

POLITICAL ECONOMIC ANALYSIS OF DAIRY SECTOR IN NEPAL: POWER AND STRUCTURAL DIAGNOSIS.

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ABSTRACT

Nepal's annual milk production is growing by 4–5%, but domestic market demand is increasing by 9–10% over the last decade, creating a potential demand–supply gap in the dairy sector. This study adopts a qualitative Political Economy Analysis framework to examine the structural and political economy factors that determine how power relations, institutional arrangements, and stakeholder interests interact to shape policy outcomes and sectoral governance. The Constitution of Nepal 2015 along with relevant policy documents, legislative instruments, and regulatory frameworks governing the dairy sector were analysed. The study reveals that constitutional authority over food safety, technology, and nutrition has been distributed among federal, provincial, and local governments, leading to complex governance challenges. The dairy sector is struggling with institutional ambiguities, overlapping mandates, coordination gaps, and weak implementation. Federalization has diluted accountability, with local and provincial governments lacking adequate technical manpower to fulfil their mandated roles. The study recommends redefining the roles and responsibilities of government agencies at all levels, enacting a unified dairy governance framework, and fostering policy dialogue to create a business-friendly environment that ensures every citizen benefits from the dairy sector's potential and contributes to national prosperity

1. INTRODUCTION

Agriculture is a crucial livelihood option in a developing country and the country's developing economy. In developing countries, contribution of agriculture to GDP varies from 15-35% (World Bank, 2023), while in developed nations, it ranges from 1-3% (USDA, 2023; EUROSTAT, 2023). The contribution of dairy sector to a country's GDP in developing countries is between 0.5-4% (Kenya Dairy Board, 2023; NDDDB, 2023), compared to 0.2-1.5% in developed economies (European Dairy Association, 2023). Nepal, despite being an agrarian country, has experienced a significant decline in agriculture's share of Gross Domestic Product (GDP) over the past decade, indicating structural economic change. The

contribution of agriculture to GDP was 35.8% in 2010/11, decreasing to 21.1% in 2023/24 (MoF, 2024). In addition to that, the percentage of the population involved in agriculture decreased from 71% in 2008 to 60.4% in 2018 (NLFS III, 2018) and further to 51.3% in 2022 (CBS, 2018; MoALD, 2023). Dairy sector is Nepal's second-largest agricultural sector, constituting 63% of livestock GDP (Heifer International Nepal, 2023).

Although the formal dairy industry has a nearly 70-year history in Nepal, the formal milk industry was started with the establishment of Dairy Development Corporation (DDC) in 1969, which assures a market and fair price for milk-producing

farmers and quality products to consumers (FAO, 2010). Over time, different government institutions like the National Dairy Development Board (NDDB) (Government of Nepal, 1992), along with milk cooperatives and their associations, private dairy associations, etc., have been established.

From the beginning to the early 2000s, DDC's market share was very high, accounting for nearly 45% of milk collection and over 60% of the formal market (Acharya & Basnet, 2009; Sharma, 2017). Since the 1990s, the private sector has entered the dairy industry, and over the last decade, they have dominated the dairy industry (Singh *et al.*, 2020).

Currently, annual milk production is experiencing a 4-5% of annual growth, and domestic market demand has been increasing by 9-10% in last decade, which creates a potential gap for investment in this sector. For a few years, the export potential of dairy products, especially dog cheese (Chhurpi), has been increasing enormously, supporting in trade balance of the country (Pant *et al.*, 2023). Despite its potential for growth, dairy sector in Nepal is still facing numerous challenges. The dairy sector in Nepal is characterized by low productivity and seasonal production. Nepal experiences two distinct dairy production periods—the flush and lean seasons. The flush season, which lasts from August to February, results in an oversupply of milk, whereas the lean season is characterised by reduced production. The production ratio between the two is roughly 1:3.

Although The Constitution of Nepal, 2015, has clearly distributed the power of Federal, Provincial, and Local Government regarding Food Safety, Technology, and Nutrition (FSTN), the institutional development, predominantly provincial and local level is primitive. Schedule 10.1.5 of the Constitution of Nepal 2015 mentions that the local level has the power of “Inspection and regulation of price and quality of locally produced goods and services,” but there is a lack of technical manpower for quality assurance at the local level. Furthermore, many locally produced foods are not listed by DFTQC, and many of these products lack quality standards. Local producers and processors are unaware of legal standards and other regulatory frameworks

(MoALD, 2019; DFTQC, 2020; FAO, 2017). Most of the local governments are unaware of their power and responsibilities on FSTN and in the meantime provincial institutions are new and majority of province FSTN policy haven't been tabulated till date (MoALD, 2023).

