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Green Economy Development Solutions for Vietnam's Livestock Sector

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Abstract

The livestock sector, in particular, and agriculture in general always play a crucial role in food security and serve as the backbone of any economy. However, this sector faces significant environmental and social challenges. This article systematizes the theoretical basis of the green economy, the development of the green economy in livestock farming, and the necessity of green economic development in livestock farming in Vietnam. Amidst the shift towards a green economy, the article discusses opportunities, challenges, and models used to assess the impact and extent of factors affecting the green economy in livestock farming in Vietnam. This provides a comprehensive assessment and analysis of the development landscape of the green economy in livestock farming in Vietnam. Solutions are proposed to help managers, policymakers, businesses, and livestock households make informed decisions to ensure the sustainable development of the green economy in livestock farming in Vietnam.

Keywords: Green economy; livestock farming; environment.

1. Introduction

As an integral pillar of agriculture, the livestock sector plays a vital role in ensuring food security, generating rural income, and contributing to national economic development. With the rising global population and increasing demand for food diversity and quality, the need for livestock products is expanding rapidly. Consequently, investment in livestock farming is growing worldwide, including in Vietnam.

In Vietnam, however, livestock production remains largely small-scale and household-based, relying heavily on locally available feed resources. This production model is associated with low productivity and poses challenges for food safety compliance. Meat quality often fails to meet established hygiene standards, adversely affecting consumer health and farmer profitability. In addition, the sector is increasingly vulnerable to the impacts of climate change, such as extreme weather events, which exacerbate disease outbreaks, reduce animal populations, and strain feed availability. Many farming and slaughtering facilities lack adequate sanitation and processing infrastructure, further diminishing the quality and international competitiveness of Vietnamese livestock products.

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Moreover, the livestock sector is a major contributor to greenhouse gas emissions, particularly methane and nitrous oxide, which significantly impact the environment. In light of these challenges, it is imperative to adopt green economy principles to transform livestock production into a more sustainable, efficient, and environmentally responsible industry. By rethinking production models and implementing innovative practices, Vietnam can turn these pressing challenges into opportunities for green growth and long-term resilience in its livestock sector.

2. Some basic concepts

2.1. Concept of a Green Economy

The concept of a green economy has been defined in various ways by international institutions, each offering complementary perspectives. Synthesizing these views allows for a more holistic understanding:

- From the European Union (EU): A green economy is defined as one that is *smart, sustainable, and equitable*—balancing growth with inclusiveness and long-term viability.
- The Green Economy Coalition highlights social aspects, describing it as *an economy that enhances human well-being and social equity while reducing environmental risks and ecological scarcities.*
- The International Chamber of Commerce offers a business-oriented view, defining a green economy as one in which *economic growth and environmental responsibility go hand in hand*, reinforcing social development.
- The United Nations Department of Economic and Social Affairs (UNDESA, 2012) consolidated global perspectives, emphasizing that a green economy must *minimize environmental and social harm caused by economic activity*.
- The United Nations Environment Programme (UNEP, 2011) provides one of the most widely accepted and comprehensive definitions: *A green economy improves human well-being and social equity, while significantly reducing environmental risks and ecological scarcities*. In simplified terms, it is *low-carbon, resource-efficient, and socially inclusive*.

From this synthesis, it becomes clear that despite differences in framing, the concept of a green economy converges around three fundamental pillars:

1. Economic development – including growth, innovation, and employment creation.
2. Environmental sustainability – focusing on reducing carbon emissions, conserving biodiversity, and preventing resource depletion.
3. Social inclusion – ensuring equitable access to opportunities, reducing poverty, and improving public health and well-being.

Moreover, in a green economy, environmental resources are not seen as mere inputs but as strategic assets that support long-term economic prosperity and resilience. Sustainable resource management and climate change adaptation are thus central tenets of this economic model.

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2.2. Green Economy in Livestock Farming

The integration of green economy principles into livestock farming is both urgent and necessary, given the sector's increasing environmental and social impacts. This need arises from several pressures:

- Rising demand: Both population growth and improved income levels are driving up per capita consumption of animal protein.
- Unsustainable production models: Conventional livestock systems are resource-intensive, environmentally damaging, and pose health risks to both animals and humans (Niamir-Fuller, 2015).

To address these challenges, the transition to a green economy in livestock farming requires a multidimensional approach:

- Sustainable consumption and production: Promoting efficiency, reducing waste, and shifting toward environmentally responsible practices throughout the livestock value chain.
- Environmental stewardship: Managing waste, land, and emissions effectively to protect natural ecosystems.
- Holistic rural development: Enhancing livelihoods and well-being across farming communities, particularly in low-income and marginalized areas.

