804,023 | 3900 | 206.16 |
| 2007/08 | 51,411.00 | 600 | 85.69 | 540,591 | 3900 | 138.61 |
| 2008/09 | 209,536.00 | 600 | 349.23 | 73,981 | 3900 | 18.97 |
| 2009/10 | 506,168.00 | 600 | 843.61 | 216,628 | 3900 | 55.55 |
| 2010/11 | 492,026.00 | 600 | 820.04 | 134,448 | 3900 | 34.47 |

| Fiscal Year | Self-Governed Irrigation System (PIS) | | | Jointly-Governed Irrigation System (KIS) | | |
|-------------|---------------------------------------|-------------------------|------------------------------|--|-------------------------|---------------------------------|
| | Total Operating Expenses (NPR) | Total Command Area (ha) | Efficiency of Cost (Percent) | Total Operating Expenses (NPR) | Total Command Area (ha) | Efficiency of Cost (NPR per ha) |
| 2011/12 | 672,623.00 | 600 | 1121.04 | 266,554 | 3900 | 68.35 |
| 2012/13 | 512,890.00 | 600 | 854.82 | 760,336 | 3900 | 194.96 |
| 2013/14 | 475,069.00 | 600 | 791.78 | 2,276,998 | 3900 | 583.85 |
| 2014/15 | 458,988.00 | 600 | 764.98 | 466,628 | 3900 | 119.65 |
| Average | 349,879.00 | 600 | 583.13 | 500,012.38 | 3900 | 128.21 |

Source: Field Study, 2016

Figure 2: Efficiency of Cost (NPR per ha)



Source: Field Study, 2016

Fee Collection Efficiency: Following formula is used to measure the fee collection efficiency of both irrigation systems:

$$Fee\ Collection\ Efficiency = \frac{Total\ Fee\ Collected}{Total\ Fee\ to\ be\ Collected} \times 100\ %$$

Table 3: Effectiveness of Fee Collection (Percent)

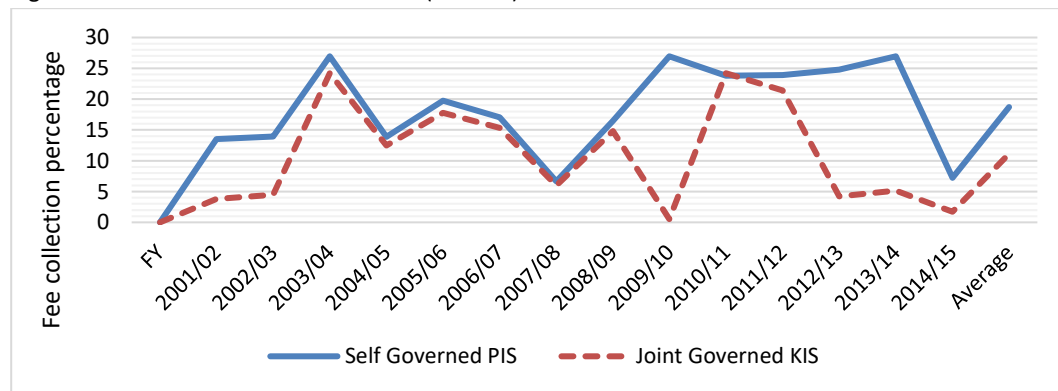
| Fiscal Year | Self-Governed Irrigation System (PIS) | | | Jointly-Governed Irrigation System (KIS) | | |
|-------------|---------------------------------------|---------------------------|----------------|--|---------------------------|----------------|
| | Total Fee Collected | Total Fee to be Collected | Efficiency (%) | Total Fee Collected | Total Fee to be Collected | Efficiency (%) |
| 2001/02 | 170,401.50 | 1,086,000.00 | 15.69 | 435,905.79 | 1,209,000.00 | 36.06 |
| 2002/03 | 225,752.92 | 1,086,000.00 | 20.79 | 341,300.50 | 1,209,000.00 | 28.23 |
| 2003/04 | 516,186.63 | 1,086,000.00 | 47.53 | 501,321.64 | 1,209,000.00 | 41.47 |
| 2004/05 | 319,325.83 | 1,086,000.00 | 29.40 | 59,569.00 | 1,209,000.00 | 4.93 |
| 2005/06 | 276,938.40 | 1,086,000.00 | 25.50 | 902,534.79 | 1,209,000.00 | 74.65 |

| Fiscal Year | Self-Governed Irrigation System (PIS) | | | Jointly-Governed Irrigation System (KIS) | | |
|-------------|---------------------------------------|---------------------------|----------------|--|---------------------------|----------------|
| | Total Fee Collected | Total Fee to be Collected | Efficiency (%) | Total Fee Collected | Total Fee to be Collected | Efficiency (%) |
| 2006/07 | 536,766.77 | 1,086,000.00 | 49.43 | 781,315.00 | 1,209,000.00 | 64.62 |
| 2007/08 | 233,689.00 | 1,086,000.00 | 21.52 | 67,860.98 | 1,209,000.00 | 5.61 |
| 2008/09 | 346,836.50 | 1,086,000.00 | 31.94 | 435,905.79 | 1,209,000.00 | 36.06 |
| 2009/10 | 516,186.63 | 1,086,000.00 | 47.53 | 48,202.00 | 1,209,000.00 | 3.99 |
| 2010/11 | 446,864.68 | 1,086,000.00 | 41.15 | 801,133.00 | 1,209,000.00 | 66.26 |
| 2011/12 | 537,440.63 | 1,086,000.00 | 49.49 | 579,055.29 | 1,209,000.00 | 47.90 |
| 2012/13 | 498,281.68 | 1,086,000.00 | 45.88 | 1,806,999.91 | 1,209,000.00 | 149.46 |
| 2013/14 | 525,439.68 | 1,086,000.00 | 48.38 | 1,414,020.00 | 1,209,000.00 | 116.96 |
| 2014/15 | 519,625.55 | 1,086,000.00 | 47.85 | 1,446,000.00 | 1,209,000.00 | 119.60 |
| Average | 404,981.17 | 1086000.00 | 37.29 | 134722.32 | 1209000.00 | 11.14 |

Source: Field Study, 2016

The effectiveness of fee collection of Self-Governance PIS was found 37.29 percent, whereas in Joint-Governance KIS, it was found 11.14 percent. The effectiveness of fee collection of Self-Governance PIS was found better than the Joint-Governance KIS. So, the water tax was also collected better in Self-Governance PIS than the Joint-Governance KIS. Trends in the effectiveness of fee collection of the two irrigation systems are demonstrated in Figure 3.

Figure 3: Effectiveness of Fee Collection (Percent)



As shown in Figure 3, the effectiveness of the fee collection percent was higher in Self-Governance PIS from 2001/02 to 2014/15 FY than the Joint-Governance KIS.

Financial Self-Sufficiency: Following formula is used to measure the financial efficiency of the irrigation systems:

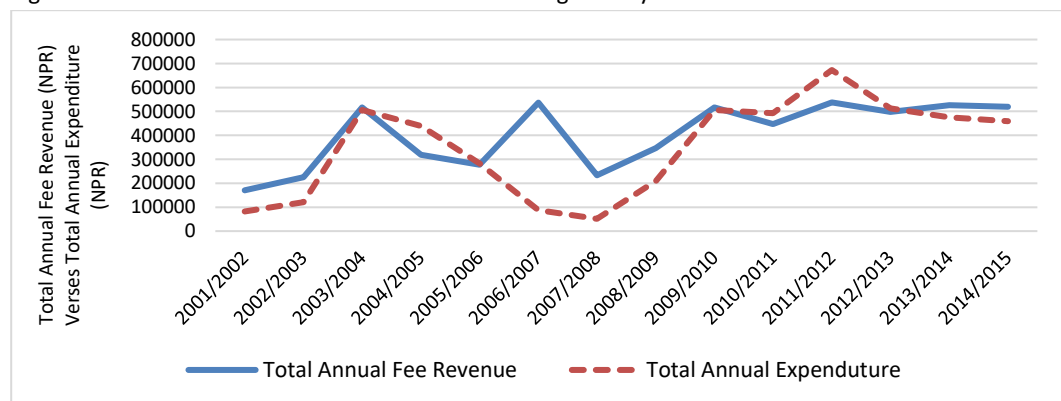
$$Financial\ Self - Sufficiency = \frac{Total\ Annual\ Fee\ Revenue}{Total\ Annual\ Expenditure} \times 100\%$$

Table 4: Financial Efficiency (in Percent)

| Fiscal Year | Self-Governed Irrigation System (PIS) | | | Jointly-Governed Irrigation System (KIS) | | |
|-------------|---------------------------------------|--------------------------------|----------------|--|--------------------------------|----------------|
| | Total Annual Fee Revenue (NPR) | Total Annual Expenditure (NPR) | Efficiency (%) | Total Annual Fee Revenue (NPR) | Total Annual Expenditure (NPR) | Efficiency (%) |
| 2001/02 | 170,401.50 | 82,403.00 | 206.79 | 435,905.79 | 16,628.00 | 2621.52 |
| 2002/03 | 225,752.92 | 120,667.53 | 187.09 | 341,300.50 | 414,142.94 | 82.41 |
| 2003/04 | 516,186.63 | 506,168.00 | 101.98 | 501,321.64 | 355,506.78 | 141.02 |
| 2004/05 | 319,325.83 | 439,609.46 | 72.64 | 59,569.00 | 395,905.78 | 15.05 |
| 2005/06 | 276,938.40 | 282,989.00 | 97.86 | 902,534.79 | 804,022.50 | 112.25 |
| 2006/07 | 536,766.77 | 87,764.00 | 611.60 | 781,315.00 | 540,591.00 | 144.53 |
| 2007/08 | 233,689.00 | 51,411.00 | 454.55 | 67,860.98 | 73,981.00 | 91.73 |
| 2008/09 | 346,836.50 | 209,536.00 | 165.53 | 435,905.79 | 216,628.00 | 201.22 |
| 2009/10 | 516,186.63 | 506,168.00 | 101.98 | 48,202.00 | 134,448.00 | 35.85 |
| 2010/11 | 446,864.68 | 492,026.00 | 90.82 | 801,133.00 | 266,554.00 | 300.55 |
| 2011/12 | 537,440.63 | 672,623.00 | 79.90 | 579,055.29 | 1,118,500.00 | 51.77 |
| 2012/13 | 498,281.68 | 512,890.00 | 97.15 | 1,806,999.91 | 760,336.00 | 237.66 |
| 2013/14 | 525,439.68 | 475,069.00 | 110.60 | 1,414,020.00 | 2,276,998.00 | 62.10 |
| 2014/15 | 519,625.55 | 458,988.00 | 113.21 | 1,446,000.00 | 466,628.00 | 309.88 |
| Average | 404,981.17 | 349,879.43 | 115.75 | 134,722.32 | 560,062.14 | 24.05 |

Source: Field Study, 2016

Figure 4: Status of the Financial Efficiencies of the Irrigation Systems



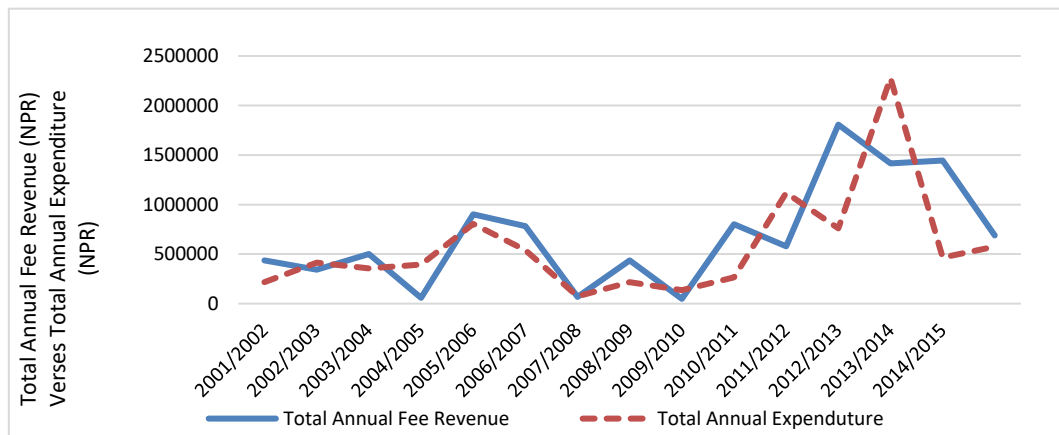
Source: Field Study, 2016

The sufficiency level was in decreasing trend due to the land plotting for gharedi (land allocated for the purpose of houses), change occupation and reluctant with farming jobs in the Self-Governance PIS and Joint-Governance KIS. As the financial viability of WUA was critically valued for the sustainability of the

institution, the Water Users’ Association (WUA) raised enough resources to cover the operating expenses.

WUA raised enough resources in the Self-Governance PIS in comparison to the Joint-Governance KIS. Self-Governance PIS to cover the operating expenses was relatively better than the Joint-Governance KIS for necessary operation and maintenance cost. Trends in the financial self-sufficiency of Joint-Governance KIS is demonstrated in Figure 5.

Figure 5: Status of the Financial Self-Sufficiency of Joint-Governance KIS



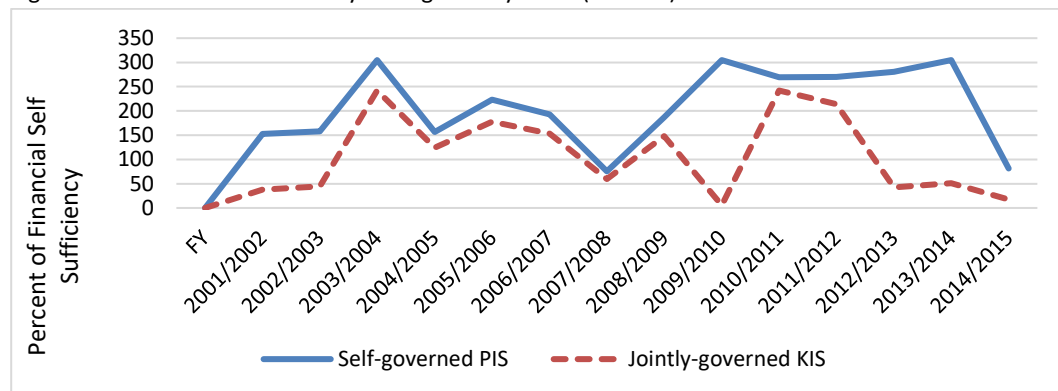
Source: Field Study, 2016

The collection of ISF in the Joint-Governance KIS was low, resulting in reduced budgetary provisions for operation and maintenance. Thus, in turn, has triggered deferred maintenance and unreliable irrigation. It covers the operation and maintenance cost of the infrastructure leading to deterioration of the asset and declining service levels with subsequent reduction in recovery of ISF.

The ISF and other aspects such as the collection efficiency, the mode of calculation and degree to which an ISF can cover normal operational costs in Self-Governance PIS. The financial resources are collected well in Self-Governance PIS than Joint-Governance KIS. Thus, Self-Governance PIS was found more financially self-sufficient in the comparison to Joint-Governance KIS. Often it seems to be assumed that if the fee is computed to exceed the operation costs, a reserve fund will accumulate, and the organization will be able to undertake capital investments of its own after a few years or take support from DoI in the case of Joint-Governance KIS.

A WUA after management handover is a type of WUA and should be evaluated as such. A WUA knows that the excess of income over expenditure, while it is a necessary condition of WUA success, is not sufficient. Without adequate capital, a WUA will always be weak and struggling and unable to generate enough activity or perform enough services to maintain the support of its own stakeholders. It is just the same with an irrigator’s institution as with any form of WUA activity. Trends in the financial self-sufficiency are given in Figure 6.