In the trajectory of political transformation of Nepal in the last decade, constitutional authority of food safety, technology, and nutrition has been distributed between federal, provincial, and local government (Constitution of Nepal, 2015), giving rise to complex governance challenges. The political economies of the dairy sector are struggling with institutional ambiguities, coordination gaps, and implementation challenges. The study examines the structural and political economy factors that determines how power relations, institutional arrangements, and stakeholder interests interact to shape policy outcomes and sectoral governance (Harris, 2013).

2. METHODOLOGY

2.1 Analytical framework: For this research, a qualitative framework for Political Economy Analysis (PEA), according to Harris (2013), is used. The framework of Political Economy Analysis consists of four related analysis stages: (i) structural analysis, where the historical, economic, and social structure of the context influencing sectoral outcomes are analysed; (ii) institutional analysis, where the legal and informal rules, values, norms, and organizations guiding the behaviour of the actors are examined; (iii) actor analysis, which entails identifying actors in the sector and analysing their interests, incentives, and power relative to each other; and (iv) process analysis, where the way these three components interact in bringing about certain policy outcomes is traced. PEA investigates relationships of accountability between the government and its citizenry, uncovers governance-related structural issues, and power relations between actors

2.2 Data sources:

This study relies exclusively on secondary data sources. The primary legal and policy documents analysed include: the Constitution of Nepal (2015); the Food Act (1967) and Food Rules (1970); the Food Hygiene and Quality Act (2024); the Dairy Development

Policy (2021); and the Agriculture Development Strategy 2015–2035. Institutional reports consulted include the Statistical Information on Nepalese Agriculture (MoALD, 2023), the Dairy Diary 2024 (NDDDB, 2024), and the DDC Annual Report 2023/24. International frameworks referenced include the Codex Alimentarius standards, FAO Nepal Country Reports, and OECD/IDF dairy sector analyses. Regulatory instruments such as the Directives on Safety and Quality of Milk and Milk Products (2018), the Code of Practice for Dairy Industry (NDDDB, 2004), and the Stakeholder Engagement Plan of the REED Project (MoALD, 2022) were also reviewed.

3. RESULTS AND DISCUSSION

3.1 Overview of Nepal's dairy sector:

Over the last ten years, the dairy sector has experienced significant growth, with a 70% increase in production from 1,700 million tons of milk in 2014/15 to an estimated 2900 million tons in 2023/24 (MoALD, 2023/24). More than 1,700 primary milk producers and cooperatives play a vital role in channelling milk produced by smallholder farmers into the formal milk market. Nepal's dairy sector is highly localized. The dairy sector of Nepal is emerging, but its share of global milk production is minimal at 0.247 percent (CASA, 2020). Out of 3.8 million farming households in the country, 95% have dairy animals, but only about 14% of milk-producing households (around 500,000) are both producers and sellers (UK Aid, April 2020). Out of the total milk produced, only 17% enters the formal sector, nearly 35% goes to the informal market, and the remaining is used within households (MoALD, 2023).

3.1.1 Dairy cooperatives of Nepal:

Cooperatives “an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly owned and democratically controlled enterprise” (ILO, 2002). Milk Cooperatives are dedicated cooperatives which primarily functions in dairy value chain. In Nepal are total 781 Milk Cooperatives or milk collection centres that are actively collecting milk, with an average daily collection of 6.26 lakhs litres (NDDDB,

2024). Them seems contradictory in the number of milk cooperatives as always.

3.1.2 Dairy industries of Nepal:

At the same time, there are 316 milk processing plants or industries with the total installed daily processing capacity of 15.05 lakh litres per day, but these processing plants are operating at 57% of the installed capacity, i.e., 8.67 lakh litres. In addition, there were 34 cheese plants, 25 chhurpi plants, and 33 cooperatives or unions running their own milk processing plants (NDDDB, 2024). Among these dairy industries and plants, most of them are operating without a license from DFTQC. Government-owned Dairy Development Corporation (DDC) operates 8 processing plants, 65 chilling centres, 10 yak cheese centres, 7 Kanchan cheese centres, and 6 paneer/mozzarella production centres across 47 districts in Nepal (NDDDB, 2024).

