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"COVID 19 Impact on the Agroforestry Practice, Chepang Case Study of Nepal"

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ABSTRACT

Agroforestry is the unique way of farming practice of agriculture and forestry in the same plot of land, Chepang are backward ethnic of Bagmati Province engaged in farm-based agroforestry system and generate production from its practice realized helpful during a crisis. A Novel Coronavirus called COVID-19 devastated sphere and keeps the human lockdown. The farmer faces trouble unexpected long day lockdown. This study is anticipated to analyze the impact of COVID-19 within Chepang in Nepal; as well as a proposed model for the agroforestry caused through COVID. Purposive sampling, with some 100 HHs (Raksirang Rural Municipality, Makwanpur district) data collected in the lockdown period.

Chepang experienced many calamities, and COVID-19 was the unique way to fight, farm production was more consume instead of a sale. Continue lockdown engaged in agroforestry farming, lack of wage opportunity, partial functioning of the market, no sale of farm products are the common trends. Food aid support by Rural Municipality played a role helped some 30 HHs poor families. A long-term food security self-sustainability strategy suggested; continue lockdown may crisis, if farm products not sold and wage stopped. A model proposed considering COVID with pointing three major actors (Farmers, Local government and Development agencies) could play a vital role in the future for sustainable development, among the model conditional wage scheme could relieve farmers in the future sustainability.

KEYWORDS:-Agroforestry, Chepang, COVID-19, Rural Municipality, Livelihood

1. INTRODUCTION

A review through Kang (1984) and Sanched (1995) detailed that agroforestry is defined as "a land-use system in which woody perennials (trees, shrubs, palms, bamboos) are deliberately used on the same land management unit as agricultural crops (woody or not), animals or both, either in some form of spatial arrangement or temporal sequence (Sanched, 1995). Agroforestry farming practices provide multiple benefits including high productivity and additional income while maintaining soil health (Kang, 1984).

MDI (2008) explain that Chepang are poor and indigenous among 59 indigenous nationalist of Nepal have practiced shifting cultivation or Khoriya (Slash and burn) for centuries. The Chepang people, as regarded as most marginalized and resource poor group in Nepal (MDI, 2008).

Forest is also an important source of cash income among Chepang (Piya et al., 2011). Gurung (1990) argued that much changes has taken place in the traditional economic structure of the Chepang as a result of a long period of interaction with non-tribal, they are now selling their products in the markets, responsible factors for the modernization and gradual changes in the Chepang region are construction of roads, growth of marketing centers, establishment of educational institution and introduction of the Praja (Chepang) development Programme, (Gurung, 1990).

A study by Baets (2007) highlighted that agroforestry offers many benefits for agricultural producers and society at large (Baets, 2007). Khadka (2010) found a results of the farm income analysis showed that agro forestry system provided higher gross benefit than Khoriya farming (Khadka, 2010). Similarly, once they started benefiting from the agro-forestry. The study was conducted to find the agroforestry plantation situations and its income forecast of northwestern part of Makwanpur district where the majority of Chepang have huge, adopting agroforestry interventions now days.

A joint study by Fedrico and Buju (2009) highlighted that the project activities, local people stopped entering the Chitwan National Park and the Parsa Wild life reserved to illegally gather wild fruits, roots and non-timber forest products. Thus, the project intervention has indirectly contributed to the biodiversity conservation in the areas (Fedrico & Buju, 2009).

A local newsagency of Hetauda, Sandesh (2015) draw an attention through various published and unpublished records that agroforestry intervention within the Chepang community brought some strengthening on economy especially on the part of income. Income from the latest agroforestry product also made an important role in income. From the various news agencies, it was reported frequently that the income became increase in the Chepang community using agroforestry intervention.

(Sandesh, 2015)

A book review by Amatya et al (2018) highlighted that the recorded history of planting trees goes back to as old as Padma Purana, a Hindu epic. It says, "those people who plant trees near road side s/he would feel happy in heaven as much the number of years as the tree has fruits and leaves on it". Acharya, (2003) has listed that 80 plant species are used in socio-cultural festivals in Nepal. These plants are used in specific purposes. Their nature, however, varies from herb to big-sized trees (Acharya, 2003).

