EMIGRATION AND FEMINIZATION IN NEPALESE AGRICULTURE: IMPLICATIONS FOR FOOD SECURITY

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ABSTRACT

Nepalese labor industry of agriculture sector is dominated by female and has direct and indirect effect on food security. This paper has attempted to find and analyze consequences of male emigration and feminization in agriculture, and implication on food security. The study revealed foreign employment as major reason for international migration of Nepalese people. Higher male emigration 91.3% with large remittance inflow has ensured food secure condition in short run but there is long run food insecurity threats due to lower domestic production and higher investment on consumption. Further extra work burden in female due to absence of active male labor and limited agriculture knowledge and skills in agri-business has resulted land abandonment and underutilization of agricultural resources. The study suggested to develop female friendly agricultural practices, investment on productive enterprises and attract youth and female in agriculture to ensure sustainable food security.

Key words: Agriculture, Feminization, Food security, Land Abandonment, Outmigration

INTRODUCTION

In Nepal, the balance cereal distribution system is showing surplus food secure condition (MoALD, 2018). The statistical data of agriculture shows the positive aggregate national cereal balance. The cereals and pulses production in 2020 was increased by 2.3% and 5.8% (MoALD, 2021). The domestic production is insufficient to meet the demand of food, thus the cereal crops like rice, wheat, maize and other food like pulses, meat, etc. are imported to meet the demand of food. Despite of positive aggregate cereal production, twelve districts of high hills were still suffering from food insecurity in 2018 (MoALD, 2018). The Global hunger index of Nepal is improving over the years from 37.4 in 2000 to 19.5 in 2020. Nepal ranks 73rd out of 107 qualifying countries. Nepal is graduating from serious to moderate severity. However the food insecurity is still prevailed in mountain regions of mid-western, far western and central regions (Acharya, Ghimire, Upadhayay, and Poudel; GHI,

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2020). Improved and sustainable agriculture ensures national food security that eventually increases the economic growth and reduce the poverty of nations (Gauchan, 2008). Agriculture is the main pathway to achieve food and nutrition security. It contributes 27.08 percent to GDP of Nepal considering itself as a mainstay for the Nepalese economy (MoALD, 2021). Around 65.6 percent of the population are engaged directly in agriculture for their livelihood where 60.2% is represented by male population and 72.8 percent by female (CBS, 2012b).

Active participation of female labor in agriculture has increased from 36 percent in 1981 to 45 percent in 1991, 66.5 percent in 2016 and 57.5 percent in 2018 (CBS, 2014, 2016, 2019). This shows higher involvement of female in agriculture than male counterparts. Although female has a major functional role in food production and higher contribution to food security, national representative samples still lack the information of food and nutrition security in relation to female in their documents (Singh, Singh, and Ram, 2014).

Higher male labor emigration (91.3%) automatically transfers a household and farm responsibilities to female population. In this scenario, workload of farms and household has increased for female, while trend of the farming has decreased and land abandonment has increased (Chaudhary *et al.*, 2020b). Thus the land use system is changing with male emigration. During 1980s more than 80% of the population was engaged in agriculture. Agriculture used to be a dominant GDP contributor of a country. However, the recent data shows only 65.6% of the population engaged in agriculture. Likewise, the GDP contribution of agriculture in Nepalese economy has reduced to 27.08% (CBS, 2012b; MoALD, 2021; MoF, 2019). Further, lack of labor and female friendly mechanization, female are facing the drudgery in farming. In this scenario many female headed household have shifted from farming and relying on subsistence farming (Tamang, Paudel, and Shrestha, 2014). However the document related to food security of Nepal shows improved food security in present context when compared to the previous period (MoALD, 2018).

Thus, the objective of this paper is to find out what consequences does the female member of family bears after the male emigration and how the situation has affected on food security.

METHODOLOGY

This paper is completely based on secondary information The study represents the national issues on existing situation of female in agriculture, food security, and labor industry. The secondary information from Government reports like Annual Household Survey (AHS), Labor survey, Economic survey, Census reports and academic journals were reviewed.