3.1.3 Demand-supply scenario of finished products

According to the National Dairy Development Board (NDDDB), the estimated annual growth in demand for milk and dairy products is 11% (NDDDB, 2020). The total requirement of milk in Nepal per person per year is 91 liters, but the production of milk is only 88 liters per person on a yearly basis (Chapagae et al., 2024). Although the Ministry of Agriculture and Livestock has declared self-sufficiency in milk along with milk powder, the shortfall is reflected in the trade balance too, with Nepal importing an estimated 20000 metric tonnes of dairy products annually, while in the meantime exporting only 5000 metric tonnes (IndexBox, 2026).

3.2 Political economic analysis:

3.2.1 Constitutional framework:

The Federal Constitution of Nepal (2015) has mentioned the clear provision on Food, Right to Food (Clause 36A), Right to Food Security (Clause 36B), Right to Food Sovereignty (Clause 36C), and also the right to consume quality Food to every citizen (Clause 44A and 44B).

The constitution of Nepal, 2015, has distributed the subject of Power of food safety

and quality governance across three government tiers;

3.2.1.1 Subject of the power as per constitutions of Nepal:

Local Government:

- Local Market management
- Local Trade/commerce, demand/supply, market management and inspection; implementation and regulation of policy
- Legislation and standards related to consumer rights and protection
- Inspection and regulation of price and quality of locally produced goods and services
- Local Market management
- Local Trade/commerce, demand/supply, market management and inspection; implementation and regulation of policy
- Legislation and standards related to consumer rights and protection
- Inspection and regulation of price and quality of locally produced goods and services
- Registration, permits, renewal, revocation, and regulation of commercial firms at the local level
- Promotion, facilitation, and regulation of local business
- Consumer awareness, data management of targeted consumers, and quality testing of locally produced goods and services

Provincial Government:

- Implementation and regulation of provincial agriculture, livestock, and food nutrition-related policy, legislation, and standards
- Implementation and regulation of provincial agriculture, livestock, and food nutrition-related policy, legislation, and standards
- Agricultural industrialization, development, and promotion of livestock-based industries and trade
- Provincial food security, food rights, and food sovereignty
- Agriculture, livestock, and food technology-related study, research, development, and promotion

- Development and management of Provincial Labs for the agriculture, livestock, and food sector

Federal Government:

Policy, legislation, and standards implementation and regulation of quality and safety related to food quarantine

An analysis of these constitutional clauses shows that there is indeed a careful yet sophisticated hierarchical structure of governance that has been developed within the Constitution. While it is true that the federal government has general control over the food quarantine regulations and other national issues, the Constitution does give substantial powers to the local governments to regulate and oversee all issues related to food safety and management of the markets as well as protecting consumers. In between these two extremes, the provincial governments act as an intermediary that is supposed to implement, conduct research, and ensure the food security at the provincial level. This hierarchy of powers is important for analysing the dairy governance, since this hierarchical structure makes sure that there is no single tier in the governance hierarchy that will have full authority over the dairy business.

3.2.2 Policy/Legislative framework and regulatory instruments:

The dairy sector of Nepal is guided by a comprehensive policy framework mainly aimed at increasing production and productivity, along with market competitiveness. Dairy Development Policy 2021 serves as the primary guiding document for the dairy sector, which has a long-term vision of contributing to national economic development through employment generation and poverty reduction by producing quality milk and dairy products (MoALD, 2021). Building upon the National Agriculture Policy 2004, which aims to transform subsistence agriculture to commercial one Agriculture Development Strategy (ADS) 2015-2035 serves as master plan for Nepal's agricultural development, aiming to transform Nepal from a net food importer to a net food exporter by achieving 6% annual agricultural growth and generating a 0.5% trade surplus by 2035

(MoALD, 2015). Major Policies, their governing institutions, provisions and gaps are listed in the table.