Figure 6: Financial Self-Sufficiency of Irrigation Systems (Percent)



Source: Field Study, 2016

At the present, in Self-Governance PIS, all the operation and maintenance mechanisms have been carried out by WUA using own collected resources. When government agencies were struggling because of lack of resources, cost was raised to maintain the quality of operation and maintenance of the system at a satisfactory level.

The financial resource was collected and an asset management plan was developed mutually agreed upon between the WUA and the DoI for the operation and maintenance of the entire system. The WUA was committed to collect the required amount of money through the ISF and other sources. The respective contributions were monitored by the WUA especially Treasurer. The WUA had access to various financial resources, viz., membership/entry fee, and renewable fee, ISF, penalty, and others.

The efficiency of revenue was found higher the water tax collection, higher was the efficiency of revenue. It showed that the efficiency of revenue was better in the Self-Governance PIS than the Joint-Governance KIS.

The efficiency of cost was found higher in Self-Governance PIS in comparison to Joint-Governance KIS. Failure to pay the ISF the WUA can easily apply sanctions to the farmers by totally stop water delivery. So, water cannot use without pay the ISF to the WUA Office. Many farmers in the summer paddy evade paying ISF saying that they do not use the canal water because of the good rainfall.

In early days the system used to run on faith and trust with each other, but after the intervention, capital instead of labor contribution increases and hence the need of a transparent accounting system was felt. Therefore, in many systems bank account and water charge collection system have been adopted. Similarly the agriculture extension services and local market have been explored for marketing of agricultural products, especially concentrating to pay the water tax on time. The economic condition of the people in the command area has gradually changed. Significant changes were observed in the farmers' renewable membership and activeness to pay the water tax after the WUA intervention. Some changes were observed in the cropping intensity and cropping pattern after the WUA intervention. The farmers are more interested toward high value crops after the availability of irrigation facility.

In financing arrangements, a detailed inventory of the assets of the irrigation system is carried out and an asset management plan is prepared. These plans will define the operation and maintenance needs of the entire system to be agreed upon between the WUA and the DoI. These will form a basis of fund commitment by the agency for operation and maintenance works, which the WUA will commit to collect the requirements through their cash contribution. The respective contributions will be monitored by the WUA. With timely payment of the water charges are their key activities that govern the efficient functioning of the irrigation system. Individual end users, and the WUA as a whole, must be active and aware towards the functioning of their system. The DoI and the WUA's are to be co-partners in the implementation and execution of the operation and maintenance of the irrigation system. Key indicators for their roles include maintaining the financial arrangements.

The financial sustainability is to measure the sustainability of the irrigation institutions in terms of performance. One also as an additional target their own capital to slickly operation and maintenance of the systems. The financial sustainability can be used to plan what to do at that moment in the days to come. The financial sustainability is measured for assessing the efficiency of an institution. This is used to determine the income of each period so as to note the financial performance of the irrigation institutions to conduct its operation and maintenance or not. In order to obtain higher income, irrigation institutions should try to do water fee collection activities that support the irrigation institutions' income rate. Destination of irrigation institutions to generate huge amount of income is to achieve the returns themselves. This means that an irrigation institution will operate more effectively if the irrigation institutions was able to maintain good performance and try to reduce the risks that exist. The financial sustainability consists of two components, namely revenue and expenses of the irrigation institutions. The financial sustainability is an irrigation institutions' ability to compare all the income and expenditure costs. The financial sustainability is said well if its income must be greater than the total costs. In the case of irrigation systems, besides financial viability, other benefits such as employment generation, improved nutritional standards of people and improved market activities associated with forward and backward linkages are common.

4. Conclusion and Way Forward

Based on above findings, in conclusion, the efficiency of revenue was found NPR 674.97 per ha of Self-Governance PIS whereas in Joint-Governance KIS, it was found NPR 176.2 per ha. The efficiency of revenue was found better in Self-Governance PIS than Joint-Governance KIS. The efficiency of cost was found NPR 583.13 per ha in Self-Governance PIS whereas in Joint-Governance KIS, it was found NPR 128.21 per ha. The cost efficiency was also found better in Self-Governance PIS than Joint-Governance KIS. The effectiveness of fee collection of Self-Governance PIS was found 211.54 percent whereas in Joint-Governance KIS, it was found only 111.43 percent. The effectiveness of fee collection of Self-Governance PIS was found almost double than Joint-Governance KIS, as a result, the water tax was raised better in Self-Governance PIS than Joint-Governance KIS. The financial self-sufficiency of the Self-Governance PIS was found 177.98 percent whereas in Joint-Governance KIS, it was found lower, i.e., 141.95 percent. It indicated that Self-Governance PIS enjoyed more financial sufficiency than Joint-Governance KIS. Due to solely responsibility of farmers and more ownership bearing in Self-Governance

PIS, they were able to collect appropriate amount of water taxes. The financial self-sufficiency level was found decreasing in trend due to the reluctant with farming jobs. As the financial viability of WUA was critical valued for the sustainability of the institution, the WUA was raised enough resources to cover the relatively high cost for necessary operation and maintenance cost in Self-Governance PIS than Joint-Governance KIS. The government burden is decreased to pay salary of guards, supervisors and other staff by involving farmers. The costs of irrigation systems is reduced by reducing DoI staffing, cost-saving and increase in fee collection, so, the benefit of WUA development has received the greatest attention.

The efficiency of revenue, efficiency of cost, effectiveness of fee collection and financial self-sufficiency are higher in Self-Governance irrigation system than Joint-Governance irrigation system. Due to sole responsibility of farmers, they felt the canal of their own canal and they had generated their ownership in order to collect a good amount of water taxes and perform all the maintenance tasks in a cost-effective manner in Self-Governance irrigation systems in comparison to Joint-Governance irrigation systems. For overall strengthening of the system, the operation and maintenance works are carried out in a timely manner by WUA using own collected and secured financial sources in case of Self-Governance irrigation systems, but Joint-Governance irrigation systems were solely dependent on DoI and other agencies.

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Knowledge Economy in Nepal: Realities and Possibilities

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Abstract

'Knowledge economy' (KE) is a type of economy in which knowledge is the key resource. Education, skills, knowledge, and communication and information technologies are the key components of the KE. Economic development is and always has been knowledge-based; however, the scope and significance of knowledge to economic processes have fundamentally changed over the last few years. Despite this, in Nepal, the concept of developing KE is still in its infant stage. There is a dearth of information on this sector. Realizing this, this article has attempted to explore the globally accepted definitions of KE, contextualizing it with Nepalese perspectives; and, more importantly, the present situation of KE practices in Nepal is discussed and potential challenges and possibilities are briefly explored. Finally, the article has proposed some implications for the betterment of the KE in Nepal.

Keywords: Brain-drain, Education, Information & Communication Technology (ICT), Knowledge Economy.

1. Introduction

Economic development is a knowledge-based effort. However, the scope and significance of knowledge in economic processes have fundamentally changed over the last few years (Arvanitidis & Petrakos, 2011). Several developed and developing countries have adequately acknowledged the importance of the knowledge economy (KE) in the overall prosperity of the country. Among the developed countries, the USA, UK, Finland, Norway, Canada, Japan, etc. have made significant achievements in the KE sector. Nevertheless, Nepal still lacks adequate recognition of KE, and frankly speaking—even in the 'circles' of academia and economists—discourses on the importance of KE and its applications have not yet started (Dangal & Gautam, 2014). There is a dearth of knowledge and information on KE in Nepal.

Thus, the main objective of this write-up is to explore the basic definitions of KE from global and national contexts and try to relate them with Nepalese perspectives. Equally, it aims to examine the situation and realities of KE in Nepal connecting to international trends of economic development, based on knowledge and information & communication technologies (ICTs) with some 'food for thought' discussions on the future prospects.

2. Methodology

While preparing this article, I have used mainly three approaches of information collection and knowledge generation: i) literature review (national and international), ii) discussions with fellow participants on the issue, and iii) some consultations with the academicians and economic

experts/professors of Nepal. Also, the guidance and feedback received from our professors at Kathmandu University (KU- School of Education/Development Studies) have been the main foundation of my discourse and propositions made in this literature-led article. Besides, I have also tried to reflect on my own experiences of over 35 years in the development field mostly associated with the rural economy, marginalized people's livelihoods, and local resources/heritage conservation and management, including pro-poor sustainable tourism development.

3. International and national perspectives of the KE

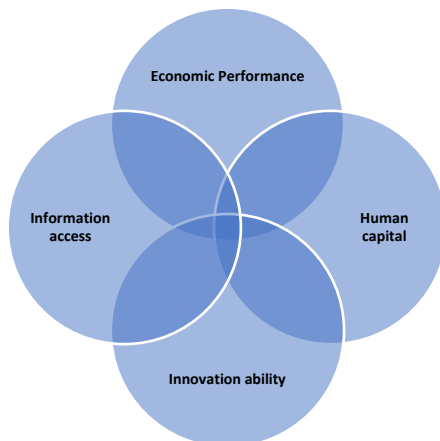
A country's economy is the wealth that it gets from business and industry. According to Dalhman (2000) and Houghton (2000), a KE is one in which 'knowledge' is the key resource. Similarly, Harris (2001) states, "The idea that knowledge plays an important role in the economy is not new" (cited in Arvanitidis & Petrakos, 2011, p. 16). Equally, Dangal and Gautam (2014) summarizes that the 'selling of knowledge' is the knowledge economy. Likewise, Brinkley (2006) suggested that the degree of incorporation of 'information' and 'knowledge' into economic processes would be so great in bringing substantial changes in the economy. Sottee (2006) also assert that knowledge is not an external 'black-box' factor, instead it is internal to the economic system and therefore economic principles can be applied to its production and exchange. In fact, as Houghton (2000) states, "the more people they use it, the greater the social return and its value become; and as a result, positive externalities arise" (p. 3). All these require a systematic access to state-of-the-art technologies and the establishment of procedures for the dissemination of the information, which is possible through an enhanced education system.

Education generally refers to knowledge and skill enhancements received through the school and higher education systems. Also, adult basic education providers and traditional academic post-secondary education programs help develop educational status for the KE. Basic education is essential because it improves peoples' capacity to learn and to use information. Higher education is also important since it is associated with both the production of new knowledge and efficient adaptation and innovative use of established knowledge. Moreover, an educated population tends to be technologically sophisticated; which gives rise to local quality-sensitive demand for advanced goods encouraging local firms to innovate and develop technologically sophisticated products and production techniques (Arvanitidis & Petrakos, 2011). Training (formal or informal, pre-job or inservice, etc.) for skills development and vocational/professional setting is also of paramount importance in creating KE (Sharma, 2010; Wagley, 2014). Equally, integration of information and communication technology (ICT) in all processes is crucial (Houghton, 2000); since ICTs roles are vital for creating and transferring knowledge.

There is a general trend that employers, be they smaller or bigger, seek variety of skills, including- *basic skills* (reading, writing, computation, communications etc.), *technical skills* (computer, technological, production/ manufacturing, delivery etc.), *organizational skills* (management and organization, employee-customer interactions, communication, analytical, problem-solving, creative thinking, interpersonal, negotiation and influencing, self-management etc.), and *company-specific skills* (different products and services-focused new technology, market changes, innovation, etc.). A successful KE

involves ingredients such as long-term investments in education, sufficient innovation capacity, adequate information infrastructure and an advantageous economic environment. For this, KE demands 4 major factors, such as human capital, innovation ability, information access, and economic performance (see Figure 1).

Figure 1: Major factors of knowledge economy



(Information source: Arvanitidis & Petrakos, 2011; Drawings developed by the author, 2015)

The figure depicts that human capital is one of the key factors of the KE; which means a well-educated and skilled workforce. There is a saying that, "the more a worker learns, the more a worker earns". Perhaps due to all these reasons, globally, societies are responding to the needs of education and training; and education and training are increasing in recent times (Dangal & Gautam, 2014). Similarly, innovation ability is very important for developing KE, and it requires nurturing 'research and development' (R&D) processes and practices. Likewise, as a third major element of the knowledge economy, 'information access' has to do with the usage of ICTs. With relatively low usage costs and the ability to overcome distances, ICTs have revolutionized the transmission of information around the globe. Economic performance and dynamism are also vital in this case. Nevertheless, Nepal has not been able to generate and exploit 'knowledge' as a key engine of economic growth. On these grounds, a positive relation is envisaged: a weak economic basis is seen as a hindrance (a robust economy as a supporter) to knowledge-driven economic dynamism. Nonetheless, brain-drain problems and "remittance-oriented thoughts of the policy-makers" (Wagle, 2018; 2019) always create hindrances in the overall development of a knowledge-based and knowledge-driven economy in the country.

Likewise, the fastest-growing jobs require additional education and training, with the increase in technology-related fields (Oliveira & Matos, 2023). According to Amartya Sen's 'Human Capability Approach' (Sen, 2000; 2010), regular training programs are key factors for the capacity enhancement of men and women. He claims that the more skills people have, the more possibility of fitting and progressing in society is possible. This is particularly very important in the case of Nepal where about 24% of people are still illiterate (CBS, 2024; NPC, 2024), and only 2% have the chance of getting an opportunity for higher studies. Such people must be equipped with new knowledge and skills to be

prepared as a new workforce (Wagley, 2014). And, job providers should also be ready to provide 'pre-service training/orientation' to all newly hired staff without any compromise or excuse. Education is the fundamental factor for enhancing KE in Nepal. The skills-oriented education system can play a pivotal role in creating more and more capable human resources as a backbone for generating technology-based innovations and economies.

4. Major challenges of developing KE in Nepal

Nepal has realized the importance of education, training and ICTs in economic development in the recent years. However, there is a dearth of information on how the government and non-governmental sectors are considering the KE as a whole. Understanding the parts of the KE is a different thing. However, understanding the term in a 'holistic' sense is still lacking in Nepal. As we discussed above, the KE requires lots of innovation and development; and development should be based on the 'research and development (R&D)' concept. However, in reality, Nepal lacks R&D concepts and priorities, even with the commitment to achieve sustainable development goals 2016-2030 (SDGs). Equally, despite several efforts, Nepal's school education system has still many challenges in achieving 100 per cent students with secondary-level education.

Undoubtedly, high dropout rates of students in the school levels have seriously affected the educational achievements in Nepal, despite the legal provision of 'free and compulsory education up-to basic level; and free education up-to secondary level in Nepal' (Nepal Law Commission, 2018; Danish Trade Union Development Agency, 2023). For, example, examining the cohort of schooling in the last few years, on average only 15% of the total students enrolled for class one appears in the SLC examinations. Poor teaching in the classrooms is blamed to be one of the main reasons for such 'dropouts' and low performances in the results (Ghimire, 2014; Mathema, 2015; UNDP/NPC, 2010). Getting qualified workers for the knowledge industry is another challenge, not in Nepal only, but globally as well. This is further aggravated by the frequent mobility of staff (and most often 'brain-drain' is a big problem having high turnover rates. Retaining qualified staff and ensuring their continued and committed service have always been challenges for any industry/organization/country (Sijapati, 2015).

The trend of 'brain drain' is rapidly increasing in Nepal. Not only 'brains' (intellectuals) we are exporting, but good 'muscles' (physical; but who have different skills rather than academic degrees) are also exported blindly in the name of 'remittance earning'. Proper utilization of such remittances is a big question in Nepal (Bhandari, 2015; NPC, 2024). However, we are promoting others' knowledge economy, but doing too little to develop our economy (Kanel, 2015) and employment creation. According to macrotrends.net (2024), the employment rate in Nepal in the years 2019, 2020, 2021 and 2022 remained at 10.64%, 13.12%, 12.58%, and 10.92% respectively. Both internal employment and out migrations are in increasing trends. A major consequence of this outflow of both skilled and unskilled people is the labor and skills shortages in Nepal, although there could be some benefits of 'brain-gain' (Groth, 2014; Balk, 2024; Bhattarai & Paudel, 2020; Paudel, 2017). For each country, life-long and life-wide learning are very important to enhance 'human capability' (Sen, 200; 2020) to contribute to a

knowledge-based economy. Nevertheless, poor understanding of the HRD and skill needs of employers is also a critical challenge.