RESULT AND DISCUSSION

LABOR OUT-MIGRATION

Foreign employment is a major reason for international migration of Nepalese people (IOM, 2019). Most of people in rural and hilly areas emigrates temporarily or permanently in search of jobs, education and other opportunities leaving the house and farm responsibilities to female and old aged people (IOM, 2019). The popular destination countries for labor migration are India, Qatar, United Arab Emirates, Saudi Arabia, Kuwait, Malaysia etc.(IOM, 2019). In 2018/19 among a total emigrated population of 236,630, 215630 (91.3%) accounted male and 20578 (8.7%) were female (MoLESS, 2020). Thus the emigration of male population is higher than female.

FEMALE IN AGRICULTURE INDUSTRY

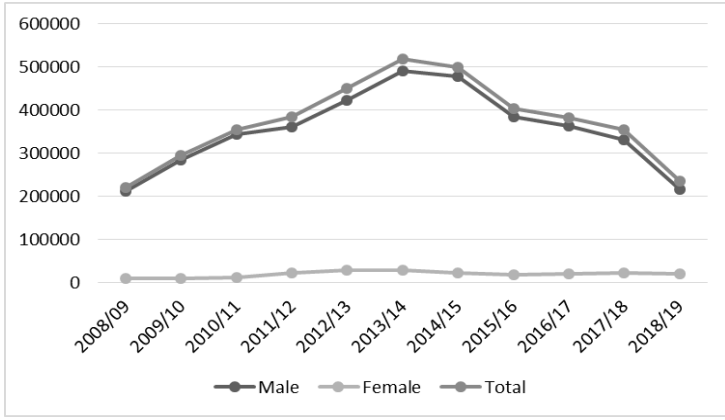

Figure 1. Trend of labor emigrant from Nepal (2008/09-2018/19)

Source: Ministry of labor, employment and social security (MoLESS, 2020)

Table 1: Employment rate of Male and female in formal and informal sector of Nepal

Employment	Formal employed			Informal employed		
	Male	Female	Total	Male	Female	Total
Agriculture	1.3	1.2	1.3	59.7	66.5	20.2
Non- Agriculture	39	32.3	36.5	45.8	32.9	41
Total	40.3	33.5	37.8	59.7	66.5	62.2

Source: Report on Labor Force Survey, (CBS, 2019)

From 1990 to 2019 there is tremendous increase in female to male ratio of labor participation (Worldbank, 2020). With increased participation of female in labor industry, economic active population of female has increased and higher than male (CBS, 2014). The majority of male are involved in construction, manufacturing and transport industries, while female are employed in agriculture, wholesale and retail trade (CBS, 2019). Further, the

employment rate of male is higher than female. From (Table 1) majority of formal sectors (40.3%) like waged agriculture and non-agricultural activities were occupied by male (CBS, 2019; NDRI, 2017), whereas as 66.5% female were employed in informal sectors basically in agriculture (paid and unpaid) (CBS, 2019). In general, among the total population engaged in agriculture (65.55% of total population), the share of female participation is 70.2% (CBS, 2011). Thus, increasing trend of female's involvement in agriculture as a labor force and occupation has feminized agriculture (Bhadra and Shah, 2007; CBS, 2015).

MALE EMIGRATION ON FEMALE HEADED HOUSEHOLD AND DECISION MAKING

In contrast to male, the female ownership to the land, assets and household is lower in Nepal (CBS, 2017; NPC, 2013). In the past, female used to have a submissive role in assets and household ownership. They used to agree the decision of the male member in the family, underrating and neglecting their own decisions (CBS, 2012a; MOHP, 2012). But the trend of female ownerships and female headed households is increasing in Nepal (CBS, 2016). The total female head household in 1996 was 12.4%, which was increased to 31.3% in 2016 (Worldbank, 2020a). One of the main reason for female headed household was emigration of male representatives (CBS, 2017; NPC, 2013; Shakya, 2014). However, pattern of household head is de-facto household head. There is an automatic shift of male responsibilities to female for a temporary period till the return of male (Joshi Rajkarnikar and Ramnarain, 2019; Pandey, 2019). Further, female in rural area are constrained by weak decision-making and bargaining power (FAO, 2019). Thus the decision making power of de-facto household head is vested upon the male representatives. Though there was improvement of decision making power of female after 2001, but from 2011 to 2016 there was decline in decision making power of female (MoH, NewERA, and ICF, 2017).

