

Status Paper

**DAIRYING IN SOUTH ASIAN REGION:
OPPORTUNITIES, CHALLENGES AND WAY FORWARD**

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ABSTRACT

South Asian region is blessed with high diversity of dairy animal genetic resources. The role of dairying in livelihood, nutritional and food security of millions of people living in south Asian countries has been well understood. Among livestock, dairy animal assumes much significance since dairying is acknowledged as the major instrument in bringing about socio-economic transformation of rural poor and sustainable rural development. Dairying provides a stable, year-round income, which is an important economic incentive for the small holder farmers. Dairying directly enhance the household income by providing high value output from low value input besides acting as wealth for future investment. This region is home for about 745 Million of Dairy Animal Populations that accounts 21% of global dairy animals. Besides, 25% of world's cattle and buffaloes, 15% of the sheep and goat, and 7% of the camel are inhabitant in the region. South Asia is currently producing about 200 Million tons of milk that accounts around 20% of global production despite low productivity of the dairy animals. This study focused the data related to dairying in different countries of the region and situation analyses of input and delivery system for identifying the points of interventions to boosting dairy production and processing. In gist, this study documented the facts about the current dairying in the south Asia and envisages the priorities to make the dairying sustainable and more productive with the aim to cater the inclusive development of dairying in the region. It is hoped that this will provide a wealth of information to the researchers, planners, entrepreneurs and other stakeholders for upliftment of dairy industry in the region.

Keywords: Dairying, productivity, opportunity, challenges and way forward

INTRODUCTION

Food security exists when all people at all times have access to adequate levels of safe, nutritious food for an active and healthy life (World Food Summit, 1996).

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The livestock sector is important to food security, not only for rural smallholders who rely directly on livestock for food, incomes and services, but also for urban consumers, who get benefit from affordable high-quality animal-based food. Like other livestock the dairy animals play an important role in all four main dimensions of food security: availability, access, stability and utilization. Dairying is acknowledged as the major instrument in bringing about socio-economic transformation of rural poor in developing countries. Dairy industry provides newer avenues for employment, both direct and indirect, and improves the nutritional standards of people. Dairy cattle/buffaloes have an immense contribution for sustainable rural development as unlike crop which is seasonal, dairying provides a stable, year-round income, which is an important economic incentive for the smallholder farmer to take up dairying. Milk plays a major role in reducing poverty and is a source of nutritious food in rural and urban population. For the small-scale producer milk is a key element for household income and food security and is a regular source of income for rural families and their survival. FAO estimates that for every 100 litres of milk produced locally, up to five off farm jobs are created in related industries like collecting, processing and marketing (FAO, 2012). Daily one glass of milk to the children in Asia can contribute tremendously to improving the nutritional levels in the region (Siddiky, 2015). Thus focused attention on dairy development would not only improve the milk production but also enhance the livelihood and food security of this segment of population.

Ensuring food security have to be an issue of great importance for South Asia where a considerable proportion of the population is estimated to be absolutely poor and significant proportion of children malnourished in one way or another. Food security means ensuring a sustainable supply of food at affordable prices that meets existing dietary preferences. Food security is a complex issue with both global and local dimensions that are intimately linked together. The two most important factors that determine the access of a household to food are household income and prevailing prices of essentials. Since milk and milk products are the most preferred food across the region irrespective of religion and socioeconomic status the supply of dairy products has to be addressed as part of any debate on food security (Siddiky, 2015).

