Journal of Development and Social Engineering
Volume 9 | Number 1 | December 2023, 90-99
ISSN 2383-5332 © School of Development and Social Engineering, Pokhara University

Women's Participation in Dairy Livestock Farming in Pokhara

Anita Dahal
School of Development and Social Engineering, Pokhara University
Email:-anitadahal3@gmail.com

Abstract: This study examines contribution of women participation in dairy livestock farming in Pokhara. For this, two objectives, to assess the integration between dairy-livestock enterprise and crop production and to examine the dairy livestock farming income and household food in-security were set.As a commuter zone ward number 5, 18 and 23 of Pokhara Metropolitan City was purposively taken as research area. Those people who were actively engaged in milk business and contributing whole family income and expenditure were purposively taken as universe of this research. Out of those universe, 60 household of women actively engaging in milk business were taken as research sample. Study clearly shows the financial gain to the family from milk business. The saving from milk business itself can pay back initial livestock purchasing investment within a single year. In viewed through the gender prospects livestock farming supports married women in participation on community organization and strengthen the role of women in decision making as a social agent. This business not only engages married women in milk business but also helped to increase the productivity of crops by using cattle manure. Additionally, use of cattle faces in biogas has reduced the fuel wood and fossil fuel consumption and supports sustainable development by providing clean energy together with forest conservation and reduced indoor air pollution. The policies addressing the availability of good source of fodder, business startup fund facilitation, a sustainable market to sell milk, good insurance policy and adoption of cutting-edge technologies can attract young and educated people in the milk business.
Keywords: Farming, Participation, Savings, Gender role, Sustainability

Introduction

Livestock is an integral part of the Nepalese farming system. In most cases, livestock is kept as an asset as well as for manure and draft purposes. In rural areas, biogas can be generated from dung, so that livestock also serves as a source of energy for lighting as well as cooking purposes ((FAO), 2019). According to the 2021 Census of Agriculture cow and buffalo dung serve as cooking fuel and biogas for more than 5.6 percent of total rural households. Census 2011 also shows the huge percentage of women participation (76.7%) in agriculture, forestry and fisheries (CBS), 2014). The Ministry of Agriculture Development has approved Agricultural Development Strategy (2015-2035) by addressing the food and nutrition security of the most disadvantaged and rural population, including lactating and pregnant women, indigenous and excluded communities ((MoAD), 2015).

In Nepal, women comprise of about 50.5% of the total population and account for 78.5 % of the labor force engaged in different occupation. The agriculture sector employed most workers i.e. 73.9 % in Nepal. Furthermore, women workers were

more likely to be employed in agriculture than men, 84.3 percent compared to 62.2 percent. They are mostly cash crops and in the livestock sector they are mainly engaged in small stock production. In addition to this, to a large extent, they are solely responsible for feeding their families ((ILO), 2017). Nepal is better platform to study about the productivity of female farmers. The agriculturally based economy if Nepal, with a subsistence sector where women participate in agricultural activities and perform almost all the activities done by their male counterparts, is ideal for comparing the productivities of male and female farmers (H. Aly, 1999).

A study of evolving pastoral markets in northeastern Somalia documents the crucial role that women play in the commoditization of pastoral camel milk (Nori M, 2006). When pastoral women can sell milk, it enhances local food security (Dietz T, 2001). The degree of control over livestock can vary according to the relative importance of different livestock products in total household income. For example, in most pastoralist societies, women traditionally milk animals and dispose of their products (Talle, 1988). Linked to this is the decision as to the amount of milk allocated for sale versus home consumption (Waters-Bayers, 1985) (Nori M, 2006). In these cases, women may have a large amount of influence over the viability of the herd (Bruggeman, 1994).

In northern Kenya, self-initiated groups convened and managed by women were able to access livestock markets. They recommended that development initiatives that increased direct access by women to small local livestock markets or to cooperatives that could broker their livestock transactions could enable women to have more control over the income generated (D L Cuppock, 2006). Gender balanced programs and projects have become an important goal for many public as well as private agencies (Schindler, 2008). Participatory methods, involving both women and men were supposed as important tools for success in any development programmes (Farrington, 1997). So, gender and gender related aspects are given lip-service by the politicians of most of the developing countries. However, the actual implication of the concept in the real field is very difficult because of the values, norms and moral codes which are embedded in the culture and tradition that determine attitudes and the organizational set-up of the whole community system ((SADC), 2000).