According to Niamir-Fuller (2015), three priority areas are key to sustainable livestock transformation:

1. Promoting sustainable consumption patterns for animal-based products.
2. Building environmentally sustainable and resilient production systems.
3. Developing rural communities through green infrastructure and inclusive development on a broad territorial scale.

Evidence of the importance of this approach is found in the UK Government's Global Food and Farming Futures report (2012), which underscores that green livestock farming is critical to ensuring a sustainable global food supply chain.

In Vietnam, the government has demonstrated its commitment to this transformation, particularly following its pledge at COP26. Supporting legal frameworks include:

- The Law on Livestock and related decrees and circulars;
- The Strategy for Livestock Development 2022–2030, with a vision to 2045,

which outlines four key initiatives:

1. Modernization of the animal feed industry;
2. Advancement of scientific and technological research;
3. Reform of slaughtering and processing practices;
4. Development of domestic and international livestock markets.

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Together, these policies establish a foundation for embedding green economy principles into the structure of Vietnam's livestock sector, ensuring environmental sustainability, economic viability, and social equity.

2.3 Characteristics of the Livestock Value Chain

The livestock sector consumes a significant amount of natural resources and contributes substantially to global greenhouse gas emissions. Prominent greenhouse gases from the livestock sector include methane and nitrous oxide. Methane is primarily produced from enteric fermentation and animal manure management, having a greenhouse effect 28 times stronger than carbon dioxide (CO2). Nitrous oxide arises from manure storage and application, with a global warming potential 265 times greater than CO2.

Livestock-related activities, from farm to table, follow a complex and multi-dimensional chain. This process starts from preparing land and livestock feed, raising livestock, transporting them to slaughterhouses for processing, and packaging products for preservation during transport. Distributors then move the goods through wholesale and retail networks to consumers, closing the farm-to-table loop. Consumers purchase these products for home cooking or use in food service establishments.