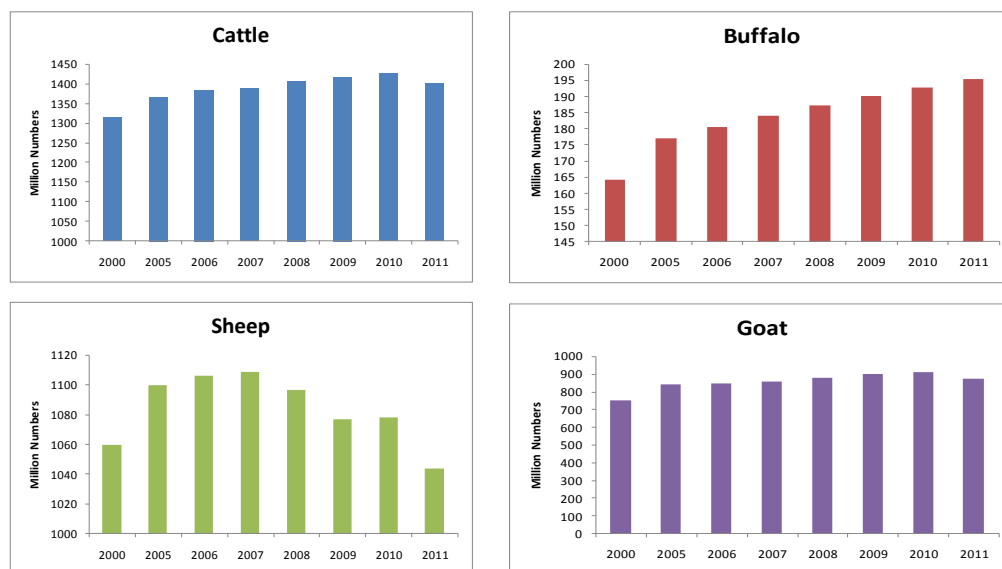
Currently the global milk demand is growing by 15 million tons per year, mostly in developing countries. This increased volume of milk is being produced by small-scale dairy farmers, and millions of jobs per year may be created in primary production. This presents a unique opportunity for building up a sustainable dairy chain that sources milk from smallholder dairy farmers to meet not only the demands of local consumers but also those of the world market. While capitalizing on this opportunity could generate significant wealth in rural areas and provide benefits to all stakeholders involved in the dairy value chain, it calls for a sound dairy development strategy. Since smallholder dairying is considerably affected by factors such as resource access, service delivery, food safety standards as well as national and international subsidies, effective strategies are to be evolved considering all these

factors. If the technological competence of the rural people in dairying is substantially improved, it would not only improve the self employment and also enhance the rural economy and livelihood (Siddiky, 2015).

Dairy Animal Population in South Asia

The Asian region has emerged as a major player in global dairy production and consumption. Aggregate consumption gains in dairy products in Asia over the past decade have exceeded twice the annual global average (FAO, 2014). The rising demand for milk is producing a shift in the dairy sector from subsistence to a market-oriented with higher input needs. Unlike developed countries where the number of dairy farms is decreasing while the number of heads per farm is increasing but in South Asian region, smallholder farmers owns a majority of dairy animals, with an average of 2-10 cows per household and contributes to a major chunk of milk produced in the region (Siddiky, 2015). It is well known fact that South Asia has large population of milch animals, but in most of the countries the dairy production is far below their national requirement due to low productivity of dairy animals (Pal, S.K. and Siddiky, 2011).

The dairy animal population in the world including cattle, buffalo, sheep, goat and camel was 3534.63 million during 2011. Among the dairy animals, cattle dominated with 1399.9 million heads followed by the sheep which was 1043.7 million heads (FAOSTAT, 2013). While the cattle population more or less was increasing at slow pace, the buffalo population increased steadily from 164.11 million in 2000 to 195.3 million in 2011 (Siddiky, 2015). The dynamics of other dairy animal population across the globe is given in figure 1.