Ingles (1994) states that the way forests are perceived and managed in Nepal depends a lot on the religious practices and beliefs of the people. He further argues that religious forests provide a refuge for many species, which may otherwise have been locally extinct (Ingles, 1994). Acharya (2002) also states that some plant species such as Pipal (*Ficus religiosa*), Bar (*Ficus bengalensis*), Gular (*Ficus racemosa*), Pakhuri (*Ficus glaberrima*), Amp (*Magnifera indica*) and Amala (*Phyllanthus emblica*) are considered highly sacred by Hindu communities and they are worshipped and used for birth to death rituals. Similarly, the sticks of Paiyu (*Prunus cerasoides*) and Dhak (*Butea monosperma*) are used to perform the ceremony of "brata bandha"of young Nepalese boys (Acharya, 2002) . Amatya (2018) added that a culture called "bel bibaha" is practiced in the Newar community where a young girl marries with the fruits of tree species Bel (*Aegle marmelos*) before the onset of her menstruation. Sisters offer their brothers fruits of Okhar (*Juglans regia*) and Katus (*Castanopsis indica*) during the Tihar festival (Amatya et al., 2018).

In Nepal, agroforestry has not been taken up as an important subject of scientific study although farmers had been practicing them since time immemorial. However, in the mid eighty (1985) farm forestry Project funded by International Development Research Centre (IDRC), Canada was implemented in the Institute of Agriculture and Animal Science (IAAS), Chitawan and in the Institute of Forestry, Hetauda. It is the first important event in the history of Agroforestry in Nepal. The pioneer research and promotion works on agroforestry were started in the IAAS field, and the on-farm sites: as alley inter-cropping of summer crops (maize, soybean, sesame, other) and winter crops (wheat, oat, mustard, others) were carried out in the established plantation of 3 to 4 years old multi-story alleys of Eucalyptus camaldulensis, Madhuca latifolia and Leucaena latisiliqua. The rows of trees were encouraging to provide

fodder and fuelwood, and the yields of winter crops were found higher inside alleys than in open plots (Barakoti, 1989).

In case of Nepalese Government is also very positive in developing Agroforestry in the country. The Fourteenth Plan (2013/14 -2015/16) pointed out that communities and private individuals will be encouraged to identify high value medicinal and aromatic plants, sustainable harvest, technology development, commercialization and marketing (NPC, 2013). Following the provisions in the plan, Government of Nepal has given due consideration in developing agroforestry. Consequently, several International and National Non-Government Organizations (I/ NGOs) are also engaged in various agroforestry activities. Various National and International Organizations are taking up agroforestry activities to support livelihood conditions of rural population. For example, Kathmandu based Food and Agriculture Organizations of the United Nations (FAO) in close cooperation with IUCN is piloting programes in Kaski and Parbat districts and helping formulate agroforestry policy for the country. Since 2013, the Government of Nepal and Australian Centre for International Agricultural Research (ACIAR) has implemented a five-year action research project titled "Enhancing livelihood and food security from agroforestry and community forestry systems in Nepal" at two districts (Kavre and Lamgung district) of middle mountain physiographic zones of Nepal through national and international partners (Amatya et al., 2018).

MDI and NCA (2015) have quoted that agroforestry practice have been began in the Chepang community from the last decade, the sloping lands were more prioritized by the GEF/ UNDP in association with UNWFP, so a plantation support local government and a technical support through MDI and local users group have started plantation in the Chepang community (MDI, 2012) (NCA, 2013).

According to CDC (2020) the Coronavirus disease 2019 (COVID-19) is a respiratory illness that
can spread from person to person. The virus that causes COVID-19 is a novel coronavirus that was first identified during an investigation into an outbreak in Wuhan, China (CDC, 2020) (Chhetri et al., 2020).
The World Health Organization (WHO) first declared COVID-19 a world health emergency in January 2020. Since the virus was first diagnosed in Wuhan, China, it has been detected in over 190 countries and all U.S. states (Washington Post, 2020). In early March, the focal point of infections shifted from China to Europe, especially Italy, but by April 2020, the focus shifted to the United States, where the number of infections was accelerating. The infection has sickened more than 3.2 million people, about one-third in the United States, with thousands of fatalities. More than 80 countries have closed their borders to arrivals from countries with infections, ordered businesses to close, instructed their populations to self-quarantine, and closed schools to an estimated 1.5 billion children (The Economist, 2020) (CRS, 2020).

A recent assessment report by WFP (2020) analysis that households affected by the lockdown, work stoppages and movement restrictions are in most instances resorting to coping strategies that include relying on less preferred, less expensive foods (for daily wage labourers, in 45 of 51

Surveyed districts and for affected agricultural labourers, in 38 of 51 districts), borrowing money or food from friends/ relatives (for daily wage labourers, in 25 of 51 surveyed districts and for affected agricultural labourers, in 12 of 51 districts) (WFP, 2020) (Chhetri et al., 2020).