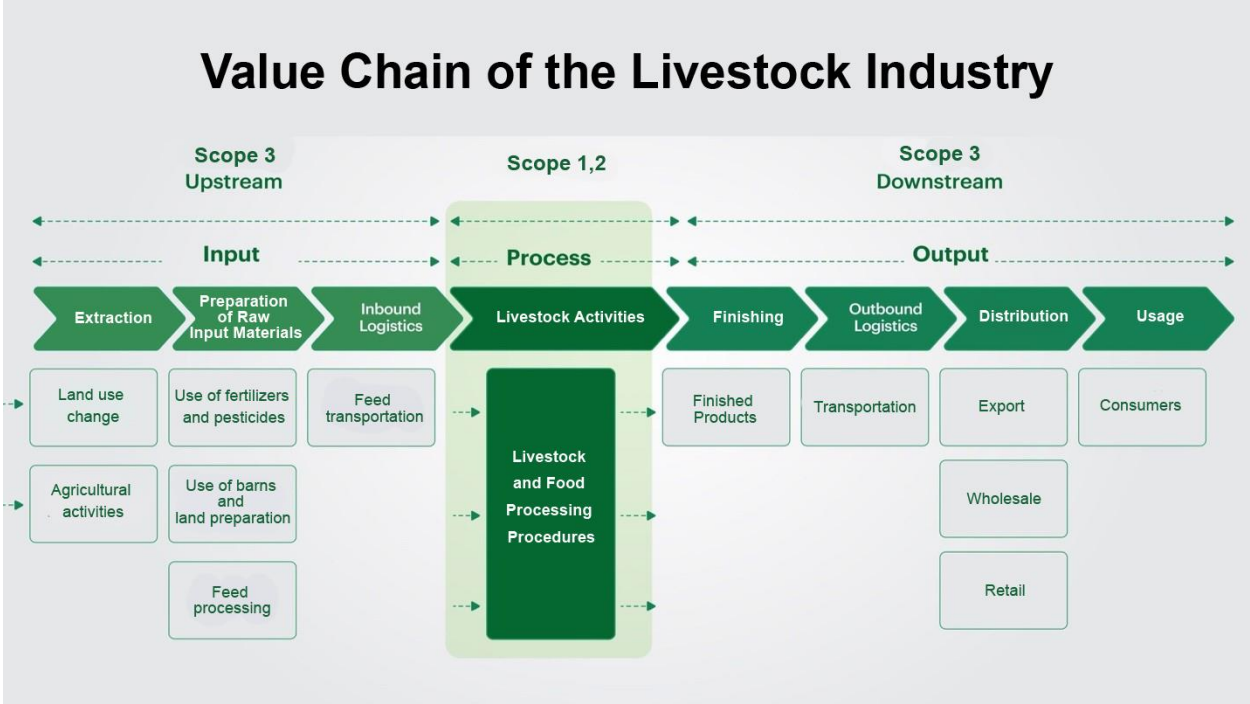

Figure 01: Livestock Value Chain

In livestock farming, about 2.8 gigatons of CO2 equivalent, accounting for 39% of greenhouse gas emissions from the livestock sector, come from enteric fermentation. This process occurs in the rumen of ruminants (such as buffaloes, cows, goats...), where bacteria, protozoa, and fungi

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ferment and decompose food. The characteristics of the rumination process create a fermentation environment, producing methane released into the environment. The amount of methane depends on the quantity and type of feed consumed by the animals and their digestive efficiency.

Besides greenhouse gases generated from enteric fermentation and animal manure, feed production is also a "hot spot" creating large amounts of carbon dioxide and nitrous oxide emissions. Carbon dioxide emissions come from various activities related to feed crop cultivation and processing, including:

Land-use change: Converting forests, grasslands, or other natural ecosystems into agricultural land for growing livestock feed.
Fertilizer and pesticide use: Production and application of chemicals, additives in farming.
Manure management and fertilization: Livestock waste and fertilizer application for feed crops. **Agricultural activities:** Using fossil fuel-powered machinery, irrigation, and other activities.

Feed processing: Drying, grinding, and processing feed for livestock.
Feed transport: Moving feed from production sites to livestock farms.

2.4 Role of Green Transition in Livestock Farming

2.4.1. Promoting Sustainable Livestock Development

Sustainable development in the livestock sector serves as a fundamental pillar for broader agricultural and environmental progress. Achieving this vision requires the responsible and efficient use of natural resources, with an emphasis on reuse, recycling, and long-term stewardship. Such practices not only meet present demands but also safeguard ecological assets for future generations.

A sustainability-oriented approach in livestock emphasizes the decoupling of economic growth from environmental degradation. It prioritizes low-impact production systems that minimize greenhouse gas emissions, reduce resource consumption, and protect ecosystems—while still contributing to economic and social development. This balanced model ensures that environmental integrity and agricultural productivity can coexist harmoniously.

In the current socio-economic context, growing consumer awareness regarding animal welfare and environmental responsibility increasingly influences purchasing behavior. Concerns about intensive farming practices can diminish market trust and demand. Therefore, it is essential for producers, businesses, and stakeholders across the value chain to stay informed about shifting public expectations. Proactively addressing these concerns not only enhances sustainability but also strengthens social license to operate, corporate reputation, and market competitiveness (Alonso et al., 2020).

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2.4.2. Helping Combat Climate Change

Greenhouse gas emissions from livestock include two main sources: methane from the rumen of ruminants and CH4, N2O from animal manure. Information from the Ministry of Agriculture and Rural Development shows that the total amount of livestock waste in 2022 reached 81.8 million tons per year, with pig farming accounting for 44.9%, beef cattle 26.7%, buffalo 15.3%, poultry 8.1%, and dairy cows 4.9%. Additionally, the liquid waste generated from livestock activities in 2022 is estimated to be 379 million cubic meters. However, only about 50% of solid waste and 20% of liquid waste is treated before being discharged into the environment.

By promoting greener livestock practices, governments and the private sector can collaborate to effectively mitigate climate change. By reducing carbon emissions in both production and transportation, it is hoped that the Earth's population can avoid many of the worst impacts of human-caused global warming.

2.4.3. Improving Ecosystems

When governments and businesses are determined to incorporate environmental protection measures into all economic activities, they not only protect biodiversity within ecosystems worldwide but also maintain effective ecosystem services. These services sustain human, animal, and plant life equally, all of which are necessary for the continued development of the economy.

In this context, trade barriers such as tariffs or import taxes, although increasing production costs and generating government revenue, impose a cost burden on consumers. However, these protective barriers have been used by developing countries to promote industrial development as part of an inward-oriented and import substitution strategy for growth (Kreuger et al., 1988).