FEMALE HEADED HOUSEHOLD IN CONSUMPTION AND PRODUCTION

The mother group are found effective for increasing dietary diversity and food intake (MoALD, 2018). Feeding practices and nurturing behavior of females have the power to improve the nutritional status of children themselves and the family (MOHP, 2012). Different studies shows that female are more underweight in male headed household in comparison to female headed household (Kennedy and Peters, 1992). Thus, female headed household and decision making power plays positive and significant role in total calorie intake of house, improvement of nutritional status and reducing child mortality (IOM, 2019; MOHP, 2012). However the consumption in a female headed household is affected by several factors like the number of children, size of landholding, family and remittance. The female headed household with adequate or large remittance has a better nutritional status

than others. However, female headed households with low income and low remittance have worst food and nutritional status (NPC, 2013).

Female headed household with decision authority have control over household income, consumption pattern, choice for own health care, household purchases and food selection (MOHP, 2012).With male out-migration, there is increased in the decision making power of female on farm for selection of crops and varieties for crop production (IOM, 2019). Nepalese female are involved in several activities including agriculture (self-employed) and other household chores (MoPE, 2016; Pattnaik, Lahiri-Dutt, Lockie, and Pritchard, 2018). From 2008 to 2015/16, working hour of female has increased from 34.8 hours per week to 67.6 hours, whereas; working hour of male has increased at a slow rate from 43.1 to 54.1 hours per week (CBS, 2009, 2016). The entire tasks that used to be done by the male before out-migration are carried by the female. There is an extra burden of work in female headed households, including farm and household.

The female headed household with adequate or large remittance have better opportunities for commercial vegetable farming and high value crop production (Adhikari, 2008; Upreti, Ghale, and KC, 2016; Upreti, Ghale, Shivakoti, and Acharya, 2018). However, there is a severe scarcity of physically strong labor due to male emigration. Income from migrated labor have the ability to hire labor, but the prevailed labor scarcity, never gives an opportunity to move the subsistence farming towards more profitable commercial farming (Maharjan, Bauer, and Knerr, 2013). Thus a female household is based on small scale production and depending on lower labor required crops like vegetable. So, out-migration has negative impact on cereal production like paddy, wheat, maize and millet (FAO, 2019; Maharjan *et al.*, 2013). Further, the production value from farm managed by female is lower than farm managed by male. There are gender inequalities in accessing, adopting and using technologies. Likewise, there is distinct difference between the male and female for their agriculture knowledge and skills in selection of crop varieties, cultivation practices, harvesting and processing. Limited knowledge on markets demand and supply, weak decision making and bargaining power, and restriction opportunities on setting up micro-enterprises and agriculture business has hindered female entrepreneurial potential in Nepal (FAO, 2019). Thus female role in production is still lagging as compared to the male counterpart.

Male emigration and transfer of ownership to female, the social and cultural aspects has become wider for female. Female are more involved in several activities like saving, participation in cooperatives, which has increased their access to credit and loan, and gained political and economic position (Gartaula *et al.*, 2017). For this situation female has diverted from agriculture to other aspects (Gartaula, Niehof, and Visser, 2010). Also, the

socio-cultural aspects of society have hindered female to work in the field (FAO, 2019). Higher liquidity and reduced capital constraints have made easier to depend on external production (Maharjan *et al.*, 2013). Further, the cost of production in agriculture is higher, with respect to this they feel effective to depend on external production (FAO, 2019). The remittance has increased the consumption and enhanced the lifestyle of households, which is also a reason for internal migration from rural to urban areas. During 2019, among total internal migrants, 65.1% of population have migrated from rural to urban. The internal migration of female was found higher than the male counterpart. Around 10.4 % of internal migrants were found migrating to urban areas for easier lifestyle (CBS, 2019), Similarly, the cropping intensity of labor intensive agriculture depending on female is less resulting low production (Ojha *et al.*, 2017; Tamang, Paudel, and Shrestha, 2014). Thus the consequences of out migration from rural areas, land underutilization and land abandonment are severe in male emigrated household (FAO, 2019).