Manjeshwori (2007) studied the contribution of farming on rural livelihood in Nepal: Focusing on dairy farming in Chitwan district of Nepal. This study focused in dairy situation of Nepal, diary production and income earning at household level, milk yield, and role of cooperative, biogas as a source of energy and livelihood strategies being practiced by farmers. The study concluded that the diary has maximum contribution in livestock gross domestic production. Lack of improved breed, quality feed and fodder, health and extension service and marketing aspects are some major constraints of the cattle keeping business (Singh, 2007).

FAO (2010) in the report Dairy Sector Study of Nepal presented the overview of diary sectors of Nepal with its socio-economic impact and contribution to food security. The study concluded that the dairy is the major player to ensure social justice among the rural poor through employment and income generation. Also, the dairy sector contributed to the food security since it regularly channels a large amount of urban money to the rural areas and improves living standard of the rural poor (FAO, 2019). Balak (2013) studied the socio-economic impacts of dairy cooperative taking a case

of one dairy producing industry of Terai region of Nepal. This study concluded that the dairy was found to be the highest income contributor to the rural farmers and dairy was found to be the symbol of pride, prestige and religious priority for the studied community (Balak Chaudhary, 2013). Upendra (2015) published the report titled "National Livestock Policy of Nepal: Needs and Opportunities". This report presented the study of present policies related to livestock promotion and regulation of Nepal. After Performing the Strength, Weakness, Opportunity and Threat (SWOT) analysis of these policies the report concluded the need to formulate a separate, integrated national livestock policy so that Nepal can sustainably increase livestock productivity and achieve diversification, commercialization and competitiveness of the livestock subsector within the changing national and international contexts. The study suggested that to properly address the urgent national agendas of gender mainstreaming, livelihood vulnerability management, climate-change vulnerability management, and the protection and promotion of interests of underprivileged and indigenous communities and of economically underprivileged areas the new policy needs to be pro-poor and inclusive (Upendra B Pradhanang, 2015).

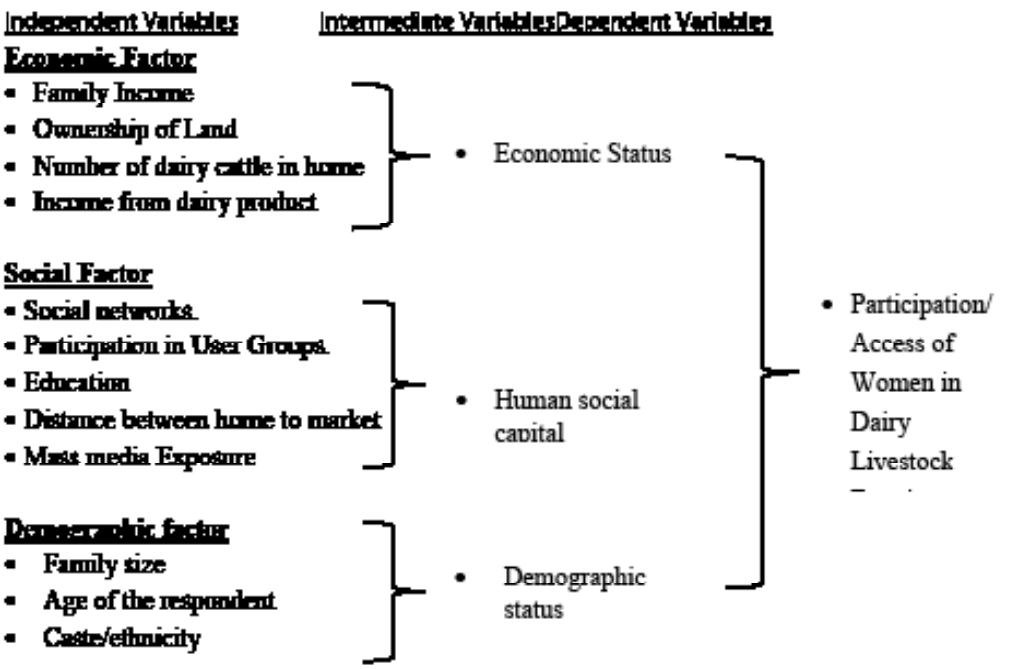
In these contexts, the study is undertaken to quantify expected socio-economic impacts of dairy cattle keeping in rural poor household's food security, income generation and social networks development. Moreover, the study is designed to determine the economic contribution in total house income of dairy cattle keeping in pastoral women households and other actors involved in the marketing of milk.