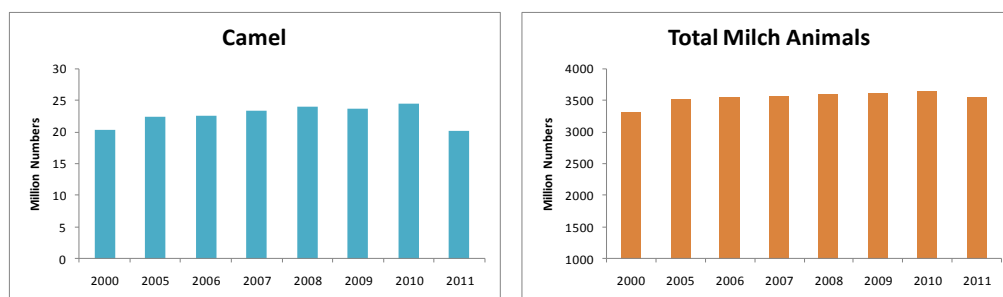
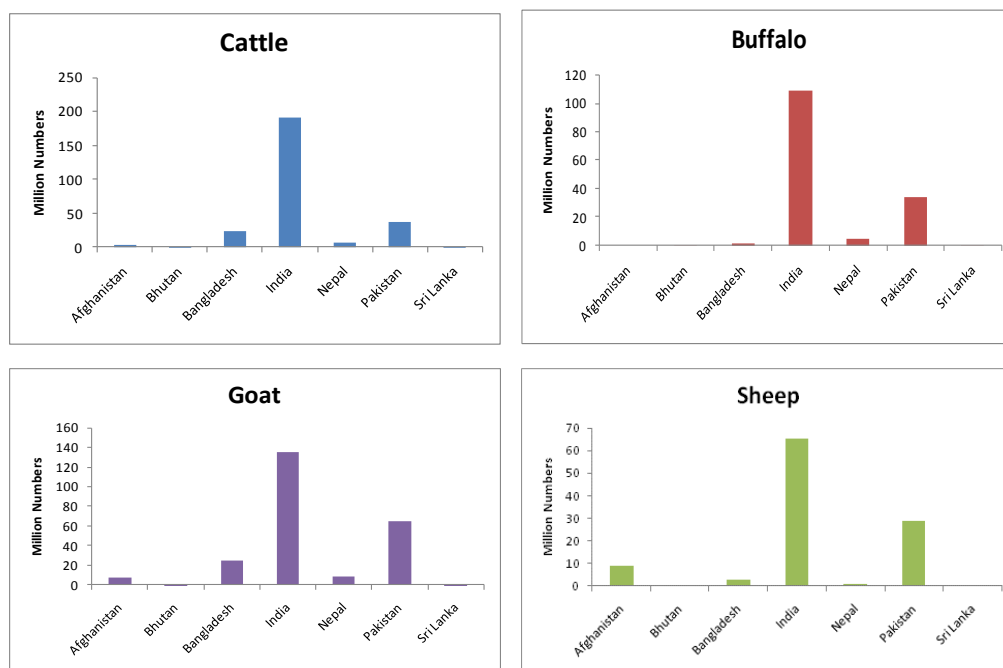


Figure 1. Dynamics of dairy animal population in the world

During 2007, the total dairy animal population in South Asia was 745.11 million that accounts to 21% of the world's dairy animal population. About 25% of world's cattle and buffaloes, 15% of the sheep and goat, and 7% of the camel were present in south Asia (FAOSTAT, 2013; Siddiky, 2015; Abdullah, 2012). Among the south Asian countries, India had huge dairy animal population with 517.08 million heads followed by Pakistan with 138.12 million heads. India accounted for 69.4% of the total dairy animal in the region, while Pakistan accounted for 18.54%. The dairy animal population in Afghanistan, Bangladesh, Bhutan, Nepal and Sri Lanka all accounted for 12.06 % of the total dairy animal population in the SAARC countries (Siddiky, 2015; Pal and Siddiky, 2011). The individual dairy animal populations in south Asia are depicted in figure 2.



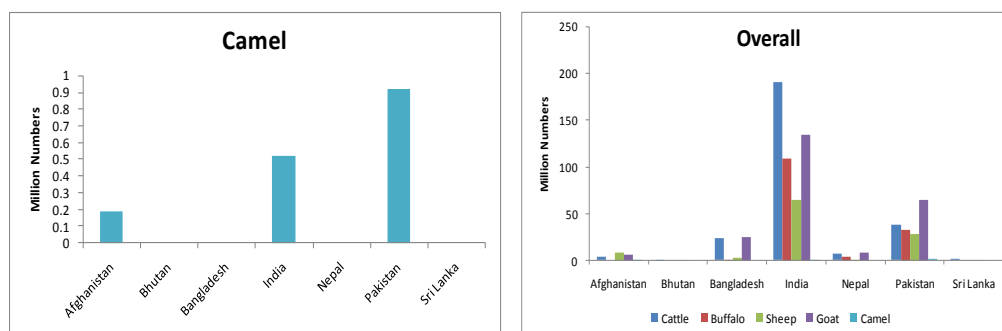


Figure 2. Distribution of individual dairy animal populations in south Asian countries

Growth Rate of Dairy Animal Population in South Asia

For analyzing the Annual Growth Rate (AGR) of dairy animal population, the period was divided into two viz., 1992-2002 and 2003 to afterwards. In Afghanistan, the AGR of cattle was positive during both the periods but the rate was higher during the period 2003-2010. The AGR of goats during both the period were negative while the AGR of sheep was negative during 1996-2002, which turned positive during 2003-2010 (Afghanistan National Livestock Census, 2008). In Bangladesh, the AGR of cattle and buffalo were positive during both the period however the AGR of sheep and goat population was negative during 2002-2010 (Siddiky, and Tareque, 2014). During the period 1992-2002, population of all the dairy animals except sheep showed a positive AGR in Bhutan, however during the period 2003-2010, all dairy animals except goat had negative growth rate (Statistical Year Book of Bhutan, 2012). Both India and Pakistan had positive AGR during both the periods (19th Livestock Census of India, 2012). The AGR of cattle, buffalo and goat was higher during the period 2001-2012 in Pakistan (Pal, S.K. and Siddiky, 2011). In Nepal, except sheep all other dairy animals had a positive growth during both the periods. All the dairy animals had a negative AGR in Sri Lanka during 1992-2002 while the AGR of cattle and buffalo was positive during 2003-2012 (Siddiky, 2015). Over all, the population of dairy animals in the region, during last few decades, showed a positive growth indicating that the population of dairy animal is increasing in a steady pace (Table 1).