Table 2: Representation of annual working hour per week of male and female (2008-2015/16)

Category	2008	2013/14	2014/15	2015/16	2017/18
Male	43.1	47.9	49.9	54.1	48
Female	34.8	58.6	58.8	67.6	39

Source: Nepal Labor Force Survey and Annual Household Survey, Nepal

The out-migration of male representatives has created extra social and economic burden to female household head (FAO, 2019). The drudgery and extra physical burden creating triple work burden (production, reproduction and community) (FAO, 2019) have made female unable to farm. The table 2 depicts increasing annual working hour per week of female from 43.1 to 54.1 from 2008 to 2015/16. However the working hour has decreased to 48 in 2017/18, simultaneously with decrease of average annual working hour per week (44 hours) from 60.85 hours. Apparently male out-migration has feminized agriculture, but in fact it is a feminization of agrarian distress. This result was found similar with the finding of (Laxaa, 2015; Tamang *et al.*, 2014).

REMITTANCE, FOOD CONSUMPTION AND PRODUCTION

Table 3: Remittance inflow and its effect in food security indicators

Description	2013/14	2014/15	2015/16	2016/17
Remittance (Billion NRs)	543.3	617.3	665	695.5
Per capita food Consumption (Nominal)	31008	33090	33085	34978
Food Consumption score	62.8	66.5	65.2	71.6
Poor food consumption score	8	4.6	4.4	5.3
Acceptable food consumption	80	84.5	84	85

Source: Nepal Living Standard Survey (NLSS III), 2011; Annual Household survey (AHS), 2016/17

Over a last decade food insecurity and malnutrition nearly of 30 million population has reduced in Nepal (NPC and WFP, 2019). Till 2016, the food insecure population was reduced to 4.6 million people, with 20 %, 22% and 10% of mildly food insecure, moderately food-insecure and severely food-insecure respective household (NDHS, 2016). Nepal is making good progress in reducing the food insecurity (NPC and WFP, 2019). Remittance is the major contributor to reduce food insecurity (Sah, 2019). The study of (Regmi *et al.*, 2019) found remittance recipient household in food secured condition than the non-recipient household. The food adequacy and food consumption score of Nepal has increased in the context of past scenario. Further expenditure on per capita food consumption has increased with increase in remittance (Table 3).

Figure 2 depicts 24.5% of remittance shares to National GDP of Nepal (MoF, 2019). Remittance has significant contribution to economic growth of Nepal (Paudel, 2015). The additional income of remittance has positive impact in food consumption (Ghimire, 2018). Remittance has increased per capita income and purchasing power parity. The increased household income due to remittance is mainly used for purchasing food, goods and education (Jaquet, Shrestha, Kohler, and Schwilch, 2016). So, majority of remittance is used for improving the quality of life (Bhatta, 2013). Despite of food affordability and availability, huge import has increased trade deficit (Bhatta, 2013; Sharma, 2017). Thus, consumption oriented Nepalese society has threaten the trade balance in Nepal (Dahal, 2014; Sharma, 2017). Further, majority of remittance is from poor family, used for consumption, loan repayment and betterment of quality of life (Zwager and Sintov, 2017). The expenditure in food consumption is higher than production of good and service in Nepal (Bhatta, 2013; B. Khanal, Banskota, and Giri, 2017). According to NLSSII, about 79% of remittance was used for daily consumption and only 2% was used for capital formation (CBS, 2011).

There is a minimal investment of remittance in agricultural sector. The study of (Khanal, Alam, Khanal, and Regmi, 2015) found only 5% of remittance used for agriculture purpose and similarly, (Zwager and Sintov, 2017) found remittance contributed only 1% for improved farm production. While, the study of (Acharya *et al.*, 2019) found remittance used for purchasing seeds and fertilizers, surprisingly the study also found higher fallow land holding in emigrated households. Despite of increasing trend of remittance, there is no increment in agricultural land. There is insignificant remittance investment for extending agricultural land (Chhetri, KC, and Dhakal, 2020). Thus, a major portion of the remittance was used for consumption, saving, and investment in off-farm activities.

Though remittance is key factors in reducing poverty, improving human capital and financing imports, there is decrease in local production and

increased dependency on imported food sources (Sharma, 2017). Food security achieved from additional income from remittance has enhanced land abandonment and neglected crops farming. Hence, sustainable maintenance of livelihood and food security is hampered with better off income from remittances (Maharjan *et al.*, 2013). So there might be threat to depend over other countries for food.