Like many other country Nepal had declared lockdown mechanism adopted following many other experiences of China, Italy and India, so the country had declared a lockdown starting from March 26th to April 2020 and gradually continued for 3 more weeks, In addition, most of Nepal's food, fuel and other essential imports are from India, or from third countries via India.

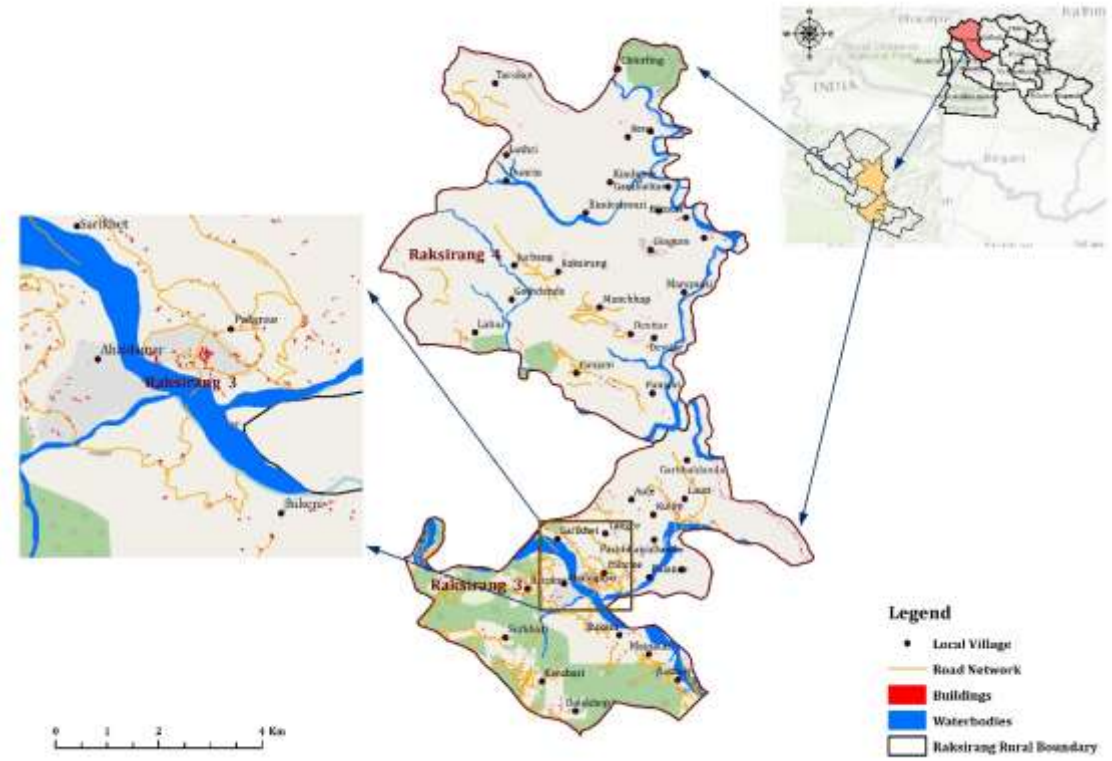
Fuel and food trucks have been allowed to cross the border; the lockdown extension could lead to a worsening of food shortages (Nepali Times, 2020) (Chhetri et al., 2020).

WFP (2020) highlighted that due to the COVID-19 crisis, demand for commodities in markets across Nepal is low and declining, as reported by a majority of interviewed traders. Food availability in markets was considered insufficient by 53 percent of traders. Similarly, 48 percent of traders in the assessed districts found the availability of non-food commodities to be inadequate (WFP, 2020).

Hence based on the above review of introduction and literature two main objective was drawn for this case study herewith;-To analyze, ongoing agroforestry practice and its impact due to COVID and lastly to propose a model in relation to the COVID-19 and agroforestry in the upcoming days.

3. METHODOLOGY

Study Area-Makwanpur district comes under Bagmati Province, out of the Seven Province structure of Nepal. There are one Sub metro Politian city, one Municipality, and eight Rural Municipality in the Makwanpur district. Rakasirng Rural Municipality holds the highest majority of the Chepang community; therefore, it was purposively selected for the study. A virtual meeting through Zoom conducted and reconfirmed through Manahari Development Institute (MDI, working in the field of agroforestry) and Raksirang Rural Municipality, it was found that ward number 3 and 4 holds the majority of Chepang HHs with agroforestry practice, hence this was selected.