Methods and Materials

Figure 1. Demonstrates the conceptual framework of the research. To study the contribution of dairy livestock farming on household food security the demographic status, human socio capital factor and economic status was used. For demographic factor the family size, age of the respondent and caste/ethnicity were considered as the major determinants. Social/market networks, women mobility, sibling education, distance between home and market and human capital are the human socio capitals considered as research. Family Income, ownership of land, number of dairy cattle in home and income from dairy product are the determinants used for the study of economic status.

The study was conducted in Pokhara Metropolitan City of Gandaki Province. Households (especially female members of family) who are engaging in dairy livestock farming and commercializing dairy products are the respondents of this research. The research area is semi-urban in nature. Purposively ward number 5, 18, and 23 of Pokhara Metropolitan City were chosen for the study. Because of having closing distance with Pokhara city, they produce the crops according to its high market price in market area.

Figure 1
Conceptual Framework



This study was mainly based on quantitative data being based on multiple tools of data collection i.e. in-depth face-to-face interviews, semi structured questionnaire schedule, and observation. Semi structured face-to-face in-depth interview were taken focusing on the experiences of women while doing livestock farming business. Semi-structured close ended interview was carried out during data collection. During the data collection, case studies were also taken to support descriptive question. The informal interview with the women engaging in livestock farming business, and villagers were also made to know the societal and economic implications of livelihood farming.

The populations of the study were women engaging in dairy livestock farming and selling the dairy products in markets. This research was based on purposively snow ball sampling. Thus, sample group was grown like a rolling snowball. So, sampling members were not selected from a sampling frame. However, from the preliminary exposure visit, it was estimated that 60 female respondents, actively engaged in milk business of ward 5, 18, and 23 of Pokhara Metropolitan city were the sample size of this research. The study was explorative cum action on the basis of structured questionnaire survey applying quantitative approach. The sample design was probability along with purposive snow ball sampling. The researcher own-self was the visitor in community for data collection. The questionnaire was prepared in English language and was asked in Nepali language in the time of interview. Selected respondents were oriented before asking the question.

Results and Analysis

Description of Data Finding

The average age of respondents was around 42 years. Among those respondents,

majority of them were Brahmin and only 10% were Chhetri by caste. Almost all respondent had Hindu as their major religion followed by 3.3% as Buddhist.

All female respondents were married and live with their families. One third respondent had completed secondary level; 21.1% respondents had completed primary level and only 10% respondent had achieved higher secondary level of education. Only 1.7% respondents had able to achieve post graduate education. And the remaining one third respondents were illiterate and not able to have a basic informal education too.

The average land per respondent consists of 5.53 ropanies and this consist of farming and non-farming land. The average livestock per household head was three. The mean year of joining dairy livestock activities was 15 years. Total annual estimated cost for livestock food grain was forty-one thousand five hundred and fifty rupees per household. Average 2 people were fully engaged in livestock growing and selling milk.

Nearly one third of the respondents had chosen milk business because of the occupation shift from generation to generation and having good market facility. Three in ten of respondents had chosen this business for health business and money purpose. Only 5.4% of respondents had selected this business because of environmentally friendly and clean.

The mean milk production of each day of all household is 16.35 liters out of which average 1.32 liters milk is consumed by household in each day. Selling price of milk is one hundred and twenty rupees for all respondents. The mean monthly income of respondent before joining dairy activities was only four thousand three hundred and ninety-two rupees. This includes selling of goat, paid labor and some vegetable selling. After joining dairy activities, the respondents' mean monthly income was consisting of around fifty-two thousand five hundred rupees.

Almost all respondents had biogas in their house. For 60% of the total respondent biogas is sufficient for cooking. Only 40% of respondents use alternate source of fuel wood and LPG gas along with biogas. Almost all respondent had using livestock manure for agricultural harvesting. After using livestock manure, they found production increase in maize, seasonal and off-seasonal vegetables, paddy, barley, mustard etc. Only 5% of them did not use manure for agricultural purpose.

The mean month of food sufficiency for next harvesting period for each household was consist of 1.93. The average month for critical food shortage for all respondent was 9 months and 15 days. More than half of respondents used milk selling income for food management in family. One third respondents had used vegetable selling income to buy food items for family. Only 13.9% respondents used family member's income for food management in family.