5. Possibilities: What Can Nepal Do for KE Development?

First and foremost, partnerships with various organizations offering training and skills-based education are required to achieve the intended goals in the knowledge and skills enhancement endeavor of the country for an enhanced KE. In this case, strengthened public-private partnerships (PPP) are needed for such initiatives to be strengthened. Educational and (vocational) training institutions can play a substantial and powerful role in the development of an educated and qualified HRD/ workforce. Open Universities, other universities, and community colleges can play particularly important roles in such endeavors. Focusing on quality education with digital efficiency is also the need of the hour for Nepal. However, present data are not satisfactory since the latest publication of NPC (2024) stated that only 35% of schools in Nepal have utilized digital technologies in their education system. According to many experts and teachers consulted, those available services are also not reliable and of satisfactory quality. The Digital Nepal Framework (GoN, 2019) has shown good rays of hope on this front. However, proper implementation of the Framework could be a challenge, as in other sectors/plans.

Practically, Nepal's ICT sector should also make steady progress to reach the unreached population. As we discussed in the previous sections, 'computer' is still a new and strange 'thing' in many schools and societies in Nepal. This is not a distant reality where more than 25% of people are still illiterate (CBS, 2024), and, where about 20% of the population is under the poverty line (NPC, 2024). Since Nepal is planning to be a 'developing country' from an 'underdeveloped' country by 2026, KE plays a paramount role in fulfilling the criteria. There are problems, but more opportunities too. In the next 10 years, Nepal is planning to export Rs. 3 trillion worth of ICT services (The Republica, 28 May 2024) and create jobs for 1.5 million people; the aspirations have risen towards achieving the goal of creating more opportunities through knowledge economy, more to be done in the days to come, because it is easy to say but difficult to do. In this respect, the utilization of non-resident Nepali (NRN) brains and money could be one of the best solutions for Nepal. For these, aggressive efforts are required to develop an educated, skilful and technologically-rich generation in the next 5-10 years.

6. Conclusion and implications

Many developed and developing countries have been fully exploiting the use of knowledge and ICTs in their economic development. The USA, UK, Finland, and Norway are some of the best examples of enhanced knowledge economy. We have still a long way to go to achieve the expected progress in education, ICTs and, economic conditions. as we saw lots of evidence from various instances that, the KE totally depends on quality education and ICTs. The country has not yet focused towards creating a 'knowledge-driven economy' due to lack of sufficient awareness, human resources (mainly due to 'brain-drain'), policies and priorities. Likewise, technical and vocational education and training (TVET) in schools and colleges has not yet been mainstreamed in the country (Sharma, 2071 BS; Sharma, 2010; Kanel, 2015). Mobilization of all government, non-government and private agencies towards knowledge economy is a crucial need. For this, the PPP approach could better serve Nepal as the country gradually opens the market as part of a liberal economy. Nepal could be developed as an 'education hub' which

is situated between two giant economies. Indian interests (of North Indians particularly) in medical studies and Chinese interests in the English language and Buddhist philosophies could be trapped (Kanel, 2015).

Foreign direct investments (FDI) can also be attracted towards developing education, ICT and other technology-friendly economy-generators in addition to hydro, tourism and agriculture sectors. Finland's example alone could be a sufficient lesson to draw our attention towards how a country can employ 'knowledge' and 'ICT' for the overall development of the KE. The world is fully convinced by the notion that knowledge intensity is driven by two forces: information technology (IT) and technological change. India's recent movement of Prime Minister Narendra Modi's government, "Developing not only *high-ways* but also *l-ways* (information ways)" could also be a good lesson for Nepal to learn from a neighbouring country. Finally, in my very personal opinion, ultimately Nepal should adopt an integrated policy to develop 'TIE'-way (technology, information and education: ...6fO{Ú-j]) for overall and 'inclusive' economic growth in the country led by the KE. Because, Nepal is traditionally a 'knowledge-land' and 'peace-land' ("*Gyanabhoomi & Shantibhoomi*") (as depicted in our National Anthem as well) where cultivation, production and selling of 'knowledge' and 'ideas' could serve the nation better.

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स्रोतमा फोहर वर्गीकरण र व्यवस्थापन: भीमेश्वर नगरपालिकाको अनुभव

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सारांश

नेपालका केही नगरपालिकाहरूले स्रोतमा फोहर छुट्याई व्यवस्थापन गर्ने गरेका छन् । भीमेश्वर नगरपालिका सोमध्येमा एक पर्दछ । नगरपालिकाको स्थापनाकालदेखि सुरुमा डम्पिङ साइट हुँदै ल्याण्डफिल साइटमा फोहर विसर्जनको अभ्यास गर्दै आएकोमा हाल दिगो फोहर व्यवस्थापनका लागि वडा नं. ६, रामकोटमा यान्त्रिकरण सहितको सरसफाइ केन्द्र स्थापना भै सञ्चालनमा आएको छ । भीमेश्वर नगरपालिकामा हाल औसत दैनिक ३ टन फोहर उत्पादन हुने गरेको छ । भीमेश्वरमा फोहर सङ्कलन हुने १५०० घरधनी सदस्यहरूमध्ये ८१ घरधनीहरूसँग गरिएको टेलिफोन अन्तर्वाताअनुसार ९७.५४% घरधुरीले घरमा नै कुहिने र नकुहिने फोहर वर्गीकरण गरेको देखिन्छ । स्रोतमा नै फोहर छुट्ट्याउने, सरसफाइ केन्द्रमा पुनः वर्गीकरण गर्ने, कुहिने फोहरबाट प्राङ्गारिक मल बनाउने, नकुहिने फोहर बिक्री गर्ने तथा बाँकी फोहर सुरक्षित तथा व्यवस्थित विसर्जन गरी भीमेश्वर नगरपालिकाले सरसफाइ केन्द्रलाई सरसफाइ ज्ञान केन्द्रको रूपमा विकास गर्दै आएको छ ।

मूल शब्दहरू: स्रोतमा फोहर वर्गीकरण, सरसफाइ केन्द्र, पुनःवर्गीकरण, नागरिक दायित्व, अनुगमन ।

१. पृष्ठभूमि

हरेक वर्ष विश्वभर दुई अर्ब टनभन्दा बढी शहरी फोहर उत्पादन हुन्छ (UNEP & ISWA, २०२४) । यसरी उत्पादन हुने फोहर जलवायु परिवर्तन, प्रदूषण र जैविक विविधता हास जस्ता समस्याहरूसँग जोडिएका छन् । फोहरबाट हुने प्रदूषण धेरै किसिमका प्रतिकूल स्वास्थ्य र वातावरणीय प्रभावहरूसँग सम्बन्धित छ जसको असर पुस्तौं पुस्तासम्म रहन्छ (Siddiqua, Hahladakis, & Al-Attiya, २०२२) । फोहरको उचित व्यवस्थापन नहुँदा समाज, वातावरण र विश्वव्यापी अर्थतन्त्रमा समेत नकारात्मक प्रभाव पर्दछ ।

विश्वव्यापी रूपमा हेर्दा फोहरको उचित व्यवस्थापन; पुनः प्रयोग तथा पुनः चक्रणबाट कुल फोहरको मात्रा घट्ने र २०५० मा चक्रिय अर्थतन्त्रमा वार्षिक प्रत्यक्ष आम्दानी २५४.६ बिलियन डलरको योगदान हुनेछ अनुमान गरिएको छ (UNEP & ISWA, 2024) ।

नेपालभरिबाट वार्षिक करिब १० लाख टन फोहर उत्पादन हुने देखिन्छ । उत्पादित फोहरमध्ये सबैभन्दा बढी वार्षिक ३ लाख ८९ हजार ९ सय ८३ टन ल्याण्डफिल साइटमा जम्मा हुने, ३ लाख १५ हजार ६९ टन नदी किनार तथा बगर जस्ता वातावरणीय क्षेत्रमा जाने र २२ हजार ७५ टन दहन गरिने देखाएको छ । फोहरको

पुनःचक्रिय उपयोगमा जान सक्ने प्लाष्टिक, धातु, कागज तथा कागजजन्य वस्तु अत्यन्तै न्यून (८,६९० टन) परिमाणमा पुनःचक्रिय रूपमा उपयोग हुने देखिन्छ (Centre Bureau of Statistics, २०२२)।

वातावरण संरक्षण ऐन, २०५३, नियमावली, २०५४, फोहर व्यवस्थापन ऐन, २०६८ र फोहर व्यवस्थापन नियमावली, २०७०, स्थानीय सरकार सञ्चालन ऐन, २०७४, फोहर व्यवस्थापन राष्ट्रिय नीति, २०७९ र अन्य विषयगत ऐन नियमसमेत फोहर व्यवस्थापनको व्यवस्था समेटिएका छन् । फोहरमैला व्यवस्थापन ऐन २०६८ को दफा ३ मा फोहरको व्यवस्थापन गर्ने जिम्मेवारी स्थानीय तहको हुने उल्लेख गरिएको छ । सोही अनुरूप स्थानीय सरकारले पनि नीतिगत व्यवस्था गरी कार्यान्वयन गरिरहेको छ । भीमेश्वर नगरपालिकाबाट २०७४ सालमा आधारभूत सरसफाइ तथा फोहर व्यवस्थापन ऐन, २०७४ जारी भएकोमा हाल प्राकृतिक स्रोत तथा वातावरण संरक्षण ऐन, २०८० स्वीकृत भइ कार्यान्वयनमा रहेको पाईन्छ।

भीमेश्वर नगरपालिकाको क्षेत्रफल १३३ बर्ग कि. मी. रहेको छ । जम्मा ९ वटा वडा रहेका यस नगरपालिकामा जनगणना २०७८ अनुसार ३४,७१२ जनसङ्ख्या र १५०० घरधुरी रहेका छन् । ऐतिहासिक, धार्मिक तथा पर्यटकीय महत्व राखे यस नगरपालिकामा हाल दैनिक औसत ३ टन फोहर उत्पादन हुने गरेको छ ।

२. उद्देश्य

यस अध्ययनको उद्देश्यहरू निम्न अनुसार रहेका छन्;

- भीमेश्वर नगरपालिकाको समग्र फोहर व्यवस्थापन प्रकृयाको विश्लेषण गर्ने, र
- नगरपालिकाको फोहर व्यवस्थानका सिकाइ र सुधार गर्नुपर्ने विषयहरू पहिचान गर्ने ।

३. अध्ययन विधि

यो अध्ययन मूलतः द्वितीय स्रोत र स्थलगत अध्ययन र छलफलबाट सूचना तथा तथ्याङ्कमा आधारित छ। द्वितीय स्रोतमा मूलतः फोहर व्यवस्थापन सम्बन्धी आधारभूत जानकारी दिने प्रकाशित प्रतिवेदन र लेखहरू, सञ्चार माध्यममा प्रकाशित सम्बन्धित लेख र समाचार तथा नगरपालिकाले फोहर व्यवस्थापनमा क्रममा तयार गरेका प्रगति प्रतिवेदन र कार्यालय अभिलेखहरू रहेका छन् । यस लेखमा प्रयोग भएका बाँकी तथ्याङ्क र सूचनाहरू स्थलगत अवलोकन, प्रमुख सूचनादाता अन्तर्वार्ता र लक्षित समूह छलफलबाट सङ्कलन गरिएका छन् । नगरप्रमुख, उपप्रमुख, नगर प्रवक्ता र वडा नं. ६ का वडा अध्यक्षसँग प्रमुख सूचनादाताको रूपमा अन्तर्वार्ता गरिएको थियो भने टोल विकास तथा सरसफाइ समितिका पदाधिकारीहरूसँग लक्षित समूहको रूपमा छलफल गरिएको थियो ।

४. अध्ययनको नतिजा

क. फोहर व्यवस्थापन विकास क्रम

भीमेश्वरमा ५० को दशकसम्ममा सबै प्रकृतिको फोहर मिश्रित रूपमा सङ्कलन गरी डम्पिङ साइटमा र ६० को दशकमा ल्याण्डफिल साइटमा विसर्जन गर्ने गरिएको थियो । जुन स्थानमा भए पनि खुल्ला रूपमा फोहर विसर्जन गर्दा फोहर छरपस्ट भई वातावरण समेत प्रदुषण भई समुदायमा नकारात्मक प्रभाव परेको महसुस भएपछि विस्तारै युवा क्लबहरू र विशेषतः टोल विकास संस्था मार्फत सरसफाइ सम्बन्धित सचेतनाका कार्यहरू

गर्ने, भीमेश्वर मन्दिर वरपर प्लाष्टिक झोलालाई प्रतिबन्ध समेत लगाउने, सुइरो वितरण गरी प्लाष्टिकको झोला र चाउचाउको खोल सङ्कलन गर्ने कार्यक्रम गरिएको थियो । सो पछि ७० को दशकमा घरघरमै कुहिने र नकुहिने फोहर छुट्टयाउने कार्य सार्वजनिक निजी साझेदारीमा सुरुवात भएकोमा फोहर वर्गीकरणको कार्य, जनशक्ति परिचालन र ढुवानीका साधनहरूको उचित व्यवस्थापन नहुँदा पहिलो निजी क्षेत्रसँगको संझौता २०७९ असार मसान्तसम्म र दोस्रो निजी क्षेत्रले २०७९ पुष मसान्तसम्म कार्य गरेको देखिन्छ। यही अवधिमा फोहरको दिगो व्यवस्थापनका लागि वडा ६ स्थित रामकोटमा सरसफाइ केन्द्र (Material Recovery Facility Centre, MRF) को स्थापना भएको छ। यसैगरी, फोहरको दिगो व्यवस्थापनलाई प्राथमिकता राखी मुख्यमन्त्री तथा मन्त्रिपरिषद्को कार्यालय, प्रदेश तथा स्थानीय शासन सहयोग कार्यक्रमको नवप्रवर्तन साझेदारी कोष (OCMCM/PLGSP/IPF) र भीमेश्वर नगरपालिकाको लागत साझेदारीमा यान्त्रिकरण समेतबाट फोहर व्यवस्थापनका लागि थप कार्यक्रम सञ्चालन भएको छ। हाल नवीनतम सोच, विधि र यान्त्रिकरण प्रक्रिया समेतबाट श्रोतमा नै फोहर छुट्टयाउने, कुहिने फोहरबाट प्राङ्गारिक मल बनाउने, फोहरलाई श्रोतको रूपमा उपयोग गर्ने, नकुहिने फोहरलाई पुनः वर्गीकरण गर्ने, पुनःचक्रण गर्ने, पुनःवर्गीकरण पश्चात काम नलाग्ने प्रकृतिको बाँकी फोहरलाई सुरक्षित तथा व्यवस्थित विर्सजन गर्ने, वातावरण सफा राख्ने तथा सरसफाइ केन्द्रलाई फोहोमैला व्यवस्थापनको ज्ञान केन्द्रको रूपमा विकास गर्ने कार्य भइरहेको छ । नगरपालिकास्तरीय फोहर समन्वय समिति र पूर्वाधार विकास तथा वातावरण व्यवस्थापन शाखा अन्तर्गतको वातावरण तथा सरसफाइ उपशाखाको सक्रियतामा फोहर व्यवस्थापन कार्य भइरहेको छ ।