(Figure-1, Self-prepared GIS spatial map of the study area)

A primary HHs questionnaire was prepared to capture the agroforestry practice in the study area, some100 HHs from ward number 3 and 4 were taken as a sample size and data collected through interview schedule, some 40 questionnaire were scheduled through interview, and rest 60 were collected through mobile phone due to movement restriction during the lockdown. No FGD was conducted in the study period due to social distancing measures. Some secondary data from internet, journals, reports and through published/ unpublished report was review. A consultative meeting over zoom software was conducted with major stakeholders for this study such as MDI, Rural Municipality Officials, Center for Community Development of Nepal (CCDN), and Plan Nepal (INGO) Officials respectively. The field data was captured in between the lockdown period of 10th April to 2nd May 2020.

Data analysis-A surveyed data was taken into the IBM SPSS volume 20 making some variables, the data were analyzed and converted into the MS Excel sheets, all tables, and statistical test were through using the SPSS database software. SD, Mean and percentage were verified for this case study.

4. RESULT

Ongoing agroforestry practice and its impact due to COVID

Following the above objective, this section of the result is illustrating through data collected from the field, and some observation techniques, empirical data and Key Informant Interview (KII) qualitative information is added here to explain the fact.

(Table-1, An analysis on the plantation situation of the study area)

Plantation situation (this season- %)	Yes	No	Current situation
Maize	100	0	Growing
Banana	86	14	Harvesting
Broom grass	45	55	Planting
Pineapple	53	47	Planting
Vegetable	70	30	Harvested
Legumes	57	43	Planting
Tree	67	33	Growing

(Source: Field visit, 2020)

Maize (*Zea soya*) is primary crop (Table-1) in this season, planted in the months of Mid-Apr to Mid-May in the district played a major role for farmers in terms of self-consumption as well as for cattle feed; banana (*Musa paradisiaca*) farming is the most popular cash crop as per the agroforestry practices. Chepang is farming in khoriya (slash and burn in English), which is rugged and fragile (MDI, 2012).

After agroforestry, practices trees and banana with grass make some innovative changes in the life of Chepang (Piya et al., 2011).

Chepang of this area practicing agro-silviculture and agro-pastoral system since last 5-10 years, broom grass and pineapple are seasonal and cash crop for the Chepang. From field visit, standing tree (Bakaino, Kutmero and Khanayo[1]) found growing in the study area, the observation insight that the agroforestry cycle is ongoing, which not only generate production but helping people in COVID pandemic circumstances.

Continue lockdown, brought change and unused cum marginal land is more planted with maize and banana indicates that the farmers learned from COVID and for the future stock did plantation. However, market was partial functioning, and complete lockdown from the March 26th 2020 immensely effects the local manahari market (Nearby local market of study area with 40 minutes walking distance) where, the traders are no longer exist due to no vehicle movement, has disturb the Chepang farm production that may cause the serious food insecurity in the coming days. However,

[1] Botanical name of Bakaino-*Melia azedarach*, kutmero- *Litsea polyantha Lauraceae, and* khanayo-*Ficus camia*;,

some household's respondents reported to receive the relief support from the Rural Municipality, which certainly helped to coping during food crisis for those people who are old, disable and people with low income.

A Key Informant Interview (KII) with Manahari Development Institute (MDI-NGO's) and Nepal Chepang Association (NCA) has shared experience that -due to COVID-19 Chepang agroforestry product could not sale to the market and adversely effect on the income, a long-lasting lockdown could affect the food security situation of the Chepang in the coming days. However, the agroforestry practices help farmers to manage the food in the season during a closure of market and lockdown period.

As a brief general information of the study area, the average land size (registered) of surveyed farmers was 0.236 hectares (Annex-1), whereas unregistered average land size was 0.202 hectares, some HHs have used the Kabuliyat or lease land whose average size was 0.033 hectares, some khoriya[2] used average land size was nearly 0.084 hectares respectively. The respondent's average family size was 6, and in some of the cases, some 8-10 members also perceived during the data collection. The family size of the Chepang is little high compare to the Makwanpur district average size of the family is 4 (CBS, 2011).

The surveyed Chepang practicing agroforestry for last 5-10 years, hence the average number of local goats (Annex-1) was 10, which symbolized that the livestock is increased due to the continue agroforestry practice, which is source of cash income.

The surveyed farmers are connected with electricity and few (Nearly 24 HHs) have installed solar system as the source of electricity in the area, drinking water is supply through pipe system water and from the unprotected well in majority.