Table 1. Annual growth rate of dairy animal population in SAARC Countries

	Afghanistan		Bangladesh		Bhutan		India		Nepal		Pakistan		Sri Lanka	
	1996-2003	2003-2010	1992-2002	2002-2010	1992-2002	2002-2010	1992-2002	2003-2007	1992-2002	2003-2012	1992-2002	2001-2012	1992-2002	2003-2012
Cattle	0.07	3.38	0.20	0.75	0.42	-0.67	0.77	1.50	1.07	0.39	2.62	6.74	-0.02	0.78
Buffalo	--	--	-0.02		9.09	-1.85	1.18	1.52	1.91	2.99	2.85	5.09	-2.38	4.64
Goat	-2.31	-2.53	3.95	-5.78	6.02	7.41	0.69	2.60	2.02	3.62	2.91	4.43	-0.23	-0.73
Sheep	-7.50	4.95	1.96		-2.61	-4.44	1.44	3.28	-0.72	-0.12	-0.87	1.74	-2.87	--

Source: SAARC Dairy Outlook, 2015

Milk Production Scenarios in South Asia

In the last three decades, world milk production has increased by more than 50 percent, from 500 million tons in 1983 to 769 million tons in 2013 (FAO, 2016). Asia is accounted for most of the increase, with output in India, the world's largest milk producing country, by producing 132.4 million tons in 2012-13 (Siddiky and Tareque, 2014). Developing countries are house of two-third of world dairy herd but contribute to one-third of the world milk production (Siddiky, 2015). The most significant milk producers in developed countries are the European Union and the United States. In developing countries India and China rank first and second, respectively in milk production. The growth rate of milk production in India, China, Pakistan, Argentina and Brazil shows future prospects. The world average level of consumption of milk and milk products is 103.6 kg/capita/year and it is expected to increase in both developing and developed countries. Although this region contributes a considerable portion of milk to the world's milk pool, the productivity of animal remains low. In 2011 the world milk production stood around at 730 million tons, of which the south Asian countries contributed 165.4 million tons (22.66%). Of the total milk produced in the region, 42.75% of milk was contributed by cattle while 52.26% was from buffaloes (Siddiky, 2015). Goat and camel contributed to 4.86% and sheep (mainly in Afghanistan) contributed to 0.12% in total milk production (Figure 3). About three-fourth of the milk produced in the region is contributed by India alone. Next major contributor for milk production is Pakistan, which produced about 22.14% of the total milk produced in the region. All the other countries in the region contributed to the remaining part of the total milk produced. The AGR in total milk production in the region between 2006 and 2011 was 4.11%. The milk production was 132.64 million tons, which increased to 165.40 million tons in 2011 with the AGR of 3.89%. The trends in total milk production in south Asian countries are given in figure 4.

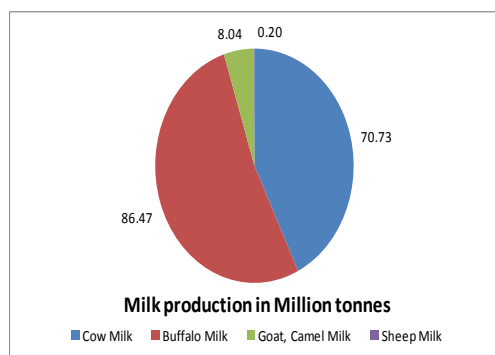


Figure 3. Contribution of different dairy animals in total milk production in the region