LAND ABANDONMENT AND SHIFT FROM AGRICULTURE

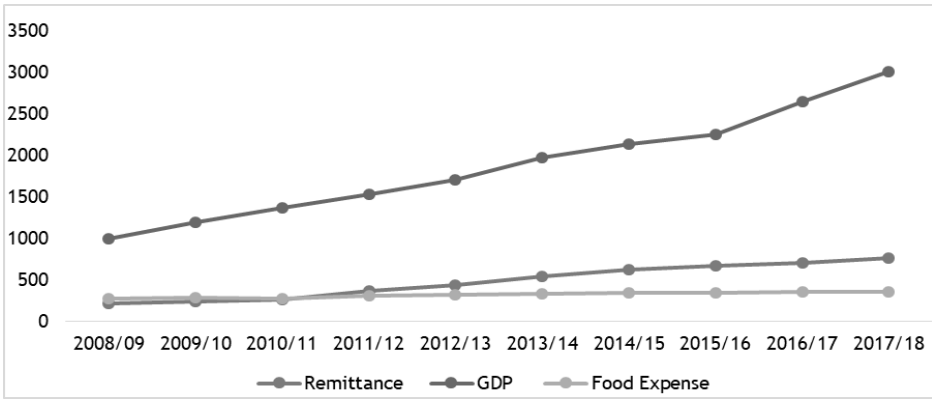

Figure 2. Increase trend of remittance inflow (NRs Billion), GDP (NRs Billion) and food expenditure (NRs) in Nepal

The socio-cultural changes with changing population dynamic has favored emigration (Ojha *et al.*, 2017). Traditional and subsistence farming is unable to maintain a sustainable household economy, which has made agriculture as unviable occupation. Low and reduced agricultural production as a serious threat has lead farmers to follow other alternatives. Thus better economic opportunities in foreign lands have made farming as less profitable. Among several factors, migration is one reasonable factor in land abandonment (Chaudhary *et al.*, 2020b). Land abandonment is most prevalent in the hilly and mountain region of Nepal. Around 23.9% of land was abandoned in 2010/11 which was increased to 37% in 2017 (Paudel *et al.* 2014; Ojha *et al.* 2017). Land abandonment has a serious effect in socio-economic and ecological aspect of people, especially for the poor people (Chaudhary *et al.*, 2020b; Jaquet *et al.*, 2016). The farmers who used to cultivate the productive land for many generations has completely abandoned the land (Jaquet *et al.*, 2016; K. P. Paudel, Tamang, and Shrestha, 2014). The land abandonment has triggered the invasion of wild species, soil degradation, genetic erosion, loss of agro bio-diversity and geomorphic damages like landslide, flood, siltation and erosion. Thus, soil fertility and productivity are decreasing thoroughly in those areas (Chaudhary *et al.*, 2020a, 2020b).

Thus agriculture is vulnerable, less productive, unsustainable and unattractive with long term impact in food security due to male emigration (Craven and Gartaula, 2015). Further, majority of returning labors are engaged in the construction program. The agriculture involvement of returning Nepalese toward agriculture is lower (CBS, 2019). Though the migrant labor has perspective to invest remittance in agriculture and livestock, in reality remittance was oriented to real state purchase. Only 7% of remittance was used as productive investment in business and farm activity (Zwager and Sintov, 2017).

CONCLUSION

Emigration has drained huge number of Nepalese labor in to the foreign land. Accompanied with this, there has been labor scarcity in Nepal including the agriculture sector. With huge number of male emigration (91.3%), their responsibilities of farm and household are transferred to female. Thus there is feminization in agriculture. However, the burden of farm and household, labor scarcity, drudgery has created agrarian distress in female. On the other hand, emigration has also increased the decision making power and female headed household, but analytically these power seems to be *defacto*, which means for temporary period until the return of male. Thus the consequences of emigration has resulted scarcity of productive labor and family labor for agriculture, leading to reduced crop farming and land abandonment. The land use system has converted from agricultural land to underutilized, abandoned and fallow, which has directly reduced the soil fertility and productivity. The degradation of biodiversity and change in land use system has converted the production pattern to the consumption.