ख. फोहर व्यवस्थापनका लागि गरिएका प्रमुख कार्यहरू

नीतिगत छलफल

फोहर व्यवस्थापनलाई व्यवस्थित र प्रभावकारी बनाउनका लागि नगरपालिकाले समय-समयमा फोहर व्यवस्थापनसँग सम्बन्धित कानुनी र नीतिगत व्यवस्थाका सम्बन्धमा जनप्रतिनिधि, कर्मचारी, सङ्घ संस्था र स्थानीय समुदायलाई अभिमुखीकरण गर्ने गरेको छ ।

अन्तरक्रिया र अनुभव आदान प्रदान

नगर प्रमुख, नगर उपप्रमुख, प्रमुख प्रशासकीय अधिकृत, फोहर समन्वय समिति, वडा अध्यक्षहरू, कार्यपालिका सदस्यहरू, टोल विकास तथा सरसफाइ समिति तथा सरोकारवालाहरूबिच समय-समयमा अन्तक्रिया हुने गरेको छ । यसका अतिरिक्त फोहर व्यवस्थापनको प्रत्यक्ष सिकाइ अध्ययन गर्न सरसफाइ केन्द्र क्षेत्रका स्थानीय समुदायलाई प्रतिनिधिमूलक रूपमा स्रोतमा फोहर छुट्टयाउने वालिङ नगरपालिका र फोहर व्यवस्थापनमा सफल रहेको तिलोत्तमा नगरपालिकामा स्थलगत भ्रमणको आयोजना गर्ने गरिएको छ ।

टोल टोलमा सरसफाइ अभियान सञ्चालन

नगरपालिकाका प्रतिनिधि र सरोकारवालाहरू टोल-टोलमा नै गएर टोल विकास समितिसँग स्रोतमा फोहर छुट्टयाउने तरिका, फोहरको नकारात्मक असर र फोहर व्यवस्थापन सम्बन्धमा अन्तक्रिया तथा अनुशिक्षण कार्यक्रम सञ्चालन गरेको, प्रत्येक नागरिकको योगदानबाट मात्र अभियान सफल हुने अनुरोध गरेको, विभिन्न अनुसन्धानको निष्कर्षबाट हाम्रो सामाजिक परिवेशमा घरायसी फोहर विसर्जन गर्ने मुख्य जिम्मेवारी महिलाले निर्वाह गरेको, टोल

विकास तथा सरसफाइ समितिको सिफारिसमा स्वयंसेवक छुनौट गरी फोहर व्यवस्थापन सम्बन्धी तालिम सञ्चालन गरेको, स्वयंसेवक परिचालन गरी स्रोतमा फोहर छुट्टयाउने विषयमा प्रत्येक घरमा पुगी घरमूली (महिला)लाई अनुशिक्षण गरेको, नमूनाको रूपमा कुहिने फोहर राख्नका लागि रातो प्लाष्टिक र नकुहिने फोहर राख्नका लागि निलो प्लाष्टिक वितरण गरेको छ।

स्रोतमा फोहर वर्गीकरण र व्यवस्थापन

कुहिने फोहरलाई व्यवस्थित रूपमा घरमा राख्नका लागि प्रत्येक घरलाई १ थान डस्टबिन वितरण गरेको, कुहिने फोहरबाट घर घरमै प्राङ्गारिक मल तयार गरी करेसावारी तथा कौसी खेतीमा प्रयोग गर्न र कुहिने फोहरको मात्रा घटाउन पहिलो चरणमा शहरी क्षेत्रका घर लक्षित गरी कम्पोष्ट बिन वितरण गरेको छ।

क्षमता विकास र सुरक्षा

भीमेश्वर नगरपालिकाको फोहर व्यवस्थापनमा संलग्न सरसफाइ कर्मचारीहरूको क्षमता अभिवृद्धि गर्न स्थलगत अध्ययन तालिममा धुलिखेल नगरपालिका र बनेपा नगरपालिकाको फोहर व्यवस्थापनसम्बन्धी सिकाइ अध्ययन गरेको, सुरक्षित कार्य वातावरणका लागि सरसफाइ कर्मचारीलाई पञ्जा, बुट, मास्क लगायत सरसफाइ सामग्री व्यवस्था गरेको, सरसफाइ कार्यमा संलग्न सरसफाइ कर्मचारीहरूको सुरक्षाका लागि प्रतिव्यक्ति रु ५ लाख बराबरको दुर्घटना बिमा गरेको र सफा भीमेश्वर नगर अभियान अन्तर्गत सशस्त्र प्रहरी बल, नेपाली सेना तथा नेपाल प्रहरी समेतको सहयोगमा शहर सरसफाइ कार्यक्रम तथा अभियान सञ्चालन गरेको छ।

सूचना प्रवाह

स्रोतमा नै फोहर छुट्टयाई नगरपालिकाको सरसफाइ अभियानलाई सहयोग गरिदिन घर बजार, शहर सफा राख्न सामूहिक अभियान सञ्चालन गरेको, सार्वजनिक स्थलमा माईकिङ्ग गरेको, नगरपालिकाको वेबसाईट, फेसबुक पेज मार्फत सार्वजनिक सूचना प्रवाह गरी नगरवासीमा अनुरोध गरेको, सार्वजनिक स्थानमा सूचना पाटी राखेको, स्थानीय रेडियोहरूबाट घर घरमा/स्रोतमा फोहर छुट्टयाई दिन सूचना प्रवाह गरी नगरवासीमा अनुरोध गरेको, सबै टोल समेट्ने गरी कुहिने, नकुहिने र सिसाजन्य फोहर सङ्कलन गर्ने तालिका निर्माण गरी फोहर सङ्कलन हुने क्षेत्रका बासिन्दालाई सूचना प्रवाह गर्न वडा नं. २, ३ र ६ का मुख्य शहरी क्षेत्रमा सूचना पाटी राखेको, सोही बमोजिम कुहिने, नकुहिने र सिसाजन्य फोहर अलग-अलग सङ्कलन हुने गरेको, फोहर सङ्कलन हुने टोलका प्रत्येक भान्सामा स्रोतमा फोहर छुट्टयाउने विषय, फोहर सङ्कलन हुने तालिका र आकस्मिक सेवाका सम्पर्क सम्पर्क नम्बर सहितको जानकारीमूलक स्टिकर टाँस गरेको छ।

पूर्वाधार र यन्त्र उपकरणको व्यवस्था

भीमेश्वर नगरपालिका वडा नं. ६ स्थित रामकोटमा निर्माण भएको सरसफाइ केन्द्रसम्म फोहर ढुवानी गर्ने, १२ महिना नै यातायात सञ्चालन हुने पहुँचमार्ग स्तरोन्नति गरेको, सरसफाइ केन्द्रमा उपकरण राख्ने ट्रेस भवन, सरसफाइ कर्मचारीहरूले कपडा फेर्ने भवन, शौचालय, पुनःवर्गीकरण गरिएको नकुहिने फोहर भण्डारण गर्ने भवन, सरसफाइ केन्द्र घेरावार र प्रवेशद्वार लगायतका पूर्वाधार निर्माण भएको छ।

सरसफाइ केन्द्रमा सङ्कलन भएको नकुहिने फोहरलाई पुनःवर्गीकरण पश्चात फोहरको परिमाण/आयातन घटाउनका लागि कम्प्याक्टरको व्यवस्था भएको, सरसफाइ केन्द्रमा नकुहिने फोहर वर्गीकरण कार्यमा सहज गर्न कन्भेयर बेल्ट तथा हुपर जडान भएको, कुहिने सङ्कलन गर्ने दिन शहर क्षेत्रमा सरसफाइ कर्मचारीहरूबाट सरसफाइ गर्ने कार्य भइरहेको, र हिल ब्यारोमा सङ्कलन गरी ट्रिपर मार्फत व्यवस्थापन हुने गरेको छ।

सरसफाइ केन्द्रमा विद्युत जडान भएको, नकुहिने फोहर पुनःवर्गीकरण पश्चात काम नलाग्ने बाँकी रहेको फोहरलाई सुरक्षित तथा व्यवस्थित विसर्जन गर्ने गरेको साथै नकुहिने फोहर पुनःवर्गीकरण पश्चात व्यवस्थापनका लागि आयतन घटाउन सिसाजन्य फोहरको लागि ग्लास बोतल सेडर, प्लाष्टिक बोतलका लागि पेट बोतल सेडर, हाडको लागि बोन क्रसर र प्लाष्टिक झोलाको फोहर सफा गर्नका लागि प्लास्टिक वेस्ट रिमुभर जडान गरेको छ।

फोहर व्यवस्थापन सम्बन्धी विगत र हालको अवस्था

फोहर सङ्कलन हुने १५०० घरहरूमध्ये ८१ घरधुरीलाई लिइएको प्रत्यक्ष अन्तरवार्ताबाट ९७.५४ प्रतिशत घरधुरीले स्रोतमा नै फोहर वर्गीकरण गर्ने गरेका छन् (Shiwakoti, 2024)।

भीमेश्वरको अभ्यासबाट फोहर व्यवस्थापन सम्बन्धी जनचेतना अभिवृद्धि भएको, स्रोतमा फोहर छुट्टयाउने अभ्यास भइरहेको, कुहिने फोहर प्राङ्गारिक मलमा परिणत गरी फोहरलाई मलको स्रोतको रूपमा विकास भइरहेको, घरमा कम्पोष्टविनमा मल बनाउने काम भइरहेको, कौशी खेती तथा तरकारी बालीमा प्रयोग हुने गरेको, नकुहिने फोहरलाई पुनःवर्गीकरण गरिएको, पुनःचक्रण गर्ने निकायसँग समन्वय भएको छ।

स्रोतमा फोहर छुट्टयाई फोहर सङ्कलन पश्चात कुहिने फोहरको मात्रा पहिलेको तुलनामा ४० प्रतिशतले र नकुहिने फोहर २५ प्रतिशतले घटेको देखिन्छ। शहरी क्षेत्र सफा भएको, शहरवासीहरूको स्वास्थ्य संकटासन्नतामा कमी आएको, सरसफाइ केन्द्र — सरसफाइ ज्ञान केन्द्रको रूपमा विकास भइरहेको तथा नकुहिने फोहर विक्रीबाट नगरपालिकाले राजस्व सङ्कलन गर्ने गरेको छ। फोहर व्यवस्थापनसम्बन्धी विगत र हालको अवस्था तलको तालिकामा प्रस्तुत गरिएको छ।

| शीर्षक | स्रोतमा वर्गीकरण हुनु अधिको अवस्था | स्रोतमा वर्गीकरण भएपछिको अवस्था | उपलब्धि/सकारात्मक परिवर्तन |
|----------------------|--|---|--|
| फोहर सङ्कलन | <ul style="list-style-type: none"> मिश्रित रूपमा सङ्कलन हुने गरेको | <ul style="list-style-type: none"> कुहिने, नकुहिने तथा सिसाजन्य फोहर छुट्टयाई सङ्कलन हुने | <ul style="list-style-type: none"> सङ्कलन हुने फोहरको मात्रामा कमी आएको नकुहिने फोहरको थप वर्गीकरण सहज भएको। |
| वर्गीकरण र पुनःचक्रण | <ul style="list-style-type: none"> वर्गीकरण नभएको सामान्यतः पुनःचक्रण नभएको। | <ul style="list-style-type: none"> फोहरको स्रोत र मेटेरियल रिकोभरी सेन्टरमा फोहर वर्गीकरण हुने गरेको | <ul style="list-style-type: none"> स्रोतमा नै कम्पोष्ट मल बनाएर प्रयोग गर्ने गरेको। नकुहिने फोहरको पुनःचक्रणको मात्रा बढेको। |

| शीर्षक | स्रोतमा वर्गीकरण हुनु अधिको अवस्था | स्रोतमा वर्गीकरण भएपछिको अवस्था | उपलब्धि/सकारात्मक परिवर्तन |
|--------------------------------|---|---|---|
| | | | <ul style="list-style-type: none"> • नकुहिने फोहरको बिक्रीबाट राजस्व प्राप्त भएको। |
| फोहर विसर्जन | <ul style="list-style-type: none"> • खुला रूपमा विसर्जन भई वातावरणमा नकारात्मक असर पर्ने गरेको। | <ul style="list-style-type: none"> • पुनः चक्रण नभएका फोहर मात्र व्यवस्थित विसर्जन हुने गरेको। | <ul style="list-style-type: none"> • फोहरका कारण वातावरणमा पर्ने नकारात्मक प्रभावमा कमी आएको। |
| फोहर व्यवस्थापन सम्बन्धी बुझाई | <ul style="list-style-type: none"> • नगरपालिकाको जिम्मेवारी भन्ने बुझाई रहेको। • सहकार्य नहुने गरेको। | <ul style="list-style-type: none"> • सबैको जिम्मेवारी हो भन्ने बुझाईको विकास भएको। • समुदाय, निजी क्षेत्र र सङ्घ संस्थाहरूसँग सहकार्य हुने गरेको। | <ul style="list-style-type: none"> • फोहर व्यवस्थापन सहज हुने गरेको। |
| शहर सफाई | <ul style="list-style-type: none"> • सार्वजनिक स्थानमा जथाभावी फोहर फाल्ने बानी रहेको। | <ul style="list-style-type: none"> • हाम्रो शहर सफा राख्नु पर्छ भन्ने बानीको विकास भएको। | <ul style="list-style-type: none"> • जथाभावी फोहर फाल्ने बानीमा सुधार आएको • फोहरजन्य स्वास्थ्य संकटासन्नतामा कमी आएको। |
| समग्र व्यवस्थापन | <ul style="list-style-type: none"> • गाह्रो, अस्वस्थ, अव्यवस्थित तथा महँगो हुने गरेको। | <ul style="list-style-type: none"> • सहज, स्वस्थ तथा व्यवस्थित हुने गरेको। | <ul style="list-style-type: none"> • नगरपालिकाले निर्माण गरेको सरसफाई केन्द्र ज्ञान केन्द्रको रूपमा विकास भएको। |

५. सिकाइ

फोहर व्यवस्थापनसम्बन्धी नगरपालिकाको सिकाइ देहायबमोजिम रहेका छन्:

- फोहर व्यवस्थापन सबैको साझा जिम्मेवारी हो भन्ने भावनाको विकास गर्न सकेमा फोहर व्यवस्थापन सहज, सरल र प्रभावकारी हुन्छ।
- स्रोतमा नै फोहर वर्गीकरण गर्न सकेमा फोहरको मात्रामा कमी आउने, फोहरको पुनः चक्रण सहज र सरल हुने, कहिने फोहरबाट कम्पोस्ट मल बनाई प्रयोग गर्न सकिने, फोहरको पुनः प्रयोग बढ्ने र आम्दानीसमेत गर्न सकिन्छ।
- कुहिने फोहरको मात्रामा कमी आउँदा दूर्गन्धमा कमी आउने, फोहर विसर्जनस्थल र आसपासको वातावरणमा पर्ने नकारात्मक प्रभावमा कमी आउने गर्दछ।