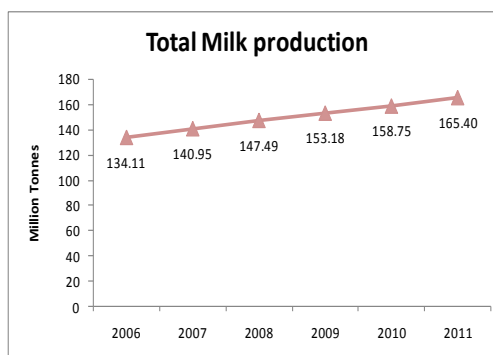


Figure 4. Trend in total milk production in the region

Milk Production Trend in Different South Asian Countries

In 2006, the total milk production in Afghanistan was 1.62 million tons, which increased to 1.72 million tons in 2011. The AGR in milk production between the periods were 1.04%. Bangladesh produced 2.69 million tons of milk during 2006, which increased to 6.97 million in 2015 with the annual growth rate of 17.67% during this period (DLS, 2016). The milk production in Bhutan was 0.042 million tons in 2006 and the total milk production decreased to 0.039 million tons in 2011 with AGR of -1.41%. India witnessed a positive milk production from 2006 to 2011. The milk production increased to 121.8 million tons in 2011 from 97.0 million tons in 2006 (DAHDF, 2012). Nepal also showed a positive trend in milk production. The AGR of milk production during the period from 2006 to 2011 was 3.02%. In Nepal, the total milk production increased from 1.38 million tons in 2006 to 1.63 million tons in 2011 (DLS, 2012). Pakistan produced 31.18 million tons in 2006, which increased to 36.62 million tons in 2011. The AGR in milk production between the periods were 2.91% (MNFSR, 2012). Sri Lanka had a high growth rate in milk production from the period 2006-2011 with the AGR of 5.23%. The total milk production in the country was 0.20 million tons in 2006, which increased to 0.26 million tons in 2011 (DAPH, 2012). All the south Asian countries except Bhutan had a positive growth in milk production (Pal and Siddiky, 2011; Siddiky, 2015).

Productivity of the Dairy Animals in the Region

The data on per cow milk productivity, as indicated by FAO for the year 2011, in component countries is used to analyze and compare the individual animal productivity in South Asia as a whole. The average milk production per cow during 2011 was 627.86 kg/year, while the average milk production per buffalo stood at 1257.96 kg/year. On an average a goat in the region produced 83.45 kg/year in 2011. Among the different south Asian countries, the milk productivity per cow per year was higher in Pakistan followed by India. Lowest milk productivity per cow per year was observed in Bangladesh and Bhutan. The milk productivity per buffalo per year was also higher in Pakistan followed by India. The milk production/cow/year in developed countries like USA, Denmark, Sweden, Finland, The Netherlands etc are above 7500kg whereas in South Asian countries the average milk production/cow/year is less than 1500 kg indicating enough scope to improve the productivity (Siddiky, 2015). There are high variations in per animal milk productivity among the South Asian countries (Figure 5).

Average Milk Production Per Cow

Among the South Asian countries, the average milk production per cow was highest in Pakistan (1229.96 kg/cow/year) followed by India (1191.54 kg/cow/year) in 2011. Sri Lanka stood at third position (683.26 kg/cow/year) among the South Asian countries regarding the average milk production per cow (Siddiky, 2015; Pal and Siddiky, 2011).

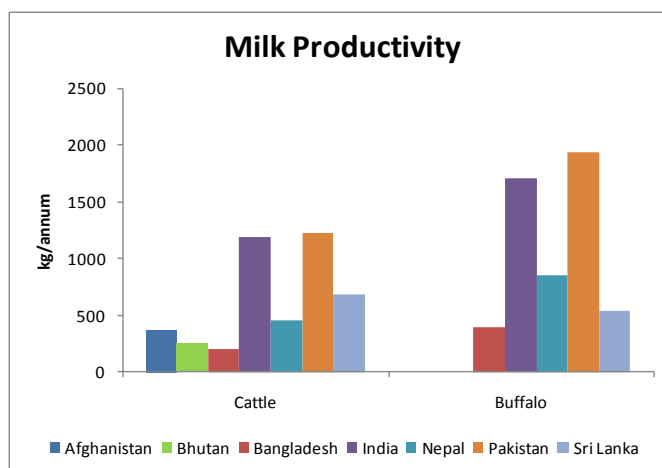


Figure 5: Per animal milk productivity among the South Asian countries

Average Milk Production Per Buffalo

The average milk production per buffalo was highest in Pakistan (1934.96 kg/buffalo/year) followed by India (1700.78 kg/buffalo/year) in 2011. Nepal stood at third position among the South Asian countries regarding the average milk production per buffalo (858.85 kg/buffalo/year).

The average milk production per buffalo was 537.35 kg/buffalo/year in Sri Lanka (Siddiky, 2015; Pal and Siddiky, 2011).

