

# **INCREASING BUT UNWATCHED COST OF MILK PRODUCTION-POLICY IMPLICATIONS FOR DAIRY INDUSTRY OF PAKISTAN**



## **POLICY PAPER** ..... **2020**

Center for Applied Policy Research in Livestock and Poultry (CAPRIL)  
**UNIVERSITY OF VETERINARY AND ANIMAL SCIENCES, LAHORE**  
[www.uvas.edu.pk](http://www.uvas.edu.pk) — [vc@uvas.edu.pk](mailto:vc@uvas.edu.pk)



**Author:**

**Prof. Dr. Rana Muhammad Ayyub,**

Director, Center for Applied Policy Research in Livestock and Poultry (CAPRIL)

Chairman , DEBM, UVAS Bussiness School

Email: [drranaayyub@uvas.edu.pk](mailto:drranaayyub@uvas.edu.pk)

# Table of Contents

1	EXECUTIVE SUMMARY .....	2
2	OVERVIEW OF LIVESTOCK SECTOR OF PAKISTAN .....	2
3	DAIRY INDUSTRY OF PAKISTAN AND ITS CONSTRAINTS .....	3
4	GLOBAL DAIRY TRENDS .....	4
5	COST OF PRODUCTION (COP) FOR MILK IN VARIOUS COUNTRIES: .....	5
5.1	COP for Milk at Global Level.....	6
5.2	COP for Milk in India .....	6
5.3	COP for Milk in Bangladesh.....	7
5.4	COP for Milk in Pakistan .....	8
6	MAJOR FACTORS CONTRIBUTING TO HIGH COST OF PRODUCTION .....	10
6.1	High cost of fodder.....	10
6.2	Trends of high-density food production .....	10
6.3	Lack of awareness about modern farm practices.....	11
6.4	Low producing animals .....	11
7	RECENT POLICY INTERVENTIONS BENEFITING DAIRY FARMERS IN PAKISTAN.....	11
8	RECOMMENDATIONS.....	12
9	POLICY IMPLICATIONS .....	13
10	REFERENCES .....	14

## EXECUTIVE SUMMARY

Milk production is the main activity of the Livestock sector of Pakistan which is mainly produced by small scale dairy farmers. Though a recent trend of emerging corporate dairy farms has also been witnessed the small dairy farms are still the main contributor to milk production. It is claimed that there is a dearth of empirical data and studies on the cost of milk production in Pakistan. However, this policy paper has given a brief account of all the possible studies on the cost of milk production related to Pakistan. Moreover, the situation of neighboring countries like India and Bangladesh is also presented. It was concluded that the cost of milk production in Pakistan is comparatively very high as compared to neighboring countries. There are many factors that contribute to the

increasing cost of milk production including the high cost of fodder and feed, high labor cost, lack of awareness to modern farming practices, increased input costs, low farmgate milk prices, increased milk wastages and neglecting farm economic practices. This cost of milk production is increasing with the passage of time whereas the farm gate milk prices are at the lowest ebb rendering this dairy business unprofitable for most of the dairy farmers who are gradually leaving this business. Such a situation will finally result in a shortage of milk, an essential ingredient of diet, on one side and result in significantly increased prices of milk on the other hand in Pakistan. Thus, to make the dairy business a lucrative venture for farmers community, some policy interventions are recommended which are urgently needed to reduce the cost of milk production in Pakistan.

## OVERVIEW OF LIVESTOCK SECTOR OF PAKISTAN

Pakistan is an agrarian country and Livestock is the most vibrant subsector of the Agriculture sector in Pakistan which is evident from its 60.5% contribution to Agriculture value added in the year 2018-19. During 2018-19, the Livestock subsector contributed 11.2% to the total GDP<sup>1</sup> of the country and has a continuously increasing trend over the last few years which advocates its inherent potential. This sub-sector engages over 8 million people (directly or indirectly) who depend on their earnings from animals and animal-related activities. The estimated

<sup>1</sup>Economic Survey of Pakistan (2019), Finance Division, Economic Advisor Wing, Government of Pakistan.

livestock population of various animals along with its percentage growth as compared to the previous year are given in the following table:

Species	2017-18	2018-19	% Change
Cattle	46.1	47.8	3.69
Buffalo	38.8	40.0	3.09
Sheep	30.5	30.9	1.31
Goat	74.1	76.1	2.69
Camels	1.1	1.1	0

Source: Ministry of National Food Security and Research

## DAIRY INDUSTRY OF PAKISTAN AND ITS CONSTRAINTS

Pakistan has the best dairy breeds in the world like Nili Ravi, Kundi and Sahiwal, etc. That's why Pakistan is among the top milk producers of the world and is ranked 3rd. The milk is mainly produced by cattle and buffaloes. However, a small portion of milk is also produced by other animals like sheep, goat, and camel. The following table shows the total milk production of Pakistan from each species along with the percentage change over last year.

*Table 1 2: Estimated Milk production (000 Tonnes)*

Species	2017-18	2018-19	% Change
Milk (Gross Production)	57,890	59,759	3.22
Cow	20,903	21,691	3.77
Buffalo	35,136	36,180	2.97
Sheep	40	40	0
Goat	915	940	2.73
Camel	896	908	1.34

Source: Ministry of National Food Security and Research

**T**he dairy industry of Pakistan is in a growing phase, in which, corporate dairy farms have sprouted since the last decade. Likewise, many businessmen have started their commercial dairy farms with the hope to earn a profit. This industry has got unprecedented interest from investors due to the import of exotic breeds of dairy animals with high milk production. Thus, many dairy farms emerged on the scene like JK Dairies, Sapphire Dairies, and Nishat Dairies, etc.

Other than these, many commercial dairy farms were also established. However, still, the major stakeholder is that farmer which is termed small or subsistence dairy farmer who is having 1-3 dairy animals. This segment constitutes around more than 90% of this dairy farming community. All these growth indicators can be considered just accidental due to the increasing interest of

private businessmen in this subsector in recent years. Whereas, the Government has been little effective in making this subsector attractive to possible investors. This is because, many urgently needed measures are still awaited regarding increasing per animal yield, modern breeding practices, modern farm management practices, husbandry practices and measures to decrease the cost of milk production. Out of these mentioned factors, the cost of milk production (COP) is considered the most important one. Thus, this subsector has a productivity level at the lowest ebb within the region and among other developing countries. The ultimate impact of the high cost of production is evident from ongoing milk adulteration and other malpractices at various steps of the milk supply chain in Pakistan which has extremely hazardous human health repercussions<sup>2</sup>.

## GLOBAL DAIRY TRENDS

Milk production trends are highly diverse and dynamic in each region. The reports and research studies present increasingly variable data on a yearly basis for various regions based on the fact that many contextual factors come into play for final calculations of dairy farming systems affecting dairy farm economics. Likewise, the cost of milk production is no

<sup>2</sup>Assessment of Loose Milk Supply chain in Lahore (2017), A study funded by PEEP-USAID and completed under CAPRIL (Center for Applied Policy Research in Livestock), UVAS, Lahore.

more exception and faces this variability not only in various parts of the world but also within various farming systems within one region and country too. Regarding the Dairy industry, a rule of 3-5% indicates that strong regions grow and weak ones decline by this rate every year<sup>3</sup>. At a global level, it has been reported that theoretical world farm gate milk prices have stood at an average level of 35 USD/100 Kg milk since 2017 as per IFCN World Milk Price Indicator. It is considered a usually long period of stabilization. Such a situation leads to low milk production which ultimately affects the increase in milk prices. The situation is exactly the same in developing countries like Pakistan where some reports indicate that farmgate milk prices remain stagnant since long and farmers have no option other than selling their milk at low farm gate prices to various supply chain agents<sup>4</sup>.

It was reported that globally 2019 would be the year of lowest milk production growth since 2013. This report shows the regions of the highest production including South Asia with India and Pakistan, and Western Europe which together accounted for 47% of milk production in 2018.

As a matter of fact, feed plays a crucial role in the economic and environmental performance of dairy production units because feed constitutes the highest variable cost of production<sup>5</sup>. Resultantly, the primary income from milk is volatile as milk prices often fail to increase with feed prices. Moreover, today's farmers are more interested in producing high-density feed due to low transportation costs, which is further worsening this situation.