Emigration has created farm distress on one hand, has improved the food consumption and purchasing power on another side. It has contributed in reducing the food insecurity. With the transfer of responsibilities, some female have developed their socio-economic status through mobilization of remittance and exploitation of opportunities. With aid of remittance, the household income has increased which has increased the household consumption mainly in food and education, for purchasing luxurious goods. While there is minimal investment of remittance on farming as well as other productive works. However, the entrepreneurial potential of female in farm production is untapped due to their limited knowledge and skills on agricultural practices, technologies and market. Besides there are also restriction for setting enterprises and agribusiness. Likewise, most of technologies are based for male access and adoption. Thus income from remittance has directly assisted to decrease the local production and increase dependency on external food sources which ensures food security for short run, but there is always threat in the long run to sustainable food security.

Male emigration and remittance are not best alternatives for achieving food security and empowering the women. It has deprived women creating high workload in one hand, and making them consumption oriented on other hand. This may break the production chain and misbalance the food security status of a country.

Thus to ensure food security on sustainable way, and to promote the domestic production, the agriculture programs and policies of Nepal should prioritize female friendly agricultural technologies and attract the youth including female for investing on enterprises like crop and livestock.

REFERENCES

Acharya, Y. Ghimire, Y. Upadhayay, N. and Poudel, B., (2019). Assessing migration and remittance status and its effect on maize production in Nepal. Journal of Nepal Agricultural Research Council, 5, 88-95.

Adhikari, R., 2008. Economic dimension of empowerment: Effects of commercialization and feminization of vegetable farming on social status of women in an urban fringe of Western Nepal. Himalayan Journal of Sociology and Anthropology 3: 86-105.

Bhadra, C. and Shah, M. T., 2007. Nepal: Country gender profile. JICA. Kathmandu, Nepal.

Bhatta, G. R., 2013. Remittance and trade deficit nexus in Nepal: A VECM approach. NRB Economic Review, 37.

Billé, R. Lapeyre, R. and Pirard, R., 2012. Biodiversity conservation and poverty alleviation: a way out of the deadlock? SAPI EN. S. Surveys and Perspectives Integrating Environment and Society(5.1).

CBS, 2009. Report on the nepal labour force survey 2008. Central Bureau of Statistics (CBS), National Planning Commission, Government of Nepal. Kathmandu, Nepal.

CBS, 2011. Nepal living standards survey 2010/11. Central Bureau of Statistics (CBS), National Planning Commission, Government of Nepal. Kathmandu, Nepal.

CBS, 2012a. National Population and Housing Survey. Central Bureau of Statistics (CBS), National Planning Commission, Government of Nepal. Kathmandu, Nepal.

CBS, 2012b. National Population and Housing Census 2011. Central Bureau of Statistic (CBS)s, National Planning Commission, Government of Nepal. Kathmandu, Nepal.

CBS, 2014. Population Monograph of Nepal. Volume III. Economic Demography. Central Bureau of Statistics (CBS) , National Planning Commission, Government of Nepal. Kathmandu, Nepal.

CBS, 2015. Annual HouseholdSurvey 2013/14. Major Findings. Central Bureau of Statiatics (CBS), National Planning Commission, Government of Nepal. Kathmandu, Nepal.

CBS, 2016. Annual Household Survey 2015/16. Central Bureau of Statistics (CBS) , National Planning Commission, Government of Nepal. Kathmandu, Nepal.

CBS, 2017. Annual Household Survey 2016/17. R Central Bureau of Statistics (CBS), National Planning Commission, Government of Nepal. Kathmandu, Nepal.

CBS, 2019. Report on the Nepal Labour Force Survey 2017/18. Retrieved from Central Bureau of Statistics (CBS), National Planning Commission, Government of Nepal. Kathmandu, Nepal.

Chaudhary, S., Wang, Y., Dixit, A. M., Khanal, N. R., Xu, P., Fu, B., Li, M. 2020a. Spatiotemporal degradation of abandoned farmland and associated eco-environmental risks in the High Mountains of the Nepalese Himalayas Land. Land 9(1): 1-19.

Chaudhary, S. Wang, Y. Dixit, A. M. Khanal, N. R. Xu, P. Fu, B. Li, M., 2020b. A synopsis of farmland abandonment and its driving factors in Nepal. Land 9(3): 84.