६. निष्कर्ष तथा सुझावहरू

फोहर व्यवस्थापनसम्बन्धी हालको अभ्यासलाई विगतको अभ्यासको तुलना गर्दा सन्तोष गर्ने ठाँउ प्रशस्त भेटिन्छ । स्रोतमा नै फोहर वर्गीकरण गर्दा समग्र फोहर व्यवस्थापनमा सुधार ल्याउन सकिन्छ जसबाट फोहरजन्य नकारात्मक प्रभावहरूलाई कम गर्न सकिन्छ । फोहरलाई स्रोतको रूपमा उपयोग गरी आय आर्जन गर्न सकिन्छ । फोहर व्यवस्थापनलाई सबैको साझा जिम्मेवारी बनाउन सकेमा फोहर व्यवस्थापन सहज, सरल र व्यवस्थित बनाउन सकिन्छ । यद्यपि, शहरवासीले उपभोग र प्रयोग गर्ने वस्तु र सामग्रीमा आएको भिन्नताले फोहरको स्वरूपमा पनि परिवर्तन आउँदछ । यस सन्दर्भमा विद्युतीय फोहरलाई उदाहरणको रूपमा लिन सकिन्छ । घरमा विरामी जाँच प्रयोग हुने थर्मोमिटर, ब्याट्री, कृषिमा प्रयोग हुने विषादी आदि घर पसल आदिबाट सङ्कलन हुने फोहरमा मिसिने सम्भावना रहन्छ । यी जटिलप्रकारका फोहर हुन् जसको व्यवस्थापनमा निक्कै सतर्कता अपनाउनु पर्ने हुन्छ । तसर्थ आगामी दिनमा नगरपालिकाले निम्न कुराहरूमा ध्यान दिनु पर्ने देखिन्छ:

- फोहर व्यवस्थापन एक निरन्तर प्रक्रिया भएकोले सो सम्बन्धी जनचेतना विस्तार, सङ्गठित प्रयास, क्षमता विकास, अनुगमन र सम्बन्धी कार्यलाई निरन्तरता दिनु पर्दछ ।
- फोहरको प्रकृतिमा आएको परिवर्तनसम्बन्धी कम्तिमा वर्षमा एक पटक व्यवस्थित रूपमा अध्ययन गर्ने, परिवर्तन मापन गर्ने र सोको सम्बोधनका उपायहरू पहिचान गर्न आवश्यक छ ।
- घरमा प्रयोग हुने थर्मोमिटर, ब्याट्री, कृषिमा प्रयोग हुने विषादी आदि लगायतका फोहरहरूमा घरपसलबाट सङ्कलन हुने फोहरमा मिसिन नदिने उपायको खोजी गर्न आवश्यक छ ।
- प्रचलित कानून अनुसार अस्पतालजन्य फोहर र उद्योगजन्य फोहरको व्यवस्थापन गर्नका लागि नगरपालिकाले सम्बन्धित निकायहरूलाई अनुरोध गर्ने र आफ्नो तर्फबाट हुन सक्ने सबै सहयोग गर्नु पर्दछ ।
- फोहर व्यवस्थापनसम्बन्धी नगरपालिकाले सञ्चालन गरेका क्रियाकलाप, व्यवस्थापन गरेको फोहरको प्रकृति र मात्रा, प्राप्त गरेका उपलब्धि, सामना गरेका समस्या र चुनौती तथा अनुभव र सिकाइ आदिको अध्यावधिक अभिलेख तयार गर्नु पर्दछ ।

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Impacts of Climate Change in Nepal: A Political Economy Perspective

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(Article Type: Research Article)

Abstract

The study aims to review the impacts of climate change in multiple sectors, its adaptation measures and develop a model in the context of Nepal with a political economy perspective. The review of literature, and field observation are the key methods of this study. The climate change is considered as a global issue that negatively impacts ecosystem services, livelihoods, food and nutritional security, health, wellbeing, water, biodiversity, gross domestic products and life of the people. Nepal is severely suffering from climate change. However, Nepal is not a culprit to produce greenhouse gases. The fast retreating glaciers, rapid rise in temperature ($>0.06^{\circ}\text{C}$), erratic rainfalls and increased in floods and drought are the effects observed in Nepal. The effects of climate change are directly affecting poverty, wellbeing and sustainable development. There are gaps between policies and practices, planned programs and budget, documentation of community good practices, use of nature-based ecosystem services, sustainable use of natural resources, and lobbying and advocacy at local, national and international level in Nepal. Nepal has done some climate change adaptation at local, province and federal level but not strong enough to make a difference in the life and livelihoods of poor and vulnerable people. The model discussed here helps address the negative impacts of climate change for the community resilience in the context of Nepal.

Keywords: Climate Change, ecosystem services, livelihoods, resilience, sustainable development

1. Introduction

Context

The Climate Change is considered as a global phenomenon in terms of economic, social, cultural, political and natural system that impacted widely in the life and livelihoods of the people across the world. The healthy, well managed, diverse type of ecosystems and the diversity of life are critical factors for a healthy, safe and prosperous society. Globally, Nepal is ranked as 4th position in case of vulnerability to climate change where floods occurred across the foothills of the Mountains, Himalayas and that cause landslides, leaving tens of thousands of houses and vast areas of farmland and roads destroyed in Nepal [https://en.wikipedia.org/wiki/Climate_change_in_Nepal]. Available reports indicate that there are negative impacts of climate change in the life of the people. However, the farm land is increasing due to shift of snow line in the Himalaya that could be perceived as a positive impact of Climate Change.

The Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (IPCC, 2013b) has pointed out that global mean surface temperatures have risen by 0.84 °C since 1880, which have substantial ecological, economic and societal impacts (IPCC, 2013b). Mukhopadhyay (2012) has stated that the glaciers and snowfields of the Hindu Kush Himalayan (HKH) region are found to be the fastest receding glacier and snow covers in the world (Mukhopadhyay, 2012, Prasad et al., 2009). Nepal is considered as more vulnerable country due to the impact of Climate Change. However, it is not the culprit to produce large amount of greenhouse gasses emission. Climate change is a natural phenomenon, although the natural process of change is slow. It can be seen in the mountains, where there is fragile ecosystem. The World Bank classifies Nepal as one of the global 'hotspots' for climate change induced disasters. As quoted by Taylor (2019) "Climate vulnerability is directly aligned with poverty and development," says Vijaya P. Singh, assistant country director of the environment unit at the UNDP, based in Kathmandu.

Karki et al. (2009) has stated that the Climate Change impacting Nepal rather disproportionately compared to its size and its own meagre contribution of the greenhouse gases. However, given its location between two rapidly growing economies of India and China, Nepal cannot escape the rapidly increasing influence of climate and global changes. The rapidly retreating glaciers (average retreat of more than 30 m/year), rapid rise in temperature (>0.06OC), erratic rainfalls and increase in frequency of extreme events such as floods and drought like situation are some of the effects Nepal is facing during the last few years (Karki, Mool and Shrestha, 2009). The objectives of the study are to assess the impact of climate change in various sector and socio-economic aspects to map out the current situation in Nepal, and to map out the causes of climate change, impact of climate change and develop a model with special reference to Bagmati Province, Nepal.

2. Methods

The article is based on the desk review. Particularly, the existing research reports, online materials and other published documents by International agencies, Government of Nepal, Province government, academic institutions, civil society organizations etc. have been reviewed. In addition to these, field observation, interaction with community people, local political leaders, key informants etc. were also carried out to collect additional information and views on the issue.

The political economy perspective was adapted to analyze the information. For this study purpose, the political economy perspective is the conceptual frame of reference related to social and political processes to assess the critical issues around decision-making on climate change adaptation and mitigation. The theoretical model (diagram 1) has been developed for the analysis of the information by the author to serve the purpose. The ecological setting of Nepal seems to be unique as compared to other countries.

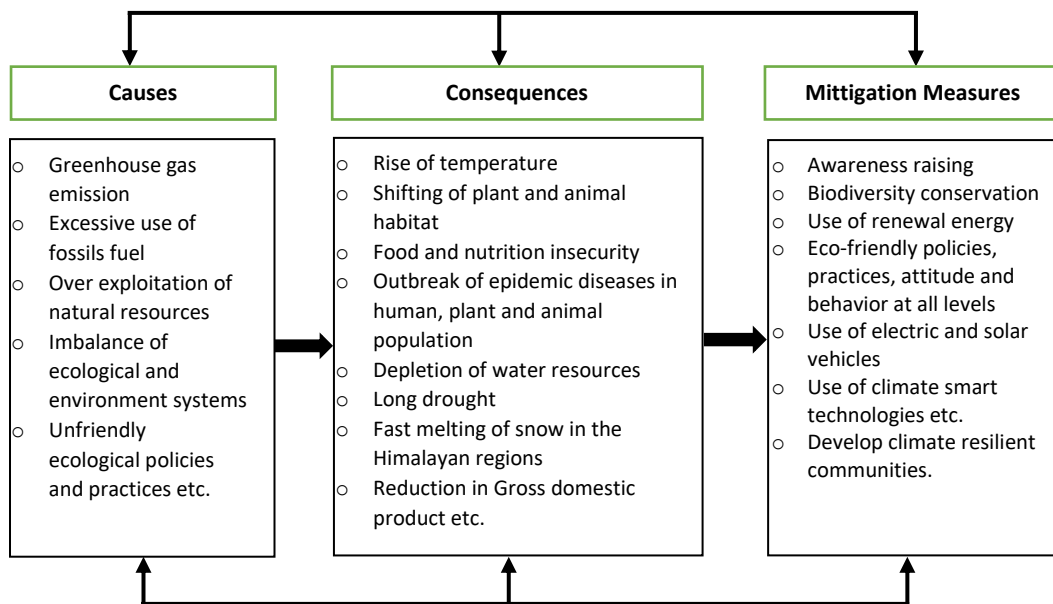
3. Impacts of Climate Change its Adaptation and Mitigation

The impacts of climate have been experienced in different sectors and life and livelihoods of the vulnerable groups of people around the world. There has been observed as climate change disaster in Nepal and elsewhere. The review study focuses on problem of climate change, causes of climate change,

impact of climate change and its adaptation and mitigation measures as mentioned [figure 1] in the diagrammatic presentation. The model has been developed in the context of ecological setting of Nepal. This is based on cause, impacts and solution relationship model as multidisciplinary dimension. According to the Asian Development Bank Nepal is highly vulnerable to climate change impacts that resulted Nepal faces losing 2.2% of annual GDP due to climate change by 2050 (<https://climateknowledgeportal.worldbank.org/country> accessed on 05082024).

Rijal (2021) has stated that the average economic loss per year due to climate-induced disasters is USD 27.78 million (NPR 2,778 million), or 0.08% of Nepal’s national GDP. The rainfall recorded in June 2021 unleashed floods that killed more than fifty people, damaged twelve hydroelectric plants and washed away roads, bridges and homes across central Nepal. The heavy rains followed a five-month winter drought that set of unprecedented nationwide wild fires (Rijal, 2021, DCA, 2021).

Figure 1: Impact of Climate Change and its Adaptation and Mitigation Measures



3.1 Impact of Climate Change in Agriculture

The impact of climate change on agriculture could be devastating in many areas. In agriculture outbreaks of plant and animal diseases, increased insect infestation, loss of biodiversity, plant and animal habitat shifted, seasonal variation, changed in estrus cycle of animals, changed in flowering time of plants, observed long drought that resulted crop failure etc. reported by the farmers.

Many regions already feel these impacts, which will get progressively more severe as mean temperatures rise and the climate becomes more variable. Scientific evidence about the seriousness of the climate threat to agriculture is now unambiguous, but the exact magnitude is uncertain because of

the complex interactions and feedback processes in the ecosystem and the economy. Five main factors will affect agricultural productivity; changes in temperature, precipitation, carbon dioxide (CO₂) fertilization, climate variability, and surface water runoff. Initially, rising atmospheric concentrations of carbon benefit crop growth and could offset yield losses from heat and water stress, but this “carbon fertilization” can be small amount in practice than previously estimated from experimental data.

Under moderate to medium estimated of rising global temperatures (1-3°C), crop climate models predict a small impact on global agricultural production because negative impacts in tropical and mostly developing countries are offset by gains in temperature and largely industrial countries. In tropical countries, even a moderate warming (1°C for wheat and maize and 2°C for rice) can reduce yields significantly because many crops are already at the limit of their heat tolerance.

For temperature increases above 3°C, yield losses are expected to occur everywhere and be particularly severe in tropical regions. In parts of Africa, Asia, and Central America yields of Wheat and Maize could decline by around 20 to 40 percent as temperature rises by 3 to 4°C even assuming farm-level adjustments to higher average temperatures. With full CO₂ fertilization the losses would be about half as large. Rice yields would also decline, though less than wheat and maize yields.

Bhattarai (2011) has pointed out that the sustainable and long-term viability of Nepal's agriculture depends on the environmental suitability of its soil and seeds. In the name of climate change and food security requirements, a group of global players are promoting their commercial vested interests. Efforts are being made under a USA's bilateral project to kill sustainability and long-term local viability of Nepalese agriculture by introducing hybrid and genetically modified seeds (Bhattarai, 2011).

On the other hand, learn from a Chinese experience. What was done there sounds simple: Seeds from the historically warm ecological region were used in cultivation in region with increasing temperature- the local government and farmers' water users' association provided a cooperative mechanism in this seed technology transfer and adaptation process. The experience showed that even in the context of climate change, strong local institutions become the effective institutional vehicle for inter-regional transfer and use of seed - the most important component for improved agricultural productivity. This solution does not entail much time and cost that breeding of new seed variety might have taken. Some measures adopted by the local communities to combat the challenges to produce crops. For example, when rice fields had dried up due to delayed rainfall, farmers in two of the villages grew black gram and millet instead of rice. Many winter crops were not grown, and in one of the villages, maize was cultivated in late May instead of April. Sowing of millet was postponed for two months due to decreased winter rain. The local communities were testing and adopting various innovative ways to adapt the impact of climate change (Box 1).

Box 1. Farmers' innovation

1. Watering for coffee flowering: Coffee needs water to flower. Krishna Neupane a Residence of Begnas Village, Kaski District, introduced his own innovation and started to sprinkle water on coffee plants to induce flowering when the rains failed in the flowering

season. He also sprinkled warm water in his nursery to maintain heat and sprayed ash to control ant attacks.

2. Hanging Nurseries: Farmers of Serabeshi, Tanahu District, constructed hanging nurseries to control pests such as red ants. According to them, besides controlling pests, these nurseries also saved seedlings from frost, weeds and fungus.

3. Water shortage: Farmers collect waste water to cope with water shortage. Waste water is collected and used for irrigation. In one of the villages, drip irrigation has been adopted for vegetable farming. This technique saves water, improves yield and reduces losses during droughts (Regmi et al. 2009).

3.2 Impact of Climate Change in Water Resources

Freshwater ecosystems and species are a key feature of nature in Nepal. Nepal hosts some of the South Asia's main rivers that include Koshi, Narayani, Karnali, Mahakali rivers etc. Himalayan glaciers and glacial lakes including those situated in Nepal are the source of waters of many large rivers including the Ganga, Brahmaputra and Indus, with the Ganga alone receiving about 70 per cent of its summer flow from glaciers (Ebi et al. 2007, Thapa, 2009) depend on rainfall and rivers arising from the Himalayas. Thus, when glaciers are retreating, 2.6 billion of the people in the South Asia region including Nepal, India and Bangladesh will fall short in water supply.

3.3 Impact of Climate Change in Public Health

The main climate-change health risks include direct mortality from natural hazards (especially landslides and floods); increased expansion of vector-borne disease into highland areas (as temperatures increase), which were previously devoid of these diseases; and increasing food and water insecurity ([https://www.climatecentre.org › uploads › RCRC_](https://www.climatecentre.org/uploads/RCRC_)). ICRC (2021) has stated that the Climate change has the potential to affect health and livelihoods in a negative feedback loop. When climate change negatively affects livelihoods, people do not have sufficient money to ensure good health and pay for healthcare, causing a spiraling of acute or chronic conditions. Likewise, when climate change negatively affects health, people may be unable to work and thereby earn sufficient money to pay for the healthcare they need, further reducing their ability to get better. A popular idiom in South Asia says: jaan hai to jahan hai – “the world exists when life exists” where ‘life’ denotes a healthy, well-provisioned existence (ICRC, 2021).