## **COST OF PRODUCTION (COP) FOR MILK IN VARIOUS COUNTRIES:**

Though milk production is one of the main activities of the Livestock industry globally and in Pakistan but the irony of the situation is that negligibly small data is found on the actual cost of milk production at various production systems in research papers, reports, and websites, etc. At a global level, IFCN (International Farm Comparison Network) works on collecting,

<sup>3</sup>Global Dairy trends and drivers 2019, A report of IFCN Dairy research network.

<sup>4</sup>Ayyub (2019). "Studying the effects of Price de-capping of milk and meat in Punjab", A consultancy research report under PEEP, USAID.

<sup>5</sup>Hemme, Torsten & Uddin, M. & Ndambi, O. (2014). Benchmarking Cost of Milk Production in 46 Countries. *Journal of Reviews on Global Economics*. 3. 254-270.

analyzing and presenting various kinds of data of dairy farms. However, that data also needs some more rigor to be considered authentic. Moreover, the situation and values change so rapidly in the fields which render the available data questionable too and limit its validity. Such forced redundancy becomes more apparent in developing countries like Pakistan where the inflation is quite high as compared to developed countries.

## 5.1-COP FOR MILK AT GLOBAL LEVEL

At a global level, a report by Hemme (2014) <sup>6</sup> compared and benchmarked the cost of, milk production in 46 countries which were representing 87% of the world's total milk production. In this study, a standard method was used which was being developed by the International Farm Comparison Network (IFCN). It was found that cost differences were mainly driven by the diversity in feeding and farming systems in various countries. This study included two typical farms from each country i.e. one average-sized and one larger farm. This report categorized world regions on cost of milk production into four levels: 40-50 US-\$ in the EU, Middle East, and China; 30-40 US-\$ in the USA, Brazil, CEEC and Oceania; <30 US-\$ in Africa, Asia, and South America; >60 US-\$ in Austria, Norway, Switzerland, and Canada. The major drivers for this variation were ranked as; purchased feed cost (the highest) followed by labor, land and machinery costs. Finally, the regression analysis showed that costs were highly correlated with milk yield and milk price but not to herd size. On the other hand, the IFCN world milk price indicator shows a -5.9 % change which advocates the misery of dairy farmers that their cost of production is increasing with the passage of time but they are given less price to their milk produced at their farms <sup>7</sup>. This situation brings the attention of policymakers and industrialists to the dire need of reducing the cost of milk production at every level of a farming system.

## 5.2-COP FOR MILK IN INDIA

India is at the top in milk production as far as quantity is concerned. This healthy picture of the Indian Dairy industry is due to farmer's friendly policies of the Indian Government. For instance, the cooperative culture in the form of Amul (Dairy cooperative company) has proved

<sup>6</sup>Hemme, Torsten & M. Uddin & O. Ndambi (2014). *Benchmarking Cost of Milk Production in 46 Countries. Journal of Reviews on Global Economics.* 3. 254-270.

<sup>7</sup>Goetz, P., A. Diepenbrock and L. Wyrzykowski (2019). *Global Dairy trends and drivers 2019.*



a great impetus for its overall performance<sup>8</sup>. Moreover, the Indian Government ensures the procurement price from Farmers strictly. Moreover, Indian Govt. exercises her control on retail prices on various brands too. Another notable feature is that the Indian Government has its own brands like Mahanand and Gokul too and sometimes gives a subsidy to leftover milk under “Power Milk Project”. Thus, the main focus of the Government again remains on ensuring the benefit of farmers in controlling the farm gate milk price with an emphasis to ensure profit margins of farmers. Above all, the Government has made arrangements to avoid loss of farmers by procuring extra milk from farmers too for her own brands.

The cost of milk production in India is also very high as compared to developed countries and is comparable to her neighboring countries like Pakistan and Bangladesh. Recent reports have shown that the growth in the dairy sector of India appears to slow down because of lower growth in Indian milk production in 2019, caused by stable milk prices and increasing feed prices resulting in poor farm economics.