Chhetri, R. K. KC, P. and Dhakal, S. C., (2020). Remittance and its Impact on Nepalese Economy. Acta scientific agriculture, 4(3), 1-5. doi:10.31080/ASAG.2020.04.0818.

Craven, L. K. and Gartaula, H. N., 2015. Conceptualising the migration–food security nexus: Lessons from Nepal and Vanuatu. Australian Geographer 46(4): 455-471.

Dahal, P., 2014. The impact of remittances on economic growth in Nepal: An analysis of a significant basis of development. Asia Pacific Journal of Public Administration 36(4): 261-282.

De Zwager, N. and Sintov, R., 2017. Maximizing the development impact of migration in Nepal: Comprehensive market study.Ministry of Labor and Employment. Nepal.

FAO., 2019. Country gender assessment of agriculture and the rural sector in Nepal. Food and Agriculture Organization. Kathmandu, Nepal.

Gartaula, H. Kirit, P. Derek, J. Rachana, D. Kamal, K. and Pashupati, C., 2017. From food security to food wellbeing: examining food security through the lens of food wellbeing in Nepal's rapidly changing agrarian landscape. Agriculture and Human Values 34(3): 573-589.

Gartaula, H. Niehof, A. and Visser, L., 2010. Feminisation of agriculture as an effect of male out-migration: unexpected outcomes from Jhapa District, Eastern Nepal. International Journal of Interdisciplinary Social Sciences, 5(2).

Gauchan., D. 2008. Agricultural Development in Nepal: Contribution to economic growth, food security and poverty Socio-economic development panorama, 1(3): 49-64.

GHI, 2020. Global hunger index: Nepal. Retrieved from https://www.globalhungerindex.org/pdf/en/2020/Nepal.pdf

Ghimire, D. R., 2018. Factors Affecting Rehabilitation of Food Security: A Study in Earthquake-Affected Districts in Nepal. International Journal of Scientific and Research Publications 8 (8): 20-40

IOM, 2019. Migration in Nepal: A Country Profile 2019.International Organization for Migration. Nepal.

Jaquet, S. Shrestha, G. Kohler, T. and Schwilch, G., 2016. The effects of migration on livelihoods, land management, and vulnerability to natural disasters in the Harpan watershed in western Nepal. Mountain Research and Development 36(4): 494-506.

Joshi Rajkarnikar, P. and Ramnarain, S., 2019. Female headship and women's work in Nepal. Feminist economics, 26(2): 126-159.

Kennedy, E. and Peters, P., 1992. Household food security and child nutrition: the interaction of income and gender of household head. World Development 20(8): 1077-1085.

Khanal, B. Banskota, K. and Giri, D., 2017. Comparative analysis of food expenditure pattern of Nepalese households using Engel Curves. Journal of Business and Social Sciences Research 2(1-2): 27-46.

Khanal, U. Alam, K. Khanal, R. C. and Regmi, P. P., 2015. Implications of out-migration in rural agriculture: a case study of Manapang village, Tanahun, Nepal. The Journal of Developing Areas 49(1): 331-352.

Laxaa, G., 2015. Feminization of Agriculture in Melamchi, Nepal? Addressing gender in agricultural production and household decisions. Master"s thesis dissertation submitted to The University of Bergen. Norway.

Maharjan, A. Bauer, S. and Knerr, B., 2013. International migration, remittances and subsistence farming: Evidence from Nepal. International Migration 51(1): 249-263.

MoALD, 2018. Status Report on Food and Nutrition Security in Nepal. Ministry of Agriculture, Land Management and Cooperatives. Kathmandu, Nepal.

MoALD, 2021. Agriculture and Livestock Diary 2078. Ministry of Agriculture and Livestock Development, Agriculture Information and Technical Training Center. Hariharbhawan, Lalitpur, Nepal.

MoF, 2019. Economic Survey 2018/19. Ministry of Finance. Singhdurbar, Kathmandu.

MoH/ NewERA/ICF, 2017. Demographic and Health Survey 2016. Ministry of Health.Kathmandu, Nepal.

MOHP, 2012. Nepal Demographic and Health Survey 2011. Government of Nepal, Ministry of Health and Population Kathmandu, Nepal.

MoLESS, 2020. Nepal Migration Report 2020. Ministry of Labor, Employment and Social Security. Kathmandu, Nepal.