ICRC (2021) has further emphasized that the Climate change is likely to exacerbate many rapid onset disasters which can significantly harm health (by causing injury or death from landslides), damage and destroy assets (especially crops) and property, which erodes the ability to remain in good health over the long run and to earn a good living, which in turn has adverse health outcomes (ICRC, 2021). The impact of climate change, secure people's livelihoods and public health are interrelated each other.

3.4 Impact of Climate Change in Forest Resources and Livelihoods

The forest area is gradually increasing in Nepal. It was only 39.6 % in 1987/88 whereas a forest area has increased to 44.74% of the country in 2019/20. The forest density has remained at 430 since 2015 while it was supposed to be increased to 487 in 2019. The rapid increase in forest areas during 1987-2015 was due the successful implementation of forest conservation programs, migration from rural areas, and active participation of the community in the protection of forests. The forest coverage under community-based management account 42.7% of the total forest areas in Nepal. With an effort to conserve biodiversity, 23.39 % of the total land areas including forests have been declared protected. Similarly, the conservation of around 1000 lakes, wetlands and ponds are also taking place. There has been an increase in the number of wild tigers and rhinos as a result of community-led anti-poaching efforts, which drastically decreased illegal killings. However, the number of community-led efforts have decreased since 2015 and stood at 126 in 2018/19.

Karki et al. (2009) has stated that Ecosystem services Climate change is already affecting ecosystem services by affecting forest type and area, primary productivity, species populations and migration, the occurrence of pests and disease, and forest regeneration (Ibid, 2009). Some field study show that farmers have observed changes in diverse aspects of the natural phenomena related to climate, ecosystem and livelihoods (Table 1).

Table 1 Perceived Impact on Forest Resources and Livelihoods

| Aspects of Climate Change | Observed variations |
|---------------------------|---|
| Climate variability | <ul style="list-style-type: none"> • Hotter summer • Less chilly, warm and shorter winter • Foggy weather |
| Rain and Floods | <ul style="list-style-type: none"> • Short but heavy downpour • Early monsoon break-out and break off • Heavy but short period of floods • Less rain during winter |
| Vegetation | <ul style="list-style-type: none"> • upwards migration of tropical plants • Appearance of new vegetation • Invasion of aggressive weeds in forest and farm • Early shedding of fodder tree leaves |
| Farming | <ul style="list-style-type: none"> • Increased insect/pest attacks and low productivity • Cultivation of mango in high altitude |
| Health and Disease | <ul style="list-style-type: none"> • Presence of mosquito all year round even in higher altitude • Irregular and often spread across the year breeding season for domestic animals. |

Source: Adapted from Chapagain et al. 2009

The nature-based solution is an important strategy to conserve ecosystem. Nature-based solutions include the protection, restoration and sustainable management of the world’s ecosystems have the potential to provide up to 30 per cent of climate mitigation required to meet the 1.5°C target in the

Paris Agreement. This requires collective global action to protect, restore and better manage the natural resources. In the ecosystem, it is clear that producers, herbivores, carnivores, and scavengers or detritus feeders interact in a sustainable set of relationships.

Principles of Ecosystem Sustainability:

- Ecosystem use sunlight as their source of energy.
- Ecosystems dispose of wastes and replenish nutrients by recycling all elements.
- The size of consumer populations in ecosystems is maintained such that overgrazing and other forms of overuse do not occur.
- Ecosystems show resilience when subject to disturbance.
- Ecosystems depend on biodiversity.

William Mc Donough has stated that “if what we make with our hands in to be sacred and to honor the earth that given us life, then things we make must not only be from the ground but return to it, soil to soil, water to water, so that everything that is received from the earth can be given back freely, without causing harm, to any living system. This is ECOLOGY” (Quoted from Centre for prosperity Infrastructure, Kathmandu, Management of Domestic Garbage, 2002).

3.5 Impact of Climate Change in Biodiversity

Uprety (1998) has reported that Nepal has about 54 % of the surface area under some sort of vegetation. A total of 118 ecosystems have been identified in different physiographic zones. In addition, 75 vegetation types and 35 forest types are identified which is bio-climatically divided into ten zones. Besides a large number of deep valleys, the considerable vertical extension of the Nepal Himalayas has contributed to the formation of many isolated localities, favorable for new species. Nepal contains only about 0.1% of the total landmass in the world while it harbors about 2 % flowering plants, 3 % pteridophytes and 6 % bryophytes of the world's flora. In addition, about 5 % (246 species) of the total flora reported is endemic to the country. The endemic species accounts to about 30 % for whole of the Himalayas. Based on the currently recorded species, Nepal could be considered as a meeting point of several floral species because of altitudinal and climatic variations (Uprety, 1998).

Biodiversity is defined as the variety of all living things and their interactions. Biodiversity changes over time as extinction occurs and new species evolve. Scientists often speak of three levels of diversity: species, genetic, and ecosystem diversity. (<https://naturalhistory.si.edu › education › life-science>). ICIMOD has stated that Nepal has already been suffering from climate change-led impacts such as depletion of snow cover, glacier retreat and glacial lake out-burst flood. At community level, problems like erratic rainfall patterns, water hazards, water shortage and vector borne diseases are reported to be increasing trend (<https://lib.icimod.org › api › files>).

Five pathways to biodiversity conservation have been presented below:

Recognize: Recognize that people and planet face unprecedented challenges, the urgency with which we must act, what we must do, and the role everyone can play. We also recognize that conservation works, that nature is wondrous, and that many are already working to protect and restore it.

Retain: Retain the world's biodiversity, and natural and cultural heritage, in key biodiversity areas and other places where diversity and traditional knowledge flourish.

Restore: Restore species populations, ecosystems and the benefits that nature provides to people, capitalizing on the UN Decade of Ecosystem Restoration.

Resource: Resource the movement by mobilizing investment in nature and the people working to conserve it through finance, capacity development and generating knowledge.

Reconnect: Reconnect people, societies and economies to nature, and rebuild connections between fragmented habitats (IUCN, 2021).

3.6 Climate Change Adaptation Measures

As a signatory to the 2016 Paris Agreement of the United Nations Framework Convention on Climate Change, Nepal's government is developing adaptation plans to address climate risks. The efforts currently being carried out are positive step (Taylor, 2019). There is needed more concrete action towards climate change adaptation.

The specific climate change adaptation measures are as follows:

- Organize plantation campaign in plains, hills, mountains and private land for fertilizer, food, timber, fruit, fodder, firewood and medicine to increase forest areas
- Maintain biodiversity in trees, cereal crops, tuber crops (potato, colocasia etc.), vegetables, fruits, livestock, wild lives and grasses to avoid risks of monoculture farming to improve food security and ecological sustainability
- Promote agro-forestry in the rural villages to supply food, fodder, bio-fertilizer to check soil erosion and improve soil health in sustainable manner.
- Make maximum use of local resources (organic manure/farm yard manure, organic pesticides, legume crops, biological nitrogen fixation, bio-fuels, local seeds etc.) to avoid dependency on external inputs like chemical fertilizers and insecticides to improve soil structure and soil fertility.
- Develop and use of drought resistant, insect pest resistant, early maturity varieties of crops, sustainable high yielding varieties and system of rice intensification (SRI) to adapt climate change and build the climate resilience livelihoods.
- Improve access to market through right information at right time, linkage with private sectors and formation of producer groups and farmers' cooperatives. One ward one product programme should be implemented across the country.
- Develop pro-poor and community based agricultural extension services and research work on crop variety selections and technological innovations in order to national development. It needs linkage, coordination and collaboration between farmers, extension workers, scientists, other

disciplines and international agencies to overcome food insecurity and hunger through mitigation and climate change adaptation.

- Educate for healthy and productive life in the community through schools, colleges, media and community dialogical process to adapt climate change.
- Explore the local knowledge, skills and experience to combat negative effects of climate change and do it now not tomorrow to ensure rights to survival of human being, animal and plants etc.
- Gender equality and social inclusion to fair sharing of work, equitable distribution of resources, socio-economic power and property rights towards care of nature.
- Do not disturb the natural processes in the name of industrialization and modernization
- Make maximum use of height (air space) and depth of garden and field by planting trees, climbers/vine crops and deep rooting plants/tuber crops (potato, colocasia, yam etc.) to increase crop productivity per unit area.
- Think globally and act locally to mitigate and adapt climate change issue.
- Make the self-governance village in energy, food, shelter, medicine, clothing, fertilizer, water (drinking and irrigation), clothing and decision-making process etc.
- Produce fish and other aquatic flora and fauna in ponds and rice fields with an integrated farming.
- Rain water harvesting and conserve ground water to maintain soil moisture through mulching, construction of ponds, check dams, crop rotations, inter-cropping, bio-engineering (soil stabilization through vegetation-bamboo, broom grass etc.) and slopping agriculture land technology etc.
- Aware, organize and develop work culture among farmers/laborers, industrialists/ traders, political leaders and other working class to increase productivity of economic resources (land, labour, water, forest, market access and capital formation etc.).
- Respect indigenous nationalities and their indigenous knowledge and skills for sustainable agriculture and natural resource management aspects.
- Promote integrated farming system to grow healthy food without inorganic chemicals (insecticides, pesticides and chemical fertilizers etc.).
- Use natural and herbal medicine for human, animals and crops to save the life and livelihoods of the people.
- Harvest nitrogen from the air by planting leguminous crops/trees like beans, peas, lentils, sesbania, Leucaena leucocephala, berseem, azolla etc.
- Use portable toilet/ecosan toilets and use urine and night soils as fertilizers for crop plants.
- Reuse, reduce and recycle of solid waste to conserve nutrients and efficient use of resources for income generation.
- Practice hedgerows of leguminous trees to check soil erosion.
- Use renewable energy like hydropower, biofuels, bio-gas, sun light, wind and muscle power (animal/human resources) to control pollution/reduce Greenhouse Gas emission.

- Increase poor people's access to and use of natural resources (land, forest and water) through pro-poor and transformative agrarian (land and agriculture) reforms, community forestry and community owned water systems through devolution of power.
- Promote small-scale cottage industries based on local resources to increase household economy at rural communities such as 'one ward one product' programme.
- Change policies, practices, ideas and beliefs towards people centered development/ ecological sustainable development as opposed to fossils fuel-based development.
- Protect, promote and exercise human rights, inclusive democracy, good governance and respect children, women, senior citizen and working class to promote social justice and social equality at all level to ensure dignified life of women and men.
- Develop and promote environment-friendly and low cost science and technologies to change the lives of poor and vulnerable people by using climate change sensitive principles.
- Make political commitment and prepare program plan of actions towards climate change mitigation and adaptation measures at local, national and international level.
- Organize social campaigns to change policies and practices against all forms of climate change induce mechanisms at local, national and global level.
- First transform ourselves and do commitment to action to **save the nature and healthy human-being.**

4. Gap Analysis

The following gaps have been identified in case of Nepal:

4.1 The policy and practice: There has been formulated policies about climate change in different sectors. However, it has been observed that the sectoral policies could not be materialized in the real practice at community level, local level government and province government of Nepal. The climate change policies need to be localized to materialize at community level.

4.2 Planned Programs and Budget: There has not been allocated enough budget in related programs for climate change adaptation and mitigation measures. There has been gap identified between climate change policies, planned programs and budget allocation pattern at local, province and federal level.

4.3 Coordination between three tier governments: The coordination and collaboration between three tiers government related to climate change adaptation and mitigation measures has identified as gap in Nepal. There has been realized that the good coordination between three tier governments need to be strengthen in the days to come.

4.4 Awareness raising among the People: The awareness raising among the local community people on climate change adaptation has found gap in terms of policies and practices in different sectors. The community people are the main driver of climate change adaptation practice.

4.5 Participatory Result based Monitoring, Evaluation and Reporting: There has been found gap on climate change adaption measures really reflected in participatory result-based monitoring, evaluation and reporting system. Some agencies described about the impact of climate change in different sector programs but not strong enough.

4.6 Climate Change Adaptation in School and Universities Syllabus: There has been found gap in climate change adaptation in school and university syllabus. The school and university syllabus need to be revised and include climate change adaptation as and when necessary in order to impart the knowledge, skills, attitude and behavior among the students.

4.7 Nature based Ecosystem Services: The nature-based ecosystem services has found gap in order to climate change adaption measures among the community people, technical personnel, policy makers and decision takers in local, province and federal government, Nepal. This issue regarded as important areas of climate change adaptation works in three tiers government in Nepal.

4.8 Sustainable Use of Natural Resources: The sustainable use of natural resources has found gap in climate change adaptation at local, province and federal level policies and practice for lasting change in terms of agriculture, forestry, biodiversity conservation, livestock, fisheries, horticulture, medicinal and aromatic plants in local and national level.

4.9 Lobbying and Advocacy at different Levels: There has been found gap in order to lobbying and advocacy to influence policy, practice, ideas and belief system in the society. The lobbying and advocacy are the important issues regarding climate change adaptation. Nepal could not strong enough work in these areas to influence policy and practice at national and international level.

5. Conclusion and way forward

The Climate Change has become the main problem in order to secure life and livelihoods of the people. The rise of temperature resulted global warming due to anthropogenic factor. The rich, the powerful corporate houses, industrialized countries, undermined ecosystem services, excessive greed and policy corruption, luxury life of the certain prosperous people and unsustainable policies, practice, attitude and behaviour have been considered as the culprit of the climate change. The earth has cooled several times as a natural process and will do so in the future. What concerns the global community is the alarming constant, yet unprecedented, increase of temperature experienced in some regions. Scientists are now in agreement that human activities the releasing GHGs into the atmosphere are responsible for the already observed global warming causing climatic changes. Without proper attention, it is very difficult to decrease temperatures as humans continue deforestation and investment in fossil-fuel dependent infrastructures and industries. The big sufferers of this will be mostly the ones who have done the least to cause climate change-poor nations and poor people-because they lack sufficient fund, skilled human resource and effective strategies to adapt to and mitigate global warming. The poverty has been directly increased due to loss of productive assets, loss of means of livelihoods, decreased agriculture production and productivity, increased health expenditure, diverted government resources to cope with climate induced disasters etc. in Nepal. The strong environmental governance and participation of civil society and private sectors are a must. The coordinated efforts, self-motivated local participation and effective policies are also essential to improve our climate and secured lives and livelihoods. There is a need of political commitment and environment-friendly policies and practices to act upon climate change issues at local, national and international level. The climate resilient community need to be developed towards climate change adaptation and mitigation measures.

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An Anthropological Inquiry on Health Seeking Behaviour of Marginalized Communities of Chainpur, Raksirang Rural Municipality, Makwanpur, Bagamati Province, Nepal

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Abstract

The health and illness of indigenous people are shaped, experienced, and understood in the context of socio-cultural, historical, and political forces. Despite inclusive health policies and strategies, the inclusion of poor and socially marginalized populations is still limited to ensure easy access to essential health care services. This research aims to explore the health seeking behaviour of marginalized communities of Chainpur, Raksirang. The field research was conducted from 15 July, 2022- 30 July, 2022 in Raksirang Makwanpur. The inclusion criteria aimed to include the poor and marginalized populations in terms of their vulnerabilities to access the health services in the local health institutions – either public or private. The motivation for health seeking behaviour among poor and marginalized populations is primarily governed by socio-cultural processes, embodied experiences and illness narratives such as social values, cultural norms, beliefs and support systems in the families and communities at large.