### 5.3-COP FOR MILK IN BANGLADESH

The cost of milk production in Bangladesh is also reported very high due to many reasons including low adoption of technological innovations, inefficient farming practices and low production per animal, etc. Bangladesh produces only 63% of its required milk that’s why dairy farmers are able to get milk prices 37% higher as compared to the global average milk prices. It is noteworthy that even after getting these higher prices, small-scale farmers are barely profiting as their cost of milk production is relatively high. According to reports of BBS (2018), Bangladesh has to import 0.11 million tons of milk to meet local demand. Moreover, as per projected estimates, Bangladesh has to increase her total milk production up to 12 million tons per annum to meet local requirements by 2030. In view of this scenario, the Government of Bangladesh is committed to solving problems of small scale dairy farmers. That’s why there is a debate to increase duty on import of skimmed milk from the current level of 25% in the year 2018 to 50%. In this regard, a recent study has found that a decrease of

<sup>8</sup>Reporter (2017), Amul raises milk procurement rates by Rs.10. Available at: <https://timesofindia.indiatimes.com/>

10% in tariff can cause a loss (Tk924 crore per year) to small –scale dairy farmers. However, it will not affect medium and large scale farmers. This study has further shown that as a result of a 10% increase in tariff, consumers and the country as a whole will get the benefit of Tk 12,887 crore per year<sup>9</sup>. Hence, the Government of Bangladesh needs to decide either to devise policies for safeguarding small scale Dairy farmers or to consumers.

#### 5.4-COP FOR MILK IN PAKISTAN

Pakistan is probably among those countries of the world which have one of the highest cost of milk production. However, this claim needs the support of some authentic empirical study. Whereas, the available fragmented studies reported various costs of production of milk at various levels of dairy farming systems. Likewise, it is also claimed that even the data presented in IFCN yearly reports, does not show a valid picture of the cost of production of milk in Pakistan. It is claimed that various sources watch their own interests and report that the cost of milk production which suits their benefit. On the other hand, the majority of Pakistani dairy farmers do not maintain and bother to calculate the cost of milk production. Those who try to calculate it have shown that their cost of production of milk is much higher, increasing day by day and forcing them to leave this business. For instance, in an empirical study conducted by Ayyub (2019), 66% of dairy farmers responded that the cost of doing business in every step has reduced significantly resulting in a higher cost of production of milk in Pakistan<sup>10</sup>.

As a matter of fact, the cost of milk production should be empirically studied in a project collecting longitudinal data from representative farms of each prevalent farming system in Pakistan. Only such data can give a clear cut picture of the cost of milk production including effects of season, disease level, changing prices of fodder/fodder, changing availability of fodder, labor, and other expenses in comparison to revenues fetched over that period of time. It is irony of the situation that no such comprehensive study was found in the literature. Thus, it is suggested that such a study is direly needed which will give the right direction to future policymaking for the dairy industry of Pakistan. However, from available sources, the cost of milk production from various sources is given for getting an idea of this situation. These

<sup>9</sup>The Daily Star (2020), "How far is Bangladesh from achieving self-sufficiency in the dairy industry?" printed on June 30, 2019.

<sup>10</sup> Ayyub (2019) "Effects of Price de-capping of milk and meat in Punjab" A consultancy report submitted to PEEP, USAID in June 2019.

values of the cost of milk production are as follows:

a—Rahman & Naveed (2019)<sup>11</sup> conducted a questionnaire survey in the district of Lahore from 5 levels of dairy production systems. The reported cost of milk production per liter for small scale household farm was Rs. 111.1 (n=18), small scale Buffalo colony farm is Rs. 99 (n=20), Medium dairy farm is Rs. 75.4, Medium-sized dairy farm is Rs. 93 (n=11) and Corporate Dairy farm are Rs. 57.8. The main limitation of this study was the small sample size and only one district of Punjab.

b—b. Ayyub (2019)<sup>12</sup> conducted a mixed-method study throughout all the divisions of Punjab and collected quantitative and qualitative data from dairy farmers. This study reported that a majority of farmers do not maintain the record for their farm economics and are unaware of the actual cost of milk production. However, the collected data reported that the majority of dairy farmers i.e. 38% responded that their cost of milk production per liter of milk was in a range of Rs. 51 to 71, 14% of farmers reported it in a range of Rs. 71 to 90 and 21% of farmers reported it as more than Rs.100. The limitation of this study was that the farmers were not analyzed on the basis of their level of the production system.