Average Milk Production Per Goat

India stands first regarding the average milk production per goat with the productivity of 150.16 kg/goat/year followed by Pakistan (140.56 kg/goat/year). Bangladesh stood at third position among the SAARC countries regarding the average milk production per goat (80 kg/goat/year). As a whole in the region the average milk production per goat was around 50 kg/goat/year or less (Siddiky, 2015; Pal and Siddiky, 2011).

Dairy Animal Breeds in South Asian Countries

The first report on State of World's Animal Genetic Resources published by the FAO in 2007 indicated that 9% of breeds were extinct and 20% are under risk. Further 36% of the breeds were classified under unknown status. The report indicated that only 35% of world's breeds are enjoying not at risk status, which is an alarming situation for the entire world (FAO, 2007). South Asia harbors a good number of indigenous breeds of dairy animals. These valuable animal genetic resources have been developed over a period of thousands of years through natural selection and human intervention, therefore, well adapted to their respective habitat. However most of the countries, for the genetic improvement of these livestock resources, import

exotic germplasm leading to dilution of local breeds. The adaptation of temperate exotic breeds needs much more sophisticated and scientific management under tropical climates. There has been a change in the utility pattern of these genetic resources which has created a stiffer competition to the local breeds for their survival. Therefore, genetic erosion is a serious concern and a number of local breeds are at the risk of extinction. The local breeds of cattle and buffalo are given in table 2 & 3.

Table 2. List of local cattle breeds in the South Asian Countries

Country	Breeds	No. of breeds
Afghanistan	Afghan, Kandahari, Konari, Kunari, Shakhansurri, Sistani, Watani	7
Bangladesh	Red Chittagong , Faridpur, Madaripur, Munshiganj, North Bengal Grey and Pabna	6
Bhutan	Bajo, Jaba, Jatsa, Langu, Nagamee	5
India	Hariana, Hissar, Kangayam, Khillari, Siri, Sunandini, Gir, Ongole, Red Sindhi, Sahiwal, Tharparkar, Alambadi, Amritmahal, Bachur, Bargur, Binjharपुरi, Brownsind, Brown Swiss, Burmese Gaur, Cutchi; Dangi, Deoni, Devarakota, Devni, Frieswal, Gangatiri, Gaolao, Gayal, Ghumsuri, Goomsur, Gujamavu, Hallikar, Jellicut, Jersind, Kankrej, Kappiliyan, Karan fries, Karan swiss, Kenkatha, Khamala, Khariar, Khasi, Kherigarh, Krishna valley, Krishnagiri, Kumauni, Ladakhi, Malnad gidda, Malvi, Mampati, Manapari, Mewati, Mhaswad, Motu, Nagami, Nagori, Nakali, Nimari, Ponwar, Pullikulam, Punganur, Purnea, Ramgarhi, Rathi, Red Kandhari, Sanchori, Shahabadi, Son valley, Tarai, Taylor, Thillari, Tho Tho, Umblacherry, Vechur, Zosial, Arunachali and Bengali	78
Nepal	Lulu, Achhami, Khalia, Siri, Yak, Terai and Pahadi	7
Pakistan	Red Sindhi, Sahiwal, Tharparkar, Achai, Bhagnari, Cholistani, Dajjal Desi, Dhanni, Gabarali, Haryana, Hisar, Kankrej, Lohani, Rojhan	
Sri Lanka	Hatton, Kinniya, Sinhala and Thamankaduwa	4

Table 3. List of local buffalo breeds in the South Asian Countries

Country	Breeds	No. of breeds
Bangladesh	Native buffaloes (Non descriptive indigenous type)	
India	Murrah, Mehsana, Nili-Ravi, Surti, Tarai, Assami, Banni, Bhadawari, Chilika, Godavari, Jerangi, Kalahandi, Manda, Marathwada, Nagpuri, Pandharpuri, Sambalpuri, Toda, Jafarabadi	19
Nepal	Lime, Parkote and Gaddi	3
Pakistan	Azi Kheli, Kundhi, Nili, Ravi and Nili Ravi	5
Sri Lanka	Lanka, Mannar and Tamankaduwa	3