Keywords: Inclusive health policies, Health seeking behaviour, Marginalized Populations, Social values and cultural norms

1. Introduction

The World Health Organization defines health as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (World Health Organization, 2020). Health is affected by multiple social, biological, and environmental factors. Disease is strictly biological—an abnormality that affects an individual’s physical structure, chemistry, or function. Going back to the time of the ancient Greek physician Hippocrates, doctors have regarded disease as the result of both a person’s lifestyle habits and the social environment in which they live.

Illness, by comparison, is the individual’s *sociocultural experience* of a disruption to their physical or mental well-being. An individual’s perception of their own illness is shaped by how that illness is viewed, discussed, and explained by the society they live in. The social perception of another person’s sickness affects that person’s social well-being and how they are viewed and treated by others. Sick roles are the social expectations for a sick person’s behaviors based on their particular sickness—how they should act, how they should treat the sickness, and how others should treat them.

The Constitution of Nepal (2015) has articulated basic health care as a fundamental right of its citizens. As country has moved to federal governance system, it is the responsibility of the state to ensure the access of quality health services for all citizens based on contextual norms of federal system. More importantly, the national health policy (2019) and Nepal Health Sector Strategy (2023-2030) aims to develop and expand a health system for all citizens in the federal structure based on social justice and good governance and ensure access to and utilization of quality health services.

This anthropological inquiry aims to explore how the communities perceive the benefits or threats of local health facilities, health care providers, health volunteers and other resources from socio-cultural and political perspectives. Likewise, another attempt is to explore how the local government understands or perceives the inclusion of poor and marginalized communities in health systems, and its engagement in supporting health (promotion) interventions, inclusion and representation in local health committees, and/or policy making.

2. Local context

The Chepang are one of Nepal's most disadvantaged indigenous groups and are classified under the 'highly marginalized' category on the basis of a set of socio-economic indicators, such as population size, language literacy rate, house type, landownership, occupation and access to higher education. Although no longer a nomadic tribe, the Chepangs have largely preserved their unique tribal identity by maintaining their traditional knowledge system and continuing to practice animism. Their language, which they themselves call Chyo-bang (Chyo means hilltop and Bang stone), belongs to the Tibeto-Burman language family and is closely related to the speech of the Raute and Raji, two others marginalized (endangered) communities of Nepal. The Chepang population totals around 50,000 (0.23% of Nepal's population) 4 and is scattered mainly across the districts of Chitwan (40%), Makwanpur (29%), Dhading (20%) and Gorkha (5%) where the majority live in sheds made of tree branches (see photo). According to the recent Nepal Living Standard Survey, almost 90 percent of Chepangs live below the poverty line, earning around 6,000 Nepali rupees per capita annually (UNRHCO, Field Bulletin, 2012).

In particular, marginalized and vulnerable populations may have a high risk for multiple health problems and/or pre-existing conditions; have limited life options (e.g., financial, educational, neighborhood, geographic location, housing, employment); face any type of discrimination (ethnic, caste, gender, sexual orientation, disability, cultural, economic, political and religious etc.).

3. Theoretical perspectives

Health seeking behavior has been defined as any action undertaken by individuals who perceive themselves to have a health problem or to be ill for the purpose of finding an appropriate remedy. To understand the complex nature of health seeking behavior, it is imperative to note the two health behavior theories:

1. The Health Belief Model (HBM) where the concept is the 'perceived susceptibility', which refers to the perceived chance of acquiring a condition. The 'perceived susceptibility' and the 'perceived severity' leads to the formation of 'perceived threat' of a certain condition. The likelihood of performing a certain health behavior is directly linked to the perceived threat, the perceived benefits, barriers of the suggested behavior change and the self-efficacy and the cues to action.
2. The Theory of Planned Behavior relates the attitude towards behavior, subjective norms and perceived behavioral control to behavioral intentions and actions.

4. Objective and Definitions

The overall objective of the research was to explore how people perceive about health and their access to health care among the poor and marginalized communities. The analysis was particularly focused on availability and accessibility of health services in selected poor, socio-economically marginalized and vulnerable communities.

Marginalized communities are those excluded from mainstream social, economic, educational and/or cultural life. Examples of marginalized populations include, but are not limited to, groups excluded due to ethnicity, gender identity, sexual orientation, age, physical inability, language, and/or migration status. Marginalization occurs due to unequal power relationships between groups (Baah et al, 2019).

Vulnerable populations include people who are indigenous and/or ethnic minorities, children, elderly, socio-economically disadvantaged, having certain chronic health conditions. Members of vulnerable populations often have health conditions that are exacerbated by unnecessarily inadequate healthcare (David Waisel, PubMed, 2013)....19).

5. Methodological approach and process

This was primarily a qualitative research that used some of the social and anthropological approaches with a clear focus on participatory methodologies such as observations, social and/or resource mapping, case studies, Key Informant Interviews (KIIs) with community/political leaders, school teachers, female community health volunteers, health workers, community-based organizations' (CBOs) representatives, representatives of marginalized communities and other social service providers (public and private). In addition, Focus Group Discussions (FGDs) with marginalized and vulnerable communities, health facility staff and mothers' groups will be conducted.

5.1 Identifying the research questions

The research questions were largely evolved from the anthropological inquiry to better understand the local context of marginalized and vulnerable populations and their access to the health services in the communities. In the context of access to health care, the inquiry is particularly guided by fundamental questions like *what do marginalized and vulnerable people do, are there any patterns to what they do, why do they do what they do and what causes differences in what they do?*

5.2 Limitations

This was a rapid participatory research and analysis within a limited timeframe of field research from early July to the end of August, 2022. The findings do not necessarily reflect the overall situation of the district covered in the analysis, rather it attempts to explore the situation of selected marginalized and vulnerable communities about their perceptions, understanding and experiences of seeking health care, the barriers or challenges to access the health care services.

5.3 Data synthesis and analysis

Community level information along with study characteristics was extracted in a tabular format from the selected observations, participatory social/resource mapping, KIIs, FGDs and case studies. The information was mainly categorized and synthesized with types of their observations, behaviors, and sharing of experiences by the key informants and communities to meet the objectives of the research around availability, and accessibility of primary health care services in the communities.

6. Key findings

The findings of the study were as follows:

6.1 Local beliefs, perceptions and socio-cultural norms

The social construction of health is diverse as it is culturally and politically constructed in different contexts. In this case, Chepangs and other similar indigenous marginalized communities such as Tamangs have their own beliefs, social values, cultural systems, and their meanings of health is far different how we define health in modern times. They have been practicing indigenous knowledge and seek help from traditional healers in the beginning, unless their situation is very serious. So, their health seeking behaviour is largely influenced and shaped by their traditional living conditions, socio-cultural understanding of health, illness and disease.

6.2 Awareness about existing health services

Most of the communities interviewed and consulted were aware of the health facilities and other clinics in particular in their localities. The primary sources of health related information including the vaccines were: 1) Health workers, 2) Female Community Health Volunteers, 3) School Teachers,

4) Community Radios, 5) Civil Society Representatives, 6) Private health care providers and 6) Local government officials and political leaders.

6.3 Availability and accessibility

In order to have a better understanding of the communities' knowledge and level of awareness about the availability and accessibility of the essential health care services, participatory social/resource mapping exercise was conducted in each cluster with the active participation of local communities. During the mapping, the communities identified the location of local health posts, hospitals, homes of FCHVs, health workers and other private pharmacies including other resources such as schools, ambulance, local government offices, Red Cross and other NGOs working in those areas as important resources for health services.

For some communities, distance and mode of travel matter while they had to visit the health facilities for the vaccines for their children and families. In some communities where the health facilities are far away, local people faced difficulties to go for the vaccines. Nonetheless, the health care services were provided free of charge.

Case 1: Participatory social mapping empowers communities to realize on their own local resources for health

As part of the participatory social research, one of the methodological approaches named 'participatory social/resource mapping' was used with the purpose of understanding local context and the community's understanding and knowledge about the availability and accessibility of social resources that would have implications to access vaccines or other essential health care services.

This exercise, facilitated by local research team, was found very interesting and useful in the communities in terms of empowering communities to identify the locations of health facilities, health



workers/volunteers (homes), traditional healers, Red Cross, Ambulance, private pharmacies, transportation access, roads and rivers, office of palikas, schools for vaccinations, NGOs or CBOs, the indigenous/ marginalized communities etc. They also noted the locations where vaccination was planned and managed. During the mapping, through participatory discussions, they also realized the opportunities as well as challenges of the communities to access the essential health services in their communities.

Case 2: Poverty and social marginalization further fuels limited access to essential health care services in the communities

Anjali Praja, 32, is a pregnant woman living in rural Raksirang village #5 in Makawanpur district for several years. She was married at the age of 18. She has already six children and

only one daughter is vaccinated as a routine immunization for children. Other kids are not yet vaccinated. She does not have citizenship certificate and voter card yet. She lives with her husband and work for a farm which lasts for about six months to feed their families. They have to depend on the wild fruits and vegetables for their livelihoods and sometimes, her husband works as a labour near high way for some extra income for foods. Considering the large family size and the pressing challenges of growing her kids, she does not plan any other kid now. She was also unaware of family planning measures.

The health facilities is very far away from their house and it takes many hours (4-5 hrs.) to reach the health post in Manahari which is on the highway. Because of several hours of walks and lack of food for the whole day, her family cannot come to the health post for vaccinations and other health services. Rather they prefer to visit private pharmacy in case of emergency health care, but it costs higher compared to public health facility.

6.4 Coping the challenges of health care during disaster or pandemic

During the natural disasters and the pandemics like COVID-19, the life of Chepangs and other marginalized communities have been a matter of life or death. During the pandemic, the communities faced terrible experiences with growing rumors, fears, doubts, and confusions together with their daily livelihood issues – lost opportunities for income and food insecurity. The limited mobility and access to other essential health services severely constrained the people with disability and/or other chronic diseases to access the health care or treatments in the health facilities or hospitals. In addition, in general situations such as increased tensions of livelihoods for survival among poor and marginalized populations triggered mental stress, depression, psychosocial problems, family conflicts and in some communities attempts to cases of suicides were also noted. Most importantly, poor, socially marginalized populations – children, women, elderly, people with disability and other chronic diseases were most affected by the pandemic or disasters.

6.5 Critical barriers and challenges

At the local level, poverty and lack of awareness on importance of the health care have been a key concern for marginalized and vulnerable populations in terms of their access to basic health services in the communities. More importantly, local belief systems, language, gender, culture, health seeking behaviour, varied perceptions about side effects of medicines or vaccines in their bodies are also the barriers to access the health services in the communities.

6.6 Health systems issues

In rural and remote areas, there have been limited human resources for health. This is an age-old challenge. On the other hand, lack of adequate health infrastructure in a strategic location, robust supply essential medicines, and other logistics, and poor recording and reporting systems, transportation difficulties in the remote districts have been key concerns to access essential health

services. During the disaster or pandemic, the local health systems were further disrupted due to the mounting pressures on immediate preparedness and management of the health services – timely diagnosis, testing and treatments in the health facilities.

6.7 Community system's issues

The community system's issues broadly include limited access to information and support, inadequate capacity of CBOs, FCHVs, and social networks to create demands for health services or healing practices in the communities. More importantly, this has been further impacted by local traditions, language, culture, wide spread primitive perceptions, health care seeking behaviour and understanding of access to health care and its potential benefits. There were also limited risk communication and community engagement initiatives to empower the marginalized communities for pandemic response.

6.8 Role of local governments

Discussions with local government officials, health workers and the communities reveal that the role of local governments is crucial in prioritizing pro-poor health policies and allocating adequate resources for essential health care services, including vaccines for poor and marginalized populations so that their access is significantly improved.

Case 3: Local policies to be responsive to the health needs of marginalized populations

Dev Chandra Gartaula is a young Chief Administrative Officer at Chainpur of Raksirang Rural Munciplity. A rural and remote village where indigenous communities of Chepang (Praja) communities are the majority of the populations in Chainpur. The culture of these communities is aged-old who have their own language, traditional dress, habits of forest-foods, and prefer to live in the isolated hills of the village freely. Dev Chandra feels that these communities are still left behind to access health and other socio-economic services because of their own belief, culture and traditional systems of their health care seeking behaviours. Dev says, "Without community awareness for behavior change, these indigenous and marginalized communities will continue to be left out for essential health care including vaccines. We want to mobilize health workers, NGOs and FCHVs to reach out those the unreached populations for awareness and referrals to the health facilities, in the annual plan and budget, we consider allocation of resources to support these marginalized communities for their access to health and other social services as much as possible. It is our social accountability and we continue to address these inequalities through inclusive development approach."

6.9 Role of civil society organizations and private sectors

The role of civil society organizations is particularly needed to support local governments – *palikas* and health facilities in empowering poor and marginalized communities to access vaccines and

other essential health services more easily and comfortably. In this context, local governments and development partners need to focus on effective and sustained mobilization of local CBOs, NGOs, mothers' groups, FCHVs, social networks, private pharmacies, civil society and/or human rights activists to better support for poor and marginalized populations (elderly, widows, disabled, sexual and gender minorities, people with HIV and TB, and other socially, economically and culturally vulnerable groups in realizing their health rights at different levels - individual, families and communities.

7. Conclusions and way forward

By examining embodied experiences of illness at personal level, we can reflect socio-cultural values and beliefs about the narratives of illness, health and healing. The traditional ways of thinking about illness, medicine, and healthcare need to be further explored from multidisciplinary perspectives. Proper understanding socio-cultural, religious and political context is important to empower these historically marginalized indigenous communities in accessing health care services. The social and cultural determinants of health need to be critically analyzed to better understand socio-cultural processes and dynamics such as social values, cultural norms, beliefs, traditional or indigenous healing or treatment practices and social support systems in the families and communities at large. Therefore, local health systems must adopt social and anthropological approach to empower rural and marginalized communities in improving their health seeking behaviors by building social capital, social support systems and enabling social environment for health and development at large.

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A study of Energy security: Current situation and root causes in Nepalese context

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Abstract

Energy is one of the most needful resources for development in a global context. Water resources in Nepal are plenty to utilize but the water importance is less prioritized. This paper aims to analyze the energy scenario in the Nepalese context and the causes of insufficient energy following a secondary review and KII with relevant stakeholders across the seven Provinces of the energy sectors conducted from Jan-May 2024.

The study further found that the lack of political interest, no focus on the priorities of Energy and bilateral pressures of development and inadequate material and funding are the main causes of importing from the neighbors. In addition, lack of policies, lack of human resources among the energy producers and dependencies of raw materials from abroad have limited opportunity to sustain the energy production from the ground doorsteps. The promotion of renewable energy in the rural sectors is appreciable but limited. The political institution commitment diverted national issues and was busy with local and regional issues. The low electricity production and many challenges have been noticed due to the energy crisis need to be addressed immediately. Comprehensive samples in the future and alternative energy promotion stand as the best suggestions from this research method.

Keywords – Nepal, Energy security, electricity, development, Sustainable

1. Introduction

Energy security- a condition in which a nation and all (or most) of its citizens and industries have access to adequate energy resources at reasonable prices (Janssen & Hancher, 2004). South Asian nations are acutely known in Energy security (USAID, 2010). The world wars were caused by the captivation of oil resources (Barton B, 2004). During 1973-4, the organization of Arab Petroleum Exporting Countries (OAPEC) and Organization of Petroleum Exporting Countries (OPEC)'s used the oil weapon (Suresh, Maritime security of India: the costal security challenges and policy options, 2014).

Energy security has been a global issue for national economic growth and the international commodity market stands as a value of strategic and national security. The industrial economy and world population rapidly increased the number of industries and energy security became a global issue, and dependency accelerates (Energy Charter Secretariat, International energy security: common concept for energy producing, consuming and transit countries, 2015). The country's energy security policy became a priority for the foreign policy agenda and energy security emphasizes political security for all (Paravantis & Kontoulis, Energy security and renewable energy: a geopolitical perspective, 2020).