Table 1: Policy Mapping and Gap Analysis of Nepal's Dairy Sector Governance Framework

Policy/Legislation	Governing Institution(s)	Key Provisions	Identified Gaps
Constitution of Nepal	Federal, Provincial & Local Governments	FSTN powers distributed among three levels; ensures food rights (Arts. 36A-C, 44A-B).	Overlapping jurisdictions; lack of intertier coordination mechanism; local governments unaware of FSTN's jurisdiction; no dairy governance provision in constitution.
Food Act (1967) / Food Hygiene & Quality Act (2024)	DFTQC / MoALD	Legislation for food safety; licenses; more stringent penalties (Act of 2024); labelling provisions in Nepali/English languages.	Many locally produced dairy products are not registered with DFTQC; poor enforcement at provincial/ local level; delay in replacing 1967 Act took 57 years.
Dairy Development Policy (2021)	MoALD / NDDDB	Provides guidelines for national dairy development; promotes job creation, poverty alleviation, and production of good quality milk.	No implementation mechanism; provincial level dairy policy virtually non-existent; NDDDB does not have enforcement powers.
Agriculture Development Strategy (ADS) 2015–2035	MoALD (master plan)	Make Nepal an exporter rather than an importer of foods; 6% yearly growth in agriculture; 0.5% trade balance surplus till 2035.	Aspirational in terms of specific dairy targets; lacking sector specific dairy sub strategy; slow progress on commercialisation.
Directives on Safety & Quality of Milk and Milk Products (2018)	DFTQC / DLS	Functions of milk handlers/operators; manpower needs for quality assurance in the dairy industry.	Low compliance rate; majority plants do not possess license from DFTQC; lack of qualified manpower; overlap between DFTQC and DLS creates ambiguity.
Animal Health & Livestock Services Act (1998) & Regulations (1999)	DLS / Animal Quarantine Offices	Controls import/export of livestock; quarantining of animals; health and safety of animal products.	Overlap with DFTQC in case of food safety; limited coordination with NDDDB; not reflective of federal structure of governance.
NDDDB Act (1992) / Code of Practice for Dairy Industry (2004)	NDDDB (coordination between public and private sector)	Standardisation of milk/milk products (organoleptic, COB, alcohol, FAT/SNF, adulteration, phosphate, microbial testing).	NDDDB functions only in advisory capacity; no powers of enforcement; parallel standards with DFTQC creates confusion for cooperatives.

Note: FSTN = Food Safety, Technology, and Nutrition; MoALD = Ministry of Agriculture and Livestock Development; DFTQC = Department of Food Technology and Quality Control; NDDDB = National Dairy Development Board; DLS = Department of Livestock Services; ADS = Agriculture Development Strategy.

Source: Review of the Constitution of Nepal (2015), Dairy Development Policy (2021), Agriculture Development Strategy 2015–2035, Directives on Safety and Quality of Milk and Milk Products (2018), Animal Health and Livestock Services Act (1998) and Regulations (1999), and NDDDB Act (1992) / Code of Practice for Dairy Industry (2004).

Besides the above-mentioned domestic policy, rules, and regulations, Nepal is also bound by international rules and regulations too. Nepal is a member of the following international organizations that affect the food safety-related policy, rules, and regulations.

- Codex Alimentarius Commission
- World Trade Organization (WTO)
- Food and Agriculture Organization (FAO) of the United Nations (UN)
- South Asian Association for Regional Cooperation (SAARC)

- World Organization for Animal Health (OIE)
- Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC).

3.2.3 *Power dynamics and stakeholder mapping/analysis:*

The Ministry of Agriculture and Livestock Development (MoALD) is the apex government body in Nepal which oversees various departments, boards, committee etc which are directly involved in technical backstopping; quality control along with standardization of agriculture and dairy products. MoALD mainly responsible for formulating national policies, rules, regulations and laws, directives etc. It provides technical backstopping as well as lead overall country's agriculture (Dhungana *et al.*, 2024).

At the provincial level, each Provincial Government have Provincial Ministry of Land Management, Agriculture and Cooperatives (PMoLMAC) which formulate provincial level laws, rules, regulations, policy, directives etc by taking National policies, rules, regulations, laws, directives as a guiding principle. Likewise, MoALD, these ministry works through Directorates related to agriculture and livestock; till date no any provincial government have created Directorate or any agency which directly look after food quality and standardization sector (Ministry of Land Management, Agriculture and Cooperative, 2026).