c—Ayyub (2020)<sup>13</sup> in a presentation based on a small telephonic survey from dairy farmers of Punjab, Pakistan reported the cost of milk production as follows. The cost of production of milk per liter for a commercial Dairy farm was Rs. 80 having production of 12 liters per day per animal, for a conventional farm was Rs. 65 having production of 6 liters per day per animal and for a small scale dairy farm it was Rs. 112 having production less than 4 liters per day per animal. The main limitation of this survey was a limited sample size and it does not account for depreciation of fixed assets and cost incurred on various marketing channels.

<sup>11</sup>Rahman & Naveed (2019). *Assessment of cost of milk production of different Dairy production systems of District Lahore, Pakistan. A presentation given at UVAS, Lahore.*

<sup>12</sup>Ayyub (2019) *“Effects of Price de-capping of milk and meat in Punjab” A consultancy report submitted to PEEP, USAID in June 2019.*

<sup>13</sup> Ayyub (2020). *Cost of milk production in Punjab. A presentation given at UVAS, Lahore*



d—Burke and Mushtaq (2015)<sup>14</sup> in a survey, conducted from household dairy farmers, reported the cost of milk production per liter for the year 2014 as Rs. 50.6. The limitations of this study include that the data was collected only from small farmers and this cross-sectional data collection was through the questionnaire survey.

The above data shows that various sources have presented the various cost of milk production per liter for various levels of production systems with individual limitations of these studies.

## 6—MAJOR FACTORS CONTRIBUTING TO HIGH COST OF PRODUCTION

There are several factors that contribute to increasing the cost of milk production at our dairy farms in Pakistan. These factors are given below.

### 6.1—The high cost of fodder

The cost of fodder is the main expense of milk-producing animals. It is reported that almost 50 % cost of the dairy farm is incurred on fodder in the world and in Pakistan too<sup>14</sup>. Pakistani farmers have to mostly either purchase fodder from markets or grow at a high cost which renders their cost of milk production very high. These prices of fodder vary from time to time however, normally prices of green fodder are reported as Rs. 6.25/- per kg, for concentrate Rs. 40/- per kg and for the wheat straw Rs. 15/- per kg. These prices fluctuate depending on season and availability in the markets and make farmers more prone to the increased cost of production.

### 6.2—Trends of high-density food production

There is an emerging trend that farmers and processors are trying to produce high-density foods which are rendering fodder availability for dairy animals to the lowest ebb. This situation is again increasing the cost of fodder for dairy animals significantly.

<sup>14</sup>Burki, A.A. and A.K. Mushtaq (2015). *Pakistan's Dairy sector lessons from the past to build a resilient dairy industry*.

### 6.3—Lack of awareness about modern farm practices

The dairy farmers in Pakistan are unaware of modern dairy farm practices and doing their business on primitive practices. It is a fact that the Government department, somehow tries on a limited scale, to educate and train them but due to lack of interest from farmers and lack of funds in Government departments, such exercises prove non-productive as a whole. Moreover, it requires huge funding to reach out to small dairy farmers which are spread out throughout Pakistan in rural areas.

### 6.4—Low producing animals

The milk yield from animals is very low which increases the cost of milk production at small dairy farms. It has been reported that average milk production in animals is around 3 to 4 liters thus most of the farmers especially small farmers remain unable to get any profit out of their business activity.

## RECENT POLICY INTERVENTIONS BENEFITING DAIRY FARMERS IN PAKISTAN

As a matter of fact, Pakistani dairy farmers are doing this dairy business either as the inherited activity or just for the satisfaction of their social ego. It has been reported by the recent report that most of the farmers don't consider this dairy business as a business of choice rather they are finding some first possible opportunity to get rid of this business. It was further reported that the cost of doing dairy business is too high to continue and it is increasing every passing day<sup>15</sup>. However, recent reports and data have shown that, in the last half of 2019 and early 2020, the farmers are a bit hopeful as they have been given a bit better price of their produced milk as compared to the previous years. Specifically, some farmers have reported that milk processing companies have started giving them a better rate based on the fact that the Government has increased duty on import of skimmed milk and companies are now forced to collect milk from local farmers. The farmers further unequivocally supported their demand that the duty on import of skimmed milk must be further significantly increased

<sup>15</sup>Ayyub (2019) "Effects of Price de-capping of milk and meat in Punjab" A consultancy report submitted to PEEP, USAID in June 2019.

to safeguard the interests of small scale dairy farmers. However, no notable measures have been taken from any corner regarding the reduction of the cost of milk production.