Table 1

Descriptive statistics of surveyed data

Particulars	Mean	Standard Deviation	Minimum	Range
Total Income	963020	543779	180000	2208000
Total Expenditure	643310	333363	170400	1629600
Total Saving	319710	516701	(1016400)	2793600
Income from Milk Business	588220	495698	12000	2292000
Ratio of Income from milk to Total Income	0.62	0.32	0.02	0.98
Ratio of Income from milk to Total Expenditure	1.03	0.75	0.01	3.32

Source*: Field Survey, 2019*

Income and Saving Patterns

Table 1 shows the descriptive statistics of the total income, total expenditure, total saving, income from milk business, ratio of income from milk to total income and ratio on income from milk to total expenditure. The total income includes the income sources from agriculture animal product (other than milk and milk products), milk and milk product selling, salary, business/ hotel/other, daily wage, pension/social security, remittance, cottage industry (SME), house rent/other rent and other sources other than above stipulated.

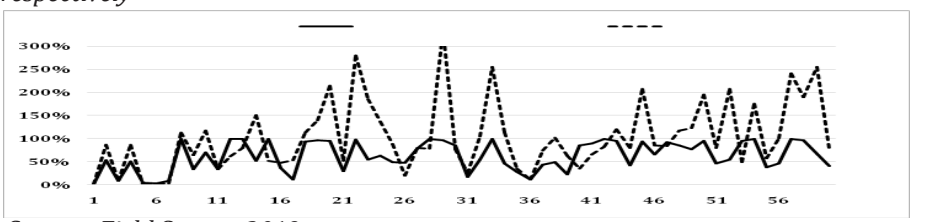
The total expenditure was calculated by addition of various expenditures. They are expenditure for food, clothing, education, health, water, electricity, other energy (cooking gas, kerosene, petrol etc.), Entertainment expenses (telephone, mobile, newspaper, TV, internet etc.), fodder expenses, house rent and miscellaneous (festivals, interest of debt etc.). The mean of total income of the respondent seems satisfactory comparing to the average household income of Nepal. From calculation average Per Capita Income is found to be 0.192 million Nepalese rupees. However, the average expenditure per household is also high as compared to Nepalese average expenditure level. Analysing the saving data statistics, the average saving seems to be satisfactory in context of urban rural areas of Nepal, however the data variation is notable ranging almost 2.8 million with minimum loss of nearly one million and standard deviation of around 0.5 million Nepalese Rupees. From the survey it seems that saving depends more on the expenditure pattern rather than the income pattern and does not depend on the number of cattle or family size or the land ownership. The lower saving household have more expenditure in education and medical purpose. However, result finding of maximum i.e. 75 % respondent saves money can conclude the viable economic consequence of the milk business in study area.

Contribution of Milk income to Total Income and Expenditure

Income from milk and the descriptive statistics of the milk income is illustrated in table 1. and the contribution ratio of milk income to total income and total expenditure is shown in line diagram of figure 2. The average of 62% contribution in total income is from milk business income with standard deviation of 32%. From the data we can conclude that the respondent income is highly dependent on milk business. The contribution of milk business on expenditure have average of 103% with standard deviation of 75 %. That means some respondents have sole income source of milk business or some respondents all expenditure was covered by milk income with saving also. We can conclude from the statistics that the coverage of income from milk in total income and total expenditure is satisfactory.

Figure 2

Line diagram showing percentage of milk income to total income and total expenditure respectively



Source: *Field Survey, 2019*

Correlation analysis

The correlation test of family size to total livestock, family size to total saving, total land to total livestock total land to total saving and total livestock to saving were tested. From test it is found that there is no correlation between the family size to total livestock, family size to total saving, total land to total livestock, total land to total saving and total livestock to saving. Which concludes that saving does not depends on the family size, total land or total livestock and total livestock does not depend on family size or total land. However, there total saving depends on saving from milk and on increasing family size, income from milk decreases.