Source: Farm Animal Genetic Resources in SAARC Countries, 2014

Dairy Animal Production Systems

Smallholder dairying

The smallholder and landless farmers together constitute over 75 per cent of regional livestock resources. Smallholders obtain nearly half of their income from livestock. Hence a rapid growth in livestock production in the region has the potential to contribute to poverty reduction. Three major milk production systems are rural subsistence, rural market oriented and peri urban plus commercial dairying. Dairy development based on smallholder production system has made an excellent contribution to rural development in both developing and developed countries (Joe Phelan, 2007). In addition to providing employment and income, it has improved the living standards in rural areas. Simulation of increased productivity, better farm financing and improved milk marketing through pro poor dairy development policies have shown that landless rural dairy farmers have the potential to reduce the cost of milk production to the level of large farms and hence theoretically have the potential to maintain a profitable dairy enterprise, especially women. The main risks of dairying by rural landless farmers are not having an animal in milk in any one year, the death of a lactating animal and having to meet the high cost of feed, fodder and poor accessibility to health coverage. Occurrence of any of these events can lead to a reduction of the already low household income by 50% and would probably force the family to abandon the dairy enterprise. Reduction of production risks faced by rural landless dairy farmers requires the availability of improved breeding services, targeted preventive animal health care, better feeding strategies and easy access to formal credit facilities (Torsten et al., 2003).

Periurban Milk Production

Periurban dairying is essentially a market oriented enterprise. Easy access to market prompts smallholders to produce more milk for sale and earn cash income. The number of periurban dairy farms in the region has increased substantially in the recent years due to rapid urbanization and increase in demand for milk. Periurban dairying provides employment and income to the unemployed and low income urban families. Periurban dairying, in general has the technical constraint of limited milk production potential of local breeds, seasonal quantitative and qualitative feed / fodder shortage, poor management and health care. A weak infrastructure base and poor support services have been shown to adversely affect the economic returns of periurban dairy units. Poor roads, unreliable power supply, inefficient cooling and processing capacity can discourage production. Services in terms of credit facility, health coverage, input supply and distribution, technical advisory services are of crucial importance to the successful management of periurban dairy units. In periurban dairying feed accounts for more than 2/3rd of the operational cost as the animals are stall fed with purchased feed and fodder. There is a need to suitably address these issues. In view of the growing contribution of this sector to meet the specialized food needs of growing urban population, periurban livestock production

needs to be recognized as an important component of the national livestock industry. Adequate government investment in infrastructure and incentive to private investment will be the pre requisite to promote this sector.

Dairying through cooperatives

The merit of the cooperative ideology is the coordination and balancing of the fundamental principles of equality, democratic control and equality in institutions, and practices to maximize social welfare. Milk production system in the region is entirely the domain of farmer. Milk production is largely a subsidiary activity to agriculture in rural areas in contrast with organized dairying in western countries. Farmers and landless labourers mostly maintain one to three dairy animals. As a result, small quantities of milk are produced widely spread over the region.

The concept of milk co-operatives has been well structured with one village or a cluster of villages forming the primary cooperative. A group of many primary cooperatives forms a union, which can be a district, region or milk shed area. The third level is the unions joining up to form a Federation at State or National level. The Federation has the power to decide on policies of pricing, human resource, exports/imports, subsidies and credit facility. In South Asian countries the dairy cooperatives are the major means of promoting dairy husbandry and proved to be a strong viable economic institution and a way for improving the living condition of the impoverished rural population. They provide farmers with an organizational support at grass root level in planning, decision-making and scheme implementation. Besides this, the cooperatives also provide services related to animal health, insemination, feed, fodder seeds, fertilizers, credit, training and education. With their vast network and deeper penetration and assured market for the producer they have become a popular sustainable model. There is little success of the cooperative models in the region.

Strengths, Weaknesses, Opportunities and Threats (SWOT) for Dairy Development in South Asia

The SWOT analysis (Siddiky, 2015) of the current dairy scenario of the region would reveal the following:

Strengths

- Constant and sustainable growth (high milk production with high growth rate) despite limited investment from public and private sector
- Mega biodiversity and large bovine population - The vast dairy animal population could prove to be a vital asset for the region. Unlike many other natural resources which may deplete over the years, a sustainable livestock production system will continue to propel the economy.
- Variable agro-climatic conditions and diverse dairy animal production systems (Zero input–low output, low input–moderate output, intensive input–high output)

- Low production cost–Dairy farming in the region thrives largely on crop residues and agricultural byproducts keeping the input costs low. Labor cost is also fairly low making the industry fairly cost competitive. The cost of production of 100 Kg milk is around 20 USD in India compared to 68 USD in Japan and 58 USD in Canada.
- Male are still used for drought agriculture (considerable proportion of agricultural land are cultivated by animals)
- As the milk productivity of dairy animals is low, there is a vast scope for improvement of the milk production and consequently increased marketable surplus of milk for processing.
- Very big domestic market-purchasing power of the consumers is on the upswing with growing economy & continually increasing population of middle class.
- Milk consumption is regular part of the dietary programme irrespective of the region and hence demand is likely to rise continuously.
- Large number of dairy plants in public and cooperative sectors besides several others in the private sector is coming up.
- Vast pool of highly trained and qualified technical manpower is available at least in some countries at all levels to support R&D as well as industry operations.