During COVID lockdown, the farmers have experienced the lack of wage opportunity in the nearby area which was the regular trend to visit and earn cash from the on-off farm activity migrating to the nearby district and area, the trend indicates that some 4.3-6 USD/ day [3](off/ on farm) generate from the daily work now has been affected due to the lockdown. Continue lockdown will have an unfavorable effect on the wage work.

Instead, the farmers are more engaged in the farming practice, consuming own vegetable, and planting maize as a regular trend during this season, the lockdown experienced the lack of sale of local farm product (Banana, broom grasses, vegetables-tomato, potato, chili, pineapple[4]) due to close down of the market and no visit of the local traders in the village due to no vehicle movement.

[2] Khoriya- Shifting cultivation commonly known as "Khoriya" in Nepali, in general, is a system of farming in which fields are prepared by cutting down the natural vegetation's. Letting it dry and burning it off. This technique serves to clear the field and enrich the soil with nutrients from the ash. Shining cultivation fields are generally used not more than two years at a lime, after which the fanners move to a new area and repeat the process

[3] USD-United States Dollar, the 115 Nepalese Rupees stands for 1 USD, the daily wage of the area is NPR 500-700 Per day.

[4] Botanical name of banana-*Musa paradisiaca*; broom grass-*Thysanolaena*; pineapple-*Ananas comosus*; tomato-*Lycopersicon esculentum*; potato-*Solamum tuberosum*; chilli-*Capsicum spp.(annuum)*

(Table-2, An analysis on the HHs food stock situation from the own production)

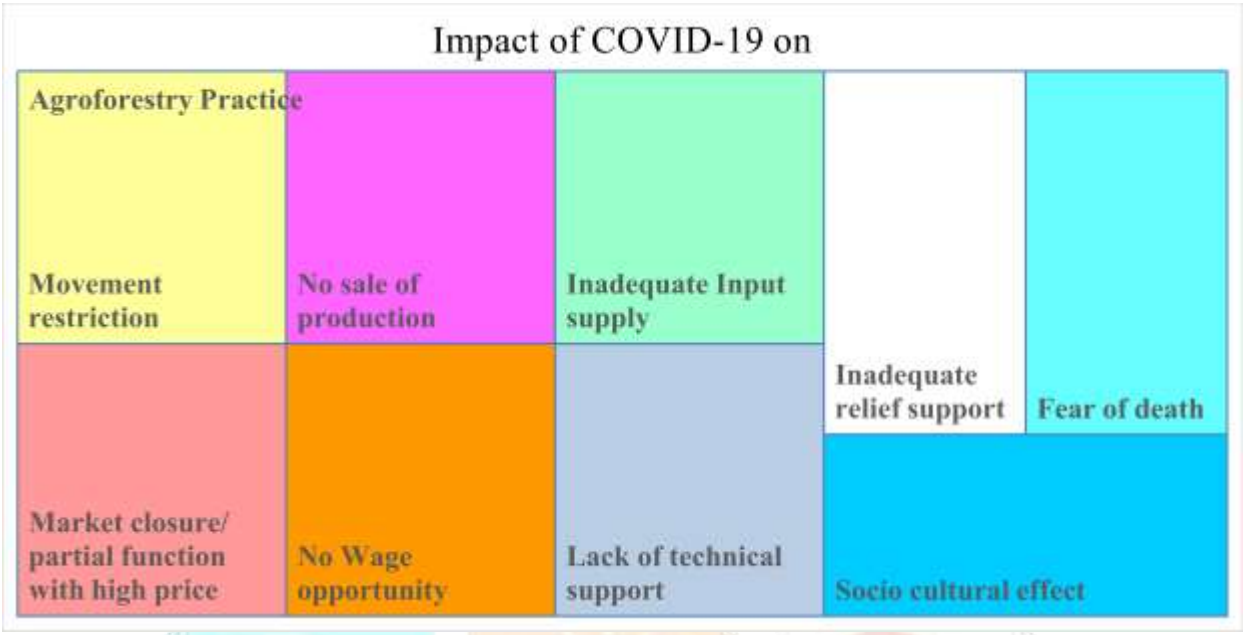
HHs food stock during visit	Percentage (%)
Up to 1 months	45
Up to 2-3 months	51
Up to 4- 6 months	2
Up to 6-9 months	1
12 months and above	1
Total	100

(Source: - Field visit, 2020)

Data revealed in case of households food stock that the majority of Chepang respondents (Table-2) have 2-3 months of food stock (51 %) in the majority during this season and till the end of May –second week of June month this is near to depletion from the own stock, the production refers the own as well as purchased food from the markets, the trend of rice purchase if high from the market which cost 8.34 USD/ sacks of 20 kg Raw rice. While talking to the stock situation, Previous stock of Maize (*Zea mays*), farm vegetables, purchased rice, farm banana (*Musa paradisiaca*) respectively are the recent stock available with respondents in average, in some houses the relief support of Rice, legumes, veg oil available through Rural Municipality, who are comes in the category of less than one month's stock (45 %).