Regional trend of Energy Security

The regional review has shown that China has put the issue of energy security as an integral part of its national interest, mainly focusing on economic and industrial growth (Tonnesson, Energy security in Asia : China, India, oil and peace, 2006). China relies much on overseas explorations to secure its national energy supplies. China's national oil companies, such as China National Petroleum Company (CNPC) have expanded their supply system across the Middle East and Africa region. Middle East monopoly and sources attracted powerful countries to plan for the strong potentiality and resource capture.

South Asian countries are highly dependent on oil and petroleum products. The import ranges from 2 to 100 % noticed. The world oil price hike creates a burden on foreign exchange reserves. Sri Lanka and Maldives hardly hit, India, Pakistan, and Bangladesh met less of their demands (Christian Aid, Low-carbon development in south Asia leapfrogging to a green future, 2014). The use of coal receives a specific concern due to its effect on environmental sustainability (Daojiong, Oiling the wheels of foreign policy? energy security and China's international relations, 2010). India gradually increases its industrialization to increase the production.

Energy in Nepalese Context

Nepal is small, diverse, and landlocked between China in the north, and India in the South region. Agriculture, the mainstay of the economy, accounts for almost one-third of GDP. Oil products and coal imports come mainly from India, as does some of the country's electricity supply. Biomass, oil products, coal, hydro, and electricity are its main sources of primary energy. The Rural part of Nepal is highly dominated by such things and alternative energy is a serious concern (ADB, 2017). As a natural resource-rich country, Nepal has not yet managed and utilized its potential resources because of lacks of political stability (ADPC, Water sector policies and guidelines of Nepal, 2021). The fifteenth plan has prioritized energy as the most essential need of the people. Because of various social-Cultural-economic-Political change, several movements and protests starting from the Maoist revolution-economic blockades-Federalizations and many local and regional clashes, energy is low priority from the political lenses in Nepal.

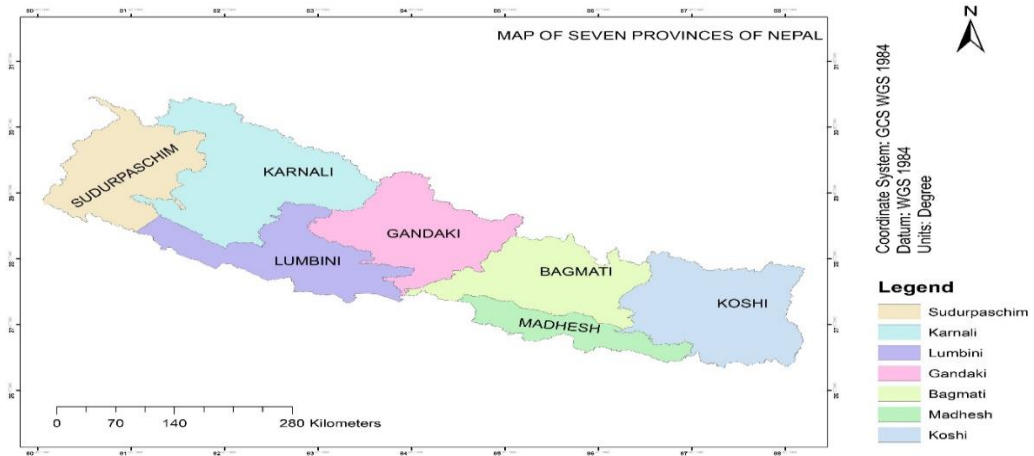
Thus, the various reviews suggest to analyses of the current situation and the causes of energy insufficiency in the Nepalese Context.

2. Methods

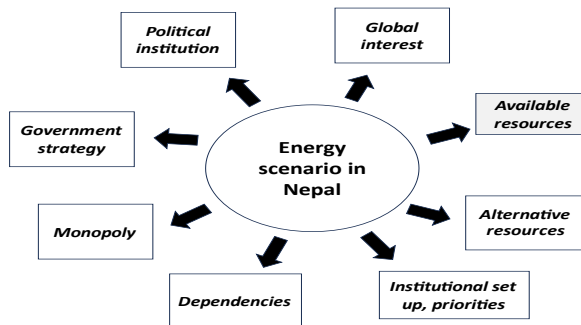
This study is purely based on the analysis of a reviews of various documents related to the Energy crisis and Policy-related documents. In addition, secondary analysis from the journal, reports, Government and private organizations reports were reviewed. In addition, various reports and reviews/ analyses were taken into consideration. Data from the empirical analysis and KII notes ¹for the study were taken. The study period covers the data of previous 10-12 year (2012 to 2024) and KII was done from Jan-May 2024. The Information covers the energy security of all Provinces within Nepal (*Figure-1*).

To find out the result of various reviews-based on the objective set herewith. A conceptual model cum review result is drawn below indicating the fundamental relation of Energy and its associated factors in the Nepalese context.

¹ KII with NEA, Ministry of Energy Ministry of Energy, Water Resources and Irrigation-Kathmandu; Nepal Electricity Authority-NEA at different stations of Federal and Provincial areas; Provincial ministry of all Seven Provinces, Local Government representatives, Private sectors-entrepreneur, Local traders, Hydropower companies, Solar Power company and all relevant stakeholders



(Figure-1, Study area of Nepal covering all seven provinces of Nepal)



(Figure-2, Conceptual and result model of the energy situation and causes in the Nepalese context)

This model referring the eight major variables starting from the available resources to the Global interest are the major associated factors of Nepalese Energy security, this conceptual model is the design of this study which can used in the analysis of Results after reviewing various studies.

3. Results

Review from various journals, empirical data and KII notes are summarized based on the objectives. Discussion on the scenario of Energy Security in Nepal and Causes of inadequacy of energy and alternative sources is presented below:

A. Current Situation of Energy

(1) Fossil fuels

In the Nepalese context, coal production is limited and mostly used by the industrial sectors. In 2014, more than 97 % of coal demand in Nepal was met through imports because No oil refinery created decencies (Ministry of Industry, 2017). Transportation distance is the biggest challenge to managing

goods accordingly and transporting from seaport Kolkatta-India (Ministry of Foreign Affairs, 2012). All petroleum products imported from Indian oil corporation as per contract. Nepal's oil storage capacity is limited and learned a lot during economic blockades (Simkhada, Foreign policy and national security, 2014).

KII with Finance and Energy Ministry, NEA official added that as per the agreement with Nepal-India (Treaty of Trade-2009, Treaty of transit-1999, and Rail Service agreement-2004), India provides petroleum products on subsidy rates because Nepal does not have an adequate source of own.

India is considered Nepal's largest trade partner. The volume of bilateral trade has reached over NRS 1134.53 billion during the last fiscal year 2022-23 with imports from India (GoN, 2023).

Increasing population, low consumption rate, and expensive grid connection recorded. Micro- hydro, solar PV, biogas, and upgraded cooking stoves are examples of sustainable supply (Surendra, 2011).

KII with Provincial Ministries confirmed that the promotion of solar is a requirement for all three tiers of Government. In the crisis of electricity, solar system playing a role in economy, business and for the areas had limited electricity areas. alternative energy promotions like biogas, solar and wind-based electricity suggested the best alternatives of electricity

(2) Institutional Setup, Government strategy/ Policies of Energy Sector of Nepal

The Ministry of Energy was responsible for looking after the energy issues. Institutional arrangements in the nation are divided into four levels: policy, regulation, operations, and implementation, NEA is responsible for electricity distribution and overall management (Pokhrel, 2020).

The National Planning Commission is in charge of organizing and creating the government's five-year multi-sector investment program. The National Water Resources Development Council: Provides government guidance on strategic issues and policy regarding integrated water resource development. The Water and Energy Commission: Provides policy advice to the government on technical, legal, environmental, financial, and institutional matters related to water resource planning and development (Bank, 2014). After 2017, the energy promotions were prioritized for LG. The local level initiation began but due to lack of financial and human resources it became limited progress.

KII added that alternative energy is the best approach and cost-effective for the rural and remote areas of Nepal.

(3) Import mechanism and challenges/ inadequate storages

India is the main supplier of trade for Nepal, China and other countries gradually after 2018 accelerated its trade in Nepal but after the Mega-earthquake, the roads were very challenging from China transport and Indians supply is ongoing and a huge amount is remitting for the energy. After 2020, the national project has increased the capacity up to 10 %. This poor generation capacity is supplemented by imports from India, but the supply is still insufficient to meet the rising demand. Thus, up to 11 hours of load shedding occur as a result, and if nothing is done right now, things could get worse (NEA, 2016). The Political intestinally fuel crisis in 2016 taught many lessons Nepal (NEA, 2016).

KII with Provincial and Local Government Officials added that the Government focused on consumption of electricity but did not think for long about production of the electricity, hence, a

large amount of electricity was spent on schools, hospitals, roads, industries and modern devices.

Foreign trade statistics show that during FY 2022/ 23 (2079/ 80), the total trade stands 1769 million, as well as a total exports 157 billion stands, and total import remained 1612 billion, indicates an increasing trend of import mechanism within the last ten years in Nepal (GoN, 2023).

KII with Provincial and traders added that uses of electrical vehicle and promotion by Government found increasing, this is one of alternatives of Petroleum but charging also required electricity? The own sources are limited.

LG and Province added that the Urban requirement is high but electricity supply is limited, rural requirements is managing electricity from Solar and Biogas but still the consumption is high In the Uran sectors due to the fabrication work.

(4) Role of Nepal Electricity Authority (NEA) in Energy sector

The single entity dealing with the power sector is the Nepal Electricity Authority (NEA) with the monopoly power to exercise in the energy market. Production, transmission and even distribution through the national grid are the sole responsibility of the NEA (NEA, 2001).

NEA plays a magnificent role in the development of electricity but as stated that the lack of management and distribution monitoring is less.

KII with private sector added that the monitoring and maintenance work by the NEA is slow and not satisfactory. Procrastination and lack of field mobility are the most common trend found and this is one of the drawbacks. The NEA monopoly is high.

B. Root Causes of Energy Crisis

Many factors are associated with the causes of the energy crisis. Nepal has no petroleum and raw materials source of his own and fully depends on supply from India. Lack of human and economic resources etc., The private and Government monopolies and much more. The other factors adversely affected are mentioned in this section.

(1) Resource deficit and Private investment scenario

Power production is profoundly constrained by the availability of monetary and human resources. The average cost per KW hydropower is US \$ 2.481 which is a relatively high number in power production (Ghimire, 2012). Butwal Power Company is a private enterprise that is involved in the distribution within a few districts with a small section of coverage. The private investment also depends on the situation of socio-economic and Political situation.

KII added the private sector and political commitment are extremely different because the private don't believe the commitment and Political parties use always commitments. Political influences and instability of the Government is the main causes of fear in the private sector.

(2) Targets and seasonal variation supply system of Nepal

The acclaimed capacity of 619 MW is now heavily dependent on nature and precipitation. During winter the storage is depleted and load shedding is performed. The run-off-river type just supports 230 MW whereas the reservoir type Kulekhani manages an output of 46 MW. This reduction in power generation puts heavy pressure to manage demand (Joshi & Shrestha, 2014).

Traders and Entrepreneurs added that the demands for the electricity increased during summer season whereas during winter it get down. This known fact is not planned and managed well.

(3) Maintenance of the National and Provincial Projects

Various reviews suggested that the lack of maintenance mechanisms found for the national and local based hydropower project in Nepal, Likewise, the Kulekhani, Trishuli and Upper Tamakoshi Projects are the backbone projects of the electricity facing repairing constraints. The maintenance mechanism is limited and insufficient for the large and mega projects in Nepal. High costing of parts replacement, shortage of technicians and parts availability is very costly to address project maintenance (Nepal, 2018; NEA, 2016). The decentralized supply system is the best option to avoid the high cost of fossil fuel, and connections fees. Biogas and solar hydro are the best alternatives in rural areas (Pokhrel & Rijal, 2021; ICIMOD, 2023).

KII with the Energy Ministry added that National and Provincial projects 2 are the largest projects in Nepal. The lack of maintenance and funding problem are recorded in the various level of discussion. Resources are low for national projects.

(4) The role of Political parties in the energy sectors:

Nepal politics witnessed a result of various movements (*Kingship abolishment-Maoist-public protest to federalism*). Following the collapse of the monarchy, the Maoists took power in Nepal and establish excellent governance that would place a high priority on inclusion, diversity, and all people. The energy sector was not given top attention by the Maoist leadership, the Nepali Congress, UML, and other national and regional parties were gradually included in the political process with low priorities, for the LG and Provincial Government this is a need but limited resources are challenges (Suman & Gautam, 2013).

The political parties were busy in please neighbours to get benefits of power and position, after 2015, federalization handed over the production authority to the Local government but for the LG and Province mega project was not possible to promote at the moment.

KII with political parties added that the lack of knowledge and priorities are the most important reason for the Political institutions. Bilateral pressure and lack of national issues are the main reasons for low priorities.

4. Critical Analysis and interpretation

Nepal is diverse and challenging from a geographical view. The prolonged political agreements and conventions are traditional. The resources from own are limited and constrained from the various aspects such as oil, coal and other factors are no doubt a lack in availability. Geopolitics is evidence that the landlocks deal with challenges rather than opportunity. Nearly 39.1 million population have diverse livelihoods and nearly 2/3 of the population are residing in rural areas. Electricity is one of the prime sources for Nepal because of the largest water availability in all seasons. Before and after federalization, electricity development was one of the most game-changing developments for Nepal. Several hydropower projects are producing electricity for Nepal but still electricity is inadequate for all.

² *Projects: Upper Tamakoshi hydropower Project of Dolkaha, Chilime Hydropower, Kulekhani of Bagamati Province, likewise, Dudhakoshi of Koshi Province, Chandranigahpur of Madhesha Province, Middle Marsyangdi of Gandaki, Guransh Khola of Dailekh, and Chameliya of Bajura district from Sudur Paschim province*

Insufficient sources, lack of raw materials, transportation, geo politics, monopoly and lack of interest by the government and Political institutions are the main reasons for low electricity even though the water sources are high. As a result of a weak system, the dependencies of import are high and political attention is minimal. The alternative promotions are the need of the people and large projects are still not reviewed yet.

5. Conclusions

Nepal does not have sufficient raw materials to produce enough energy through hydropower and other modes. Increasing urbanization, modernization and development progress demanding for electricity to build infrastructure. The prolonged signed treaty and agreements are still not yet revised and traditional supply system and practices are ongoing. Energy is vital to all but Nepalese politics does not consider as a prime requirement. Water sufficiency is high across the nations but bilateral substances are more influenced internal and external politics of Nepal. The electrification trend is high nowadays, but still electricity is insufficient because of inappropriate projects, lack of resources including finance, technical and human resources respectively. Lack of interest, knowledge and No interest for any of the political parties are the prime causes of insignificant amount of energy. Hence, the dependency on the available is high. In addition, the possible way of alternative energies such as biogas, solar system and wind are high to invest and obtained much energy but this consideration is negligible and still the energy circulation system is differed in rural and urban sectors. A comprehensive survey across the nations is advised and alternative energy promotion in the energy sectors are advised.

ABBREVIATION

USAID-United States Agency for International Development; **OAPEC**-Organization of Arab Petroleum Exporting Countries; **GDP**-Gross Domestic Products; **UNDP**-United Nations Development Program; **ADB**-Asian Development Bank; **KII**-Key Informant Interview; **FY**-Fiscal year; **MW**-Mega Watt; **PV**-Photo Voltaic; **GoN**-Government of Nepal; **NEA**-Nepal Electricity Authority; **NPC**-National Planning Commission; **NRS**-Nepalese Rupees.

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