Table 2

Correlation of Different Parameters

Correlation Test	Correlation Value	Result
Family size to Total Livestock	-0.065	No Correlation
Family Size to Total Saving	-0.061	No Correlation
Total Land to Total Livestock	0.171	Very low Correlation
Total Land to Total Saving	-0.061	No Correlation
Total Livestock to Total Saving	-0.050	No Correlation
Total Saving to Income from Milk	0.525	Saving depends on Income from milk
Total Livestock to Income from milk	0.195	Very low Correlation
Family size to Income from Milk	-0.180	Very low Negative Correlation

Case Studies

Case I

A Forty-eight years old woman residing in Pokhara Metropolitian City-18, was attracted in commercial milk farming business since her teenage time. Because of the extreme family pressure, she married in her early age. Her married life was not successful because of her husband's daily mental and physical torture. Since her fully engagement in care economy sector i.e., engaging in farming activities, child care, elderly care and kitchenware works, she cannot earn money for her husband's family, and finally divorced. Being alone, she was helpless and stayed in the maternal family. To fulfil the basic needs, firstly she engaged in agro-farming business, however this is just sufficient for substance level. Having very close to city area, she found milk business along with produced seasonal vegetable for as interesting for earning and livelihood sustenance. Then after she choose the milk-business and started the milk business. She kept four milk keeping buffalos for 15 years, which gives 20 liter of milk daily. She sells milk in Pokhara Valley, with milk she brings vegetables to sell from her farm house also. Now she has sufficient income from milk selling to make one floor concrete house, medicine to cure her ill mother, the daily food and living expenditure. She participates in cooperative because of milk business. She also saves some part of money in Bank. Now, her life is happy and satisfied. She thanks milk business for contributing her to better livelihood.

Case II

A woman of age Sixty, living in ward 18 of Pokhara Metropolitian City is a milk seller. When she was just twenty-six years old, her husband met an accident and left her along with four children. Having fewer land for agriculture, poor housing situation, no

income source and being sole manager of household food supply and other activities, she was in extreme economic situation. Having some financial assistance from former Sarangkot Village Development Committee and social group she started to keep buffalo at her home. Then after she began to sell milk and milk products results in income generation. From which she manages the household food and children education. The sole income source as milk business, she not only manages household but also the higher education of siblings, marriage expenditure of children and some saving also. She is continuing the milk selling business till now, and a happy milk seller.

Case Analysis

These two case studies show how women are being able to sustain their livelihood from the engagement in dairy livestock farming. These women are happily bearing the responsibilities of household head, a good community member and even sole responsible factor for children's household food and child education management. This indicates women's participation in dairy livestock farming has supported them in economic sustenance at one hand and they are supporting to their children's career at another.

Results and Discussion

The research was conducted in such semi-urban area to find the condition how the urban area affect its commuter zone. From the finding, it was found that there was almost no diversity in religion and caste among respondents. All respondents were married and most of the respondents had educational level lower than secondary level. Family size of the respondent was slightly higher than the national average. Main source of family income was found milk business. It seems that milk business is indifferent to religion, caste, family size and total land owned of respondents. However, milk business becoming boon for the socio-economic benefit of married and low-educated women of study area.

From the major finding it can be said that gradually women's care economic sector can be noticed and valued if they commercialize their agro-products to market area. The average monthly income of respondent before and after joining the dairy livestock farming indicates the increase of monthly income of the respondent. Besides the dairy livestock farming, the crop-livestock integration has supported in agricultural harvesting and biogas fuel energy for cooking, whose source was animal faces and was sufficient for cooking for maximum household has a chain effect in environmental protection by saving fuel wood, income saving from reduced Liquefied Petroleum Gas (LPG) consumption and improved respiratory health condition from smokeless cooking

Conclusion

Nepal is patriarchal country, where majority of men works outside of the home and women works for the indoor activities. In such situation, their key engagement in dairy livestock farming can sustain economic independency and environmental conservation too. Women's care economy value in Nepal is still unnoticed and under-valued but if we evaluate their care economic value, they are the major most citizen to contribute in national Gross Domestic Product.

The present study was mainly focused on the participation of women in dairy livestock farming as well as the crop-livestock integration in household food consumption and management. It focuses on the livestock farming business of sub-urban areas of Pokhara Metropolitan City where especially the milk business was becoming

a key economic agent for empowering the women's financial and social level.

The livestock farming business families' demographic character can be simply defined by the average family size is slightly greater than Nepal's average, mostly joint family, very low diversity in religion and caste, young and people with higher education are not much attracted to the milk business and married women are only involved in the business. This business helps married women in participation on community organization and strengthen the role of women in decision making as a social agent.