As per KII from Chairman of Raksirang Rural Municipality has opinion that the food sufficiency from the own production last for 3-6 months from the own production (Maize and millet) for the majority of agroforestry farmers, he added that the agroforestry practioner have farm product than a traditional farmer, who usually do wage and plant maize and millet and food insecure yearly. Raksirang Rural Municipality reported that some 1564 HHs (6074 people) have received food support from them following government norms (ration for 15 days with Rice-4 kg for per people, Pulses-1 kg for 3 people, 2 kg for 4 people, 3 kg for 7 people and above, Veg oil-1/2 ltr for 3 people, 1 ltr for 4 people, salt-1 kg to the family and soap 1 piece to each family) (DAO, 2020).

(Figure-1, Impact of COVID-19 in the study area)



(Source: Field study, 2020, various discussion within Key Informants and Stakeholders)

In case of Impact analysis (Figure-1), a framework using tree-map try to explain that primary effect of COVID was the movement restriction adversely affected to economy as the nearby market partially functional with high market price (Cereal and Legumes increased up to 20-30 %, for vegetables increased by 30-50 % and for Fruits increased up to 60 % in April end week) due to limited supply from the Terai region and Indian boarder due to global effect. As consequences, wage opportunity was stop due to closure of nearby off/ on farm and constructional work. Lockdown affected farm product to the nearby market cause of inadequate price and mainly due to no purchase by traders because of no movement of vehicle, earlier trend indicating that the Chepang product usually moved to the big markets (Kathmnadu, Pokhara, Narayanghat etc.) but due to lock down across country create problem for sale.

For farm activity the technical support and Input, supply (Fertilizer, seed, machines etc.) was essential during a harvesting/ growing period of Maize and vegetables, some crop infestation also required medicine and technical support, such was away in the situation. After the 54 consecutive day of lockdown respondents felt a fear of death due to limited relief support and lockdown livelihood in home, however the surveyed respondents replied in majority that the family fully depends on the farm product available with them to survive the situation, due to no cash opportunity from any activity and lack of family gathering adversely affected the socio cultural (birth process, marriage, death, family rituals) effect of the Chepang community in the study area.