Major institutions involved in Quality Control and Standardization are :

Department of Food Technology and Quality Control (DFTQC):

The Department of Food Technology and Quality Control, established in 1961, is the authority responsible for enforcing regulations related to food safety and quality management to ensure the availability of safe, high-quality food. It has the power to conduct inspections, issue licenses, keep records, serve as the SPS inquiry point, standardize, certify for export and import, and implement awareness programs, along with technology

development and training. DFTQC has developed 24 legal and quality standards for milk and milk products (DFTQC, 2020). It operates through eight regional or provincial offices, 12 Food Import-Export Quality Certification Offices, and 22 division offices.

National Dairy Development Board (NDDB)

National Dairy Development Board (NDDB) is established to make dairy production business much stronger by bringing about harmony between the private sector and the government sector, by formulating a policy on dairy business at the national level, and by formulating a development plan relating to it. It was established by the Government of Nepal in 1992 under a separate Act based on the recommendation of "Ten Year Dairy Development Plan (1991-2000)". NDDB has established the Code of Practice for Dairy Industry 2061 (2004), which directs six criteria for the standardization of milk and milk products, such as the Organoleptic test, COB test, Alcohol Test, FAT and SNF test, Adulteration test, Phosphate test, and microbial and coliform test (NDDB, 2004).

Department of Livestock Services (DLS)

Department of Livestock Services (DLS) is mainly involved in the growth of livestock development in the country, thereby enhancing the economic and social lifestyle of rural people. DLS mostly engages in animal health management; quarantine and trade regulation; genetic resource conservation and promotion; policy & regulatory framework development; production and productivity enhancement; extension and services. Directives on Safety and Quality of Milk and Milk Products 2018 have clearly given regulatory roles to DLS on food safety, quality, and promotions. Besides these, DLS also implements dairy-related projects funded by different donor agencies.

Provincial Directorates of Livestock and Fisheries Development:

It is mainly involved in livestock extension; animal health along with breed improvement and production enhancement. Besides this it also provides technical assistance to dairy farmers within their jurisdiction.

In addition to the above-mentioned institutions, the Provincial-level dairy development board, Dairy Development Corporation (DDC), Private dairies, Private dairies association, Milk Cooperative, and their union are also working as per their rules and regulations in the dairy sector.

Nepal Rural Economic and Enterprise Development Project (REED) have suggested that stakeholder engagement/mapping can be distinguished into four parts into four parts (MoALD, 2022) in their Stakeholder Engagement Plan (SEP):

1. High Influence; high interest (Manage closely)
2. High Influence, low interest (Keep satisfied)

3. Low Influence, high interest (Keep informed)
4. Low Influence and Low Interest (Monitor)

Mainly there are three tiers of stakeholders' Primary stakeholders (directly engaged in input supply, production, collection, processing and packaging, and domestic trading (wholesaling/ retailing)); Secondary Stakeholders who are engaged in enabling the dairy business (MoALD, DFTQC, NDDDB, DLS, Provincial Ministries, Local Government, Development Agencies) and its constitute; Tertiary Stakeholders who are not directly involved but work as a watchdog (Nepal Consumers Societies, Political Parties, Education Institutions, Media) (MoALD, 2022).