## RECOMMENDATIONS

Based on the above situation, the following recommendations are presented before the Government of Pakistan to take immediate measures to reduce the cost of milk production and make our dairy farmers competitive locally and internationally.

1—Livestock farming should be treated as Agriculture and hence all facilitation given to the agriculture sector should also be extended to the Livestock farming which should include reduced electricity tariffs, exemption of income tax, waved off and/or reduced duties & taxes on machinery and raw material, etc.

2—It is recommended that the Government should move the raw milk to the 5th schedule of the Sales Tax Act 1990 and continue the zero-rating status for the dairy farming sector. It is further recommended that this zero-rating status should cover all direct and indirect material/ capital goods required in feed production and farm machinery etc.

3—The government should support the fodder and feed preparation players to increase the availability of low price fodder and feed for dairy animals. Technological support should be provided.



4—It is recommended that the collection of duties and taxes on the import of raw material/ cattle feed/machinery & equipment used for the production of raw milk at the dairy farms should be abolished.

5—To increase procurement of liquid milk from small dairy farmers, customs and regulatory duties on milk powders (PCT Code: 0402.1000) and whey powders (0404.1010) should be significantly raised from the existing 45% to 100%. It will indirectly reduce the cost of milk production at farms by efficient disposing of milk to milk collecting channels.

6—Effective implementation of artificial insemination of descript animals should be the priority to increase yield per farm animal, which will ultimately increase revenue from dairy farms and reduce the cost of milk production.

7—Milk prices should be de-capped which will enable farmers to get a good farm gate price of their milk.

8—An effective mechanism of milk collection and initial processing must be devised and implemented at the tehsil level to avoid wastages of milk in the milk supply chain. This will indirectly help to reduce the cost of milk production.

## POLICY IMPLICATIONS

- The above situation attracts the attention of policymakers related to Livestock sector for following interventions immediately:
- The government should sponsor some empirical studies/projects through which the actual cost of milk production may be empirically studied at various production systems throughout the province and Pakistan.
- A comprehensive program of capacity building of dairy farmers should be launched to make them aware to work on their farm economics and improve it.
- A long term national dairy development policy needs to be prepared in consultation with all relevant stakeholders and implemented.

## REFERENCES

Ayyub (2019) "Effects of Price de-capping of milk and meat in Punjab" A consultancy report submitted to PEEP, USAID in June 2019.

Ayyub (2020). Cost of milk production in Punjab. A presentation was given at UVAS, Lahore.

Assessment of Loose Milk Supply chain in Lahore, 2017, A study funded by PEEP-USAID and completed under CAPRIL (Center for Applied Policy Research in Livestock), UVAS, Lahore.

Burki, A.A. and A.K. Mushtaq (2015). Pakistan`s Dairy sector lessons from the past to build a resilient dairy industry.

Economic Survey of Pakistan (2019), Finance Division, Economic Advisor Wing, Government of Pakistan.

Global Dairy trends and drivers 2019, A report of IFCN Dairy research network.

Goetz, P., A. Diepenbrock and L. Wyrzykowski (2019). Global Dairy trends and drivers 2019.

Hemme, Torsten & Uddin, M. & Ndambi, O. (2014). Benchmarking Cost of Milk Production in 46 Countries. Journal of Reviews on Global Economics. 3. 254-270.

Rahman & Naveed (2019). Assessment of cost of milk production of different Dairy production systems of District Lahore, Pakistan. A presentation was given at UVAS, Lahore.

Reporter (2017), Amul raises milk procurement rates by Rs.10. Available at: <https://timesofindia.indiatimes.com/>

The Daily Star (2020), "How far is Bangladesh from achieving self-sufficiency in the dairy industry?" printed on June 30, 2019.