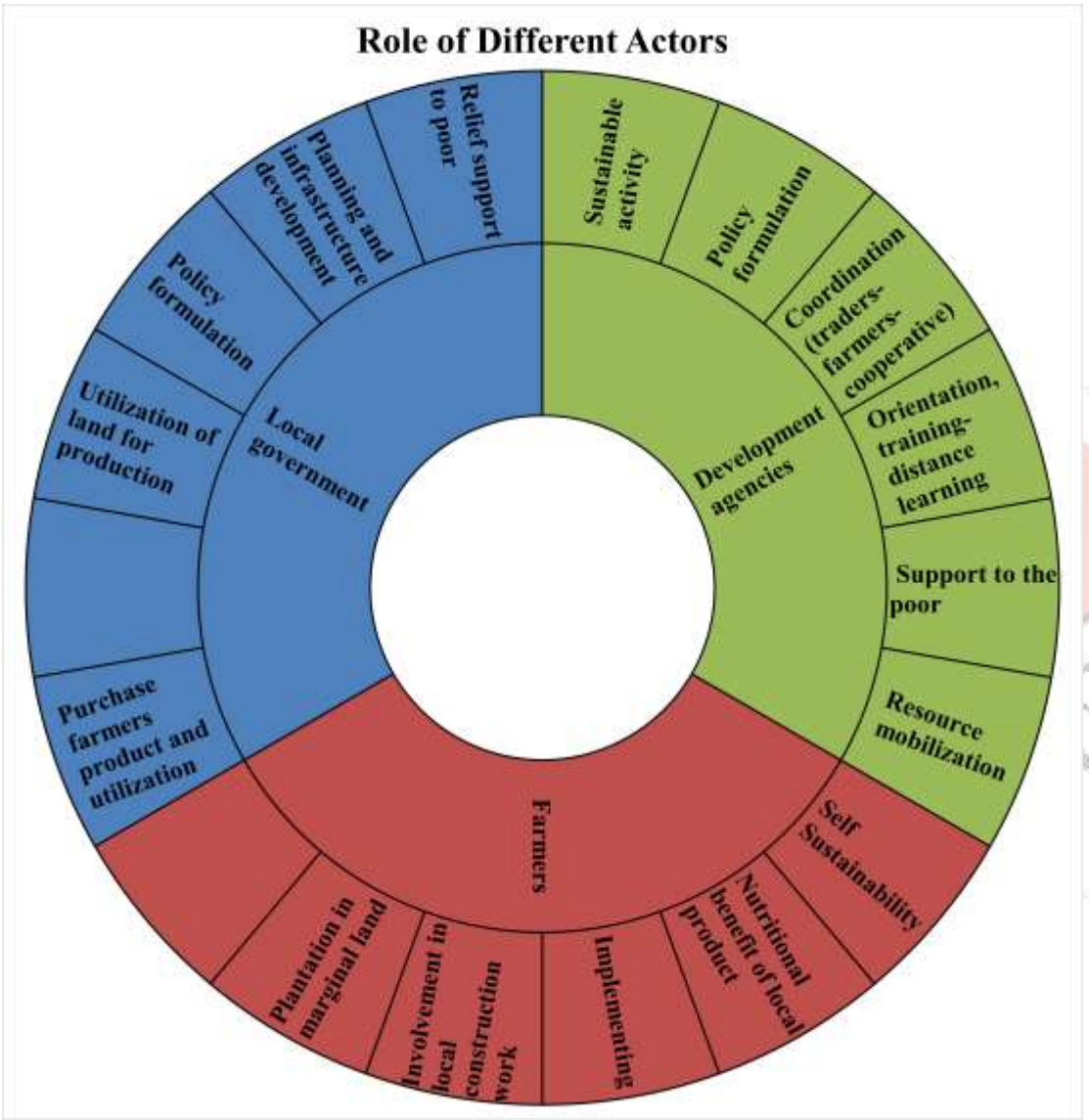
KII with Rural Municipality (RM) officials and Nepal Chepang Association stated that

“Marriage, death and medical treatment is challenging during the COVID-19 period because gathering is needed in such case, and social distancing is the priority to manage in the present situation”.

A model in relation to the COVID-19 and agroforestry in the upcoming days.

According to the objective set for the proposed model, different interactions with Key informants and secondary literature review and a primary summary of the study were further compiled into the summary sheet that was illustrative using ranking priority in excel and a proposed conceptual model was created to illustrate this objective here with-

(Figure-2, Proposed model for the role of different actors during and after COVID-19 in case of Study area)



(Source: - Based on field visit-Primary/ Secondary data, KII interview, 2020)

In the case of the model suggestion, figure-2 suggests the appropriate model for this study. Three prime actors associated are Farmers/ Beneficiary, Local Government, and Development Agencies respectively. The prescribed model is somehow an opportunity in the recent and future time for all. For farmers or beneficiary is one of the principal actor, who is the prime victim of COVID pandemic more but through model, it can be proposed that the self-consumption of farm products will help to mitigate the food security cycle of the farmer, this model is an opportunity

to increase the future production for food security using marginal land, which is unused since a long period. On the other hand, off/ on-farm wage opportunities could generate in the local area, and instead of out-migration, this wage opportunity will bring an opportunity to the Chepang at the local level. Agroforestry farming and the upcoming farming cycle will take considering into the implementations of regular farm practice. The use of farm and community products (banana, pineapple, vegetable, and dairy product) will add the nutritional value for the health benefit of family members during the epidemic situation, so this process will help in a pandemic situation will assuredly keep farmers sustainable to perform his routine in the community level.

On the other hand, the role of local government (Rural Municipality) also played a vital role in the development of Nepal. After federalism, the Rural Municipality is more powerful and capable (publically elected from the same area) to perform the task at the local level. At the primary stage of lockdown, Rural Municipality (RM) provided the relief support to the needful people in the Rural Municipality (RM) prioritized given to the formal/ informal wage labors, marginal, disadvantage families with less income, old age, disable were benefited through the relief support given for 12 days following the Government norms set through (Rice-4 kg for per people, Pulses-1 kg for 3 people, 2 kg for 4 people, 3 kg for 7 people and above, Veg oil-1/2 ltr for 3 people, 1 ltr for 4 people, salt-1 kg to the family and soap 1 piece to each family) (MoFAGA, 2020).