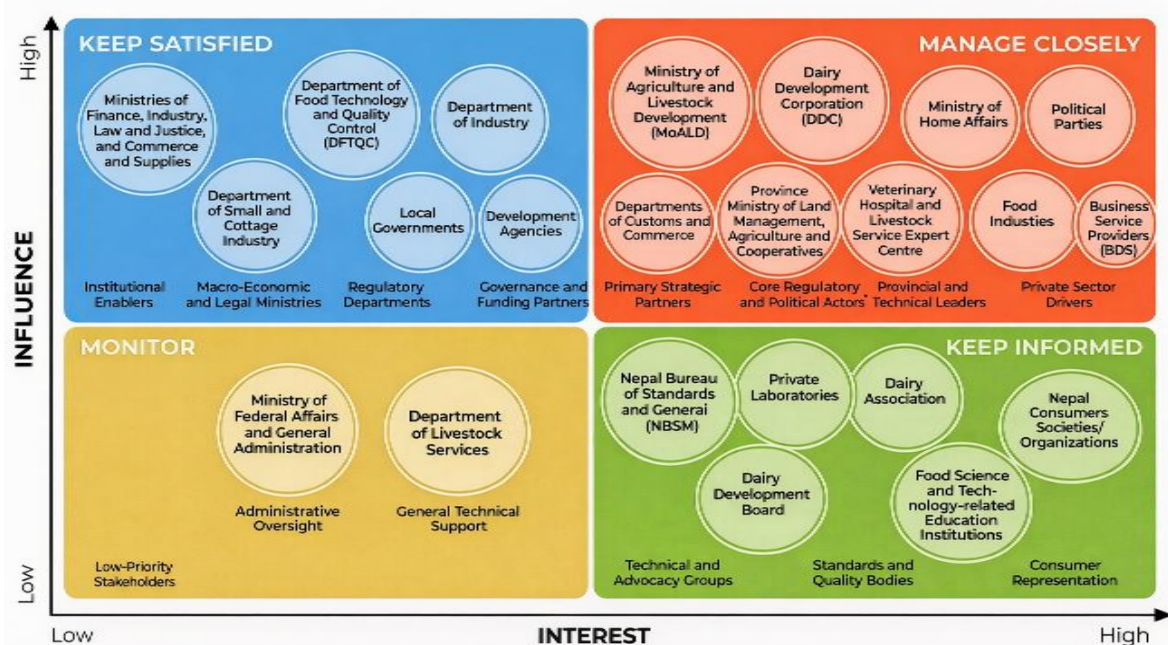


Figure 1: Stakeholders' Mapping (Source: MoALD, 2022)

Analysis of the distribution of powers among the various stakeholders of the dairy sector demonstrates considerable overlap in their mandates and coordination gaps. Each organization – including MoALD, DFTQC, NDDDB, and DLS – has a specific mandate; however, the jurisdictions of these organizations converge around common roles such as quality control, licensing, and standard setting. For example, the role of DFTQC includes licensing and inspections at all milk processing plants; on the other hand, NDDDB makes its own Code of Practice for

cooperatives. DLS is responsible for livestock services and animal health, while simultaneously playing a role in formulating the dairy food safety directive. Such overlap leads to a situation in which a particular milk producer must approach several different agencies for the same approval process. Another dimension that influences power dynamics in the dairy industry comes from varying ability and power to influence among actors' groups. The central government and ministries continue holding more legitimacy and expertise; however, their power remains

weak at local levels. The provincial government, which has just been formed due to federalism, lacks the necessary bureaucratic machinery and skilled individuals capable of performing functions defined for them constitutionally and find themselves disadvantaged despite being on equal grounds formally. Privately owned dairy companies enjoy a lot of financial muscle and take part in policy making processes through their lobby organizations, having the power to influence pricing policies and rules for accessing markets. Dairy farmer cooperative societies, although many, find themselves with less bargaining power individually but somewhat strong collectively. The disparity in resources held by private actors and small-scale farmers remains one of the major factors perpetuating value chain inequities.

There are areas where there could be some potential for coordination and cooperation, but these areas have been under-utilized. For instance, the National Dairy Development Board had been established as a coordination agency between public and private stakeholders in the sector, but it is a body without enforcement power and functions largely in an advisory capacity. While there are inter-ministerial coordination arrangements within MoALD, the Ministry of Industries, and the Ministry of Health for such cross-sectoral challenges as food safety, labeling and inspection, and importation, the level of inter-agency coordination and cooperation still appears to be insufficient. The work of development partners and international organizations like the FAO, and donor-driven projects like the REED program, has certainly contributed to bridging some gaps in the area of coordination, but clearly the dependency on donors makes this approach unsustainable.

4. CONCLUSION:

The Constitution of Nepal (2015) and related food legislation clearly define stakeholder roles and rights, yet implementation remains critically poor. Post-federalization, agricultural responsibilities are fragmented across three government tiers, creating accountability gaps, while local and provincial governments lack the technical capacity to execute their mandates effectively. Decades of political transition have kept food safety and quality standards deprioritized, leaving Nepal governed by a new constitution but largely operating under outdated laws—only recently addressed through the Food Hygiene and Quality Act (2024)—compounded by institutional ambiguity that forces dairy enterprises to navigate multiple agencies for a single approval. To bridge these gaps, inter-agency coordination among DFTQC, DoA, DLS, NCS, and NBSM must be strengthened, local governments equipped with adequate technical resources, and production-site inspections rigorously enforced. Given consumers' willingness to pay premium prices for quality dairy products, parallel investment in hygiene standards, distribution infrastructure, and consumer awareness is essential, alongside further research into price sensitivity across specific quality attributes.

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