MoPE, 2016. Nepal Population Report 2016. Government Of Nepal, Ministry of Population and Environment. Kathmandu, Nepal.

NDHS, 2016. Nepal Demographic and Health Survey.

NDRI, 2017. Nationa Assessment on ON Gender Equality and Knowledge Society . Nepal Development Research Institute. Nepal.

NPC, 2013. Nepal Thematic Report on Food Security and Nutrition 2013. National Planning Commission Central Bureau of Statistics. Nepal.

NPC/WFP, 2019. The food security atlas of Nepal. Kathmandu, Nepal: Government of Nepal National Planning Commission/United Nations World Food Programme Retrieved from https://www.npc.gov.np/images/category/Food_Security_Atlas_2019.pdf.

Ojha, H. R. Shrestha, K. K. Subedi, Y. R. Shah, R., Nuberg, I. Heyojoo, B. and Paudel, K. P., 2017. Agricultural land underutilisation in the hills of Nepal: Investigating socio-environmental pathways of change. Journal of rural studies 53: 156-172.

Pandey, R., 2019. Male out-migration from the Himalaya: Implications in gender roles and household food (in) security in the Kaligandaki Basin, Nepal. Migration and Development, 1-29.

Pattnaik, I. Lahiri-Dutt, K. Lockie, S. and Pritchard, B., 2018. The feminization of agriculture or the feminization of agrarian distress? Tracking the trajectory of women in agriculture in India. Journal of the Asia Pacific Economy 23(1): 138-155. doi:10.1080/13547860.2017.1394569

Paudel, K. P. Tamang, S. and Shrestha, K. K., 2014. Transforming land and livelihood: Analysis of agricultural land abandonment in the Mid Hills of Nepal. Journal of Forest and Livelihood, 12(1): 11-19.

Paudel, N. 2015. Migration trend and remittance inflow: The experience of Nepal. Department of Economics, Tribhuvan University, Kathmandu, Nepal.

Regmi, H. R. Rijal, K. Joshi, G. R. Sapkota, R. P. and Thapa, S., (2019). Factors Influencing Food Insecurity in Nepal. Journal of Institute of Science and Technology, 24(2), 22-29.

Sah, B. N., 2019. Remittance and Economic Development of Nepal. Patan Pragya, 5(1), 196-208.

Shakya, K., 2014. Changing gender status: Achievements and challenges. Population monograph of Nepal 2: 221-271.

Sharma, B., 2017. Socio-economic problems of remittance economy: the case of Nepal. Journal of Advanced Management Science 5(4): 285-290.

Singh, A. Singh, A. and Ram, F., 2014. Household food insecurity and nutritional status of children and women in Nepal. Food and Nutrition Bulletin 35(1): 3-11. doi:10.1177/156482651403500101

Tamang, S. Paudel, K. P. and Shrestha, K. K., 2014. Feminization of agriculture and its implications for food security in rural Nepal. Journal of Forest and Livelihood 12(1): 20-32.

Upreti, B. R. Ghale, Y. and KC, S., 2016. Effects of armed conflict on agricultural markets and post-conflict engagement of women in export-led agriculture in Nepal. Journal of International Women's Studies 18(1): 156-180.

Upreti, B. R. Ghale, Y. Shivakoti, S. and Acharya, S., 2018. Feminization of agriculture in the Eastern Hills of Nepal: A study of women in cardamom and ginger farming. SAGE Open 8(4): 1-12.

USAID, 2019. Food assistance fact sheet Nepal. USAID. Nepal. Retrieved from: https://www.usaid.gov/nepal/food-assistance

Vira, B. and Kontoleon, A., 2012. Dependence of the poor on biodiversity: which poor, what biodiversity International Institute for Environment and Development. (pp. 52-84): Wiley Online Library.

Worldbank, 2020a. Female headed households (% of households with a female head) - Nepal. Demographic and Health Surveys. Worldbank. Retrieved from https://data.worldbank.org/indicator/SP.HOU.FEMA.ZS?end=2016andlocations=NPandstart=1996

Worldbank, 2020b. Ratio of female to male labor force participation rate(%)-Nepal. Worldbank. Retrieved from https://data.worldbank.org/indicator/SL.TLF.CACT.FM.ZS?locations=NP