Rural Municipality confirmed some 30 households (150 people) have received the food support through Raksirang Rural Municipality in the lockdown period. Since, relief is a preliminary and short-term support. COVID is not only a challenge instead an opportunity for the Rural Municipality (RM) to run some constructional and infrastructure activity and engage more labor within the area will benefit. For this instead of relief distribution, a conditional wage opportunity furthermore planned through the government will help managing labor time and income. A policy formulation for the marginal land utilization and local planning budget will certainly be useful work through Rural Municipality (RM) considering COVID as a future development modality.

Likewise, Chepang, Tamang, and Dalit's are the people residing in the Rural Municipality (RM) so this scheme of rural construction will bring an opportunity to the wage labor to get involved and earn at the local level. The government (Could be Rural Municipality, Provincial, Federal) or Private Sector could further purchase or manage the farmer's product connected with traders- cooperative, or may distribute the production to the demand area through networking channels.

At last, the model prescribed some activity for the Development agencies (International/ Non-Government Organization (I/ NGO), donor, United Nations) could mobilize own/ external resources in the short and long-term strategy for the community, the model suggests the agencies to provide support to the needful poor farmers. Some orientation, training about social distancing and hygiene (washing, uses of mask, sanitization) and many other personal safety programmes would be efficient in the present situation. Distance learning would be an innovative and essential method in the current situation. For the farmer's production, the development sector could play a fundamental role facilitate, coordinate with multi-sectoral for the sale of farm products. The advocacy for marginal land farming, lease land, and much other relevant policy formulation is the need of present situation and development agencies may play

a vital role in this. In the case of program activity, the development sector may initiate some creative and sustainable activity, where both farmers and local governments will benefit.

A KII with the officials of Raksirang Rural Municipality also shared that-
"Instead of relief support, a conditional wage is planning will engage farmers to work and provide cash support on behalf of work, similarly the Rural Municipality (RM) is also planning of the sustainable activity to keep farmers secured in the future".

5. DISCUSSION, CONCLUSION AND RECOMMENDATION

The study result shows that the COVID-19 adversely affected the Chepang community due to on-going lockdown; Socio-economic situation of Chepang depends on the farming practice through agroforestry. Ongoing farm-based agroforestry practices are followed through agri-silviculture and agro-pastoral system, ongoing lockdown immensely affect the HHs of agroforestry practioner in terms of farm product sale and stop off on- off farm activity in the nearby area.

However, the standing production is helpful to meet the crisis being consumed own production instead of sale; a long-lasting lockdown may reduce the HHs stock and could affect the livelihood of Chepang. A model prescribed targeting three main actors as Farmers, Local government, and Development agencies who had a magnificent role in the community development in the coming days the steps provided are the best way to promote, utilized, and use the local product, planning and manage the local resources for future.

CONCLUSION

Agroforestry practices help farmers to manage the food in the crisis period. Relief support through government helped whereas no wage opportunity create problem in the. Agroforestry practice hopes for the farmer ongoing practice and its production helpful in the crisis and utilization of marginal land for future production is the change occurred from the field.

After agroforestry, practices trees and banana with grass make some innovative changes in the life of Chepang (Piya et al., 2011). A proposed model made for three main actors such as Farmers, Local government and Development agencies played a vital role in the future development of the community and may create a sustainable environment during crisis occurred.

RECOMMENDATION

Agroforestry promotion and technical support, and market linkage is immensely the prime requirement of the study area. A recommendation has made to initiate a working environment for the wage labor in the study area with conditional support program such as rural road strengthening, small micro project, vegetable collection center, other infrastructure is the need of the area, and labor of local area will benefit from the work during a pandemic situation. At last, policy implication to the land management and self-sustainability for the Chepang and other wage labor is immense requirement and local government is the best way to overcome the crisis.

Annex:

(Annex-1, Analysis on general information and socio economic situation)

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
Total family members	100	1	11	554	5.54	1.94583
Land Registered	80	1	30	587.5	7.3438	5.76743
Land Unregistered	84	0	24	577	6.869	5.06055
Lease/ Kabuliyat land	8	0	4	5	0.625	1.40789
Khoriya/ Forest	18	0	10	45	2.5	2.47933
Goat's	96	0	80	1006	10.4792	11.04629
Cow/ Buffaloes/ Ox	94	0	23	336	3.5745	3.07781
Pigs	74	0	8	113	1.527	1.69789
Poultry's	100	2	30	1197	11.97	5.26942

(Source: Field visit, 2020)

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