Weaknesses

- Though cross breeding programmes have significantly improved animal productivity, milk production system in many parts of the region is still largely dominated by low yielding animals.
- Wide gap between availability and requirement of progeny tested proven dairy sires
- Shortage of feed and fodder; continuous reduction in area under fodder production
- Poor condition of roads and erratic power supply remain a major challenge for procurement and supply of good quality raw milk. Furthermore, raw milk collection systems in certain parts of the region remain fairly underdeveloped.
- Maintenance of cold chain is still a major handicap. For organized marketing of milk, the milk produced is required to be transported to nearby processing plant which incurs cold storage and transportation costs which are quite high.
- Majority of producers is unaware about scientific dairy farming, clean milk production and value chain.
- Absence of comprehensive and reliable milk production data, impact assessment studies are almost non-existent, investments in dairy research is also not commensurate with returns and potential.

Opportunities

- Technology driven production enhancement in low producing animals
- Expanding market can create of enormous job and self employment opportunities.
- Economy is growing in the region, consequently, the investment opportunities are also increasing continually.
- Demand for dairy products is income elastic. Continued rise in middle class population will see shift in the consumption pattern in favour of value added products besides the growth in demand for liquid milk.
- Untapped indigenous milk products market - Greatly improved export potential for indigenous as well as western milk products.
- Value addition in raw milk; functional food - Opportunities for utilization of byproducts of the dairy industry for manufacturing value added products.
- Public private partnership

Threats

- Danger of extinction of valuable bio-resources - Excessive grazing pressure on marginal and small community lands has resulted in almost complete degradation of land and Indiscriminate crossbreeding for raising milk productivity could lead to disappearance of valuable indigenous breeds.
- Developed countries are providing huge subsidy & incentive for export of milk and milk products
- Organized dairy industry handles very less percentage of the milk produced. Cost effective technologies, mechanization, and quality control measures are seldom exercised in unorganized sector and remain as key issues.
- Middlemen still control a very large proportion of the milk procurement. Serious efforts need to be taken to eliminate them from the supply chain.

Strategies for Boosting Dairy Production

Now it is well understood that “Animal number driven” dairying may not fulfill the demand for milk and milk products in the region and the dairying need to reorient towards “technology driven mode”. Since dairying is socially and culturally intermingled with farming community and offer livelihood and nutritional security to a major mass of population, this transformation in dairying cannot be made overnight. However, it is high time to develop policies and source the technological options for smooth transition of dairying towards commercial mode while protecting the interests of smallholders. Some of the major issues impeding the dairy animal productivity and technological options to overcome those obstacles are genetic improvement of the dairy animals, conservation and utilization of potential dairy

breeds, genetic improvement of non-descriptive cattle and buffaloes, buy back policy for improving the availability of breeding bulls, enhancing the percolation of artificial breeding facilities, promoting buffaloes as dairy animals, to make availability of feed and fodders of the dairy animals, optimizing reproductive efficiency, milk processing and value addition (Siddiky, 2015; Pal and Siddiky, 2011).

CONCLUSION

The dairy sector in the region is characterized by small-scale, scattered and unorganized dairy animal holders; low productivity; inadequate and inappropriate animal feeding and health care; lack of assured year-round remunerative producer price for milk; inadequate basic infrastructure for provision of production inputs and services; inadequate basic infrastructure for procurement, transportation, processing and marketing of milk; and lack of professional management. Low productivity of dairy animals is a serious constraint to dairy development in the region. The productivity of dairy animals could be increased by crossbreeding the low yielding nondescript cows with high yielding selected indigenous purebreds or suitable exotic breeds in a phased manner. The breeding policy should not only focus on milk yield but should also provide for the production of good quality breeding bulls. Upgrading of nondescript indigenous buffalo through selective breeding with high yielding purebreds, such as Murrah, Nili Ravi, should be given high priority in all areas where buffalo are well adapted to the agro-climatic conditions.

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