On one hand, it engages married women in milk business and on other hand the by-product can be used as manure which increase the productivity of crop and fodder for the livestock. Further, the use of biogas has reduced the fuel wood and fossil fuel i.e., LPG consumption and helps to sustainable development by providing clean energy, forest conservation and reducing indoor air pollution.

From the research, we can conclude that the respondent had the substantial saving and contribution to saving mainly consisting of income from milk business. The saving from milk can payback the investment needed to purchase new milk giving average livestock number in a year. Providing good source of fodder incentives in purchasing the livestock, a sustainable market to sell milk, good insurance policy, and cutting-edge technologies adoption can attract the younger and educated people in this business and can help to boost the livestock farming business even better.

Acknowledgement

I would like to express my sincere gratitude to the School Research Committee (SRC) of School of Development and Social Engineering, Pokhara University in providing funding for this research.

References

A Talle. (1988). *Women at a loss : changes in maasai pastoralism and their effects on gender relations.* Stockholm: Department of Social Anthropology, University of Stockholm.

A Waters-Bayers. (1985). *Dairying by Settled Fulani Women in Central Nigeria and Some Implications for Dairy Development.* London: ODI Pastoral Development Network Paper, Overseas Development Institute.

Abdirizak Arale Nunow, Adano Wario Roba and zaal F Dietz T. (2001). Pastoral Commercialization : on Caloric Terms of Trade and Related Issues. Amsterdam Research Institute for Global Issues and Development Studies Organisation of Social Science Research in Eastern and Southern Africa, *African Pastoralism, Conflict, Institutions and Government* (194-234). Amesterdam: Pluto Press.

Central Bureau of Statistics (CBS). (2014). *Population Monograph of Nepal. Volume III (Economic Demography).*kathmandu: Government of Nepal. National Planning Commission Secretariat.

FAO. (2019). *Country Gender Assessment of Agriculture and The Rural Sector in Nepal.*kathmandu: Food and Agricultural Organisation.

Food and Agriculture Organization (FAO). (2019). *Country Gender Assessment of Agriculture and Rural Sector in Nepal.* Kathmandu: Food and Agriculture Organization of the United Nations.

H Bruggeman. (1994). Pastoral Women and Livestock Management: Examples from Northern Uganda and Central Chad. *Issue Paper 50, IIED, London*.

International Labour Organisation (ILO). (2017). *Nepal Labour Market Update.* Kathmandu: International Labour Organisation Country office for Nepal.

J Farrington. (1997). Farment's participation in agricultural research and extension : lessons from last decade. *Bio Technology and Development*.

K Schindler. (2008). *Time Allocation, Poverty and Gender: Evidence from Post-War Rwanda.*Stuttgart, Germany: University of Hohenheim.

Kenyanjui MB, Yusuf MA, Mohammed FH Nori M. (2006). Milking drylands : The emergence of camel milk markets in stateless somali areas. *Nomadic Peoples 10*, 9-28.

M.P. Shields H. Aly. (1999). Privatization and surplus labour in egyptian textile industry. *Economic Letters Vol 63*, 187-91.

Manjeshwori Singh. (2007). *Contribution of Farming on Rural Livelihood in Nepal: Focusing on Dairy Farming in Chitwan.* Hiroshima University, Japan: Graduate School for International Development and Cooperation.

Ministry of Agriculture Development (MoAD). (2015). *Agriculture Development Strategy (ADS) 2015-2035.* Kathmandu: Ministry of Agriculture Development, Government of Nepal.

Mukul Upadhya Balak Chaudhary. (2013). Socio-Economic impact of diary cooperatives. *Economic Journal of Development Issues Vol. 15 and 16*.

S Desta, A Wako, I Adenm, G Gebru, S Tezera, C Tadecha D L Cuppock. (2006). *Collective Actions by Women's Group to Combat Drought and Poverty in Northern Kenya.*California: Global Livestock Collaborative Research Support Program, University of California-Davis.

Soni M Pradhanang, Arhan Sthapit, Nir Y Krakauer, Ajaya Jha and Tarendra Lakhankar Upendra B Pradhanang. (2015). *National Livestock Policy of Nepal: Needs and Opportunities.* Basel: MDPI.

Swiss Agency for Development and Cooperation (SADC). (2000). *Livestock and Gender: A Winning Paper.* Bern: Swiss Agency for Development and Cooperation.