2.4.4. Enhancing Social Equity

Green finance in livestock seeks to ensure fair outcomes for everyone in the global community. Instead of placing the burden mainly on developing countries, green economists in the livestock sector assert that industrialized countries should shoulder most of the responsibility in transitioning the economy and energy sector to greener technologies. This allows the international community to pursue the goals of poverty alleviation while implementing traditional environmental initiatives.

Typical of livestock farmers in developing countries are limitations in capital and access to formal capital sources, small and scattered farm sizes, low productivity, and low production levels. For this reason, farm income and welfare levels are often low (Adebayo & Adeola, 2008). This low welfare level has prompted governments to introduce credit policies and capital support to increase farm size and productivity, thereby increasing the income and welfare of farmers (Ashari, 2012).

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2.4.5. Advancing Science and Technology for Green Economic Development in Livestock

The role of livestock technology in developing countries revolves around finding labor-saving processes to maximize production with low input costs. Feed efficiency in terms of herd size or herd productivity is a top consideration in technology development. Other factors in developing appropriate and affordable technologies to ensure sustainability include: (i) conserving and improving resource bases; (ii) minimizing waste and environmental degradation; and (iii) recycling waste into livestock feed or biogas. On the other hand, technological advancements, such as the use of machinery, equipment, and electronic communication systems, have fundamentally changed the agricultural working environment in recent years (Pivoto et al., 2018).

A green livestock sector is resilient, capable of withstanding and mitigating the impacts of various challenges and stresses that may arise. By minimizing or eliminating livestock activities that harm human health and the environment, green livestock practices provide a better quality of life for people and support agricultural and economic activities.

2.5. Theoretical Framework: The Green Economy and Circular Economy Principles

The green economy, as defined by leading global institutions—including the European Union, UNEP, UNDESA, and the Green Economy Coalition—emphasizes inclusive economic growth, environmental sustainability, and social equity. Despite variations in interpretation, most definitions converge around three core pillars:

1. **Economic development**, including growth, productivity, and job creation;
2. **Environmental sustainability**, focusing on reducing emissions, conserving biodiversity, and minimizing resource depletion;
3. **Social inclusion**, ensuring access to opportunities and improving quality of life.

Aligned with this framework, this study also adopts the **circular economy model** as a key operational paradigm. Unlike traditional linear models (take–make–dispose), circular agriculture in livestock emphasizes:

- Efficient use of feed and natural resources;
- Reuse and recycling of livestock waste (e.g., biogas, organic fertilizers);
- Redesign of production processes to minimize emissions and waste.

Together, these frameworks provide a robust lens through which to assess sustainable transitions in the livestock sector, particularly in developing economies such as Vietnam.

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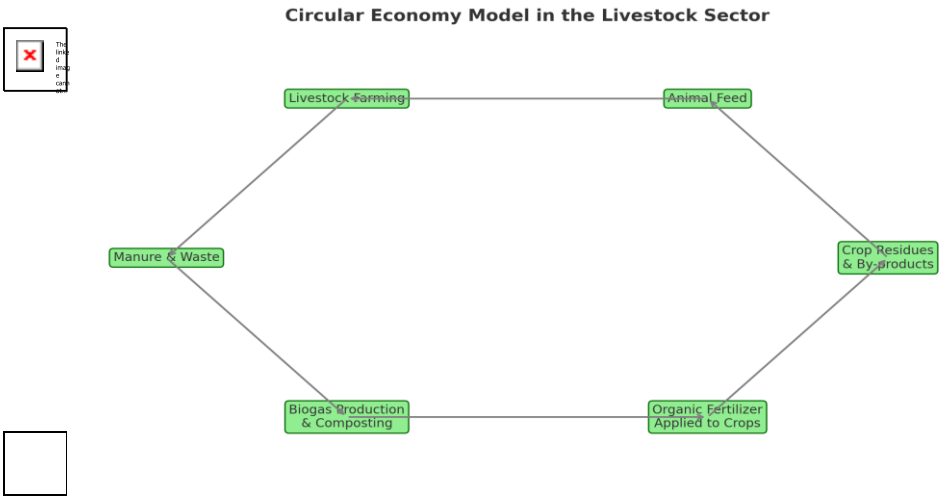

Figure 2: Circular Economy Model in the Livestock Sector

To operationalize the green economy in the livestock sector, this study adopts the **circular economy model**, which replaces the traditional "take–make–waste" approach with regenerative cycles of production and resource reuse. In livestock farming, this model includes:

- Utilizing agricultural by-products as animal feed;
- Recovering livestock waste for **biogas generation** and **composting**;
- Returning organic fertilizer to crop production to close the nutrient loop.

This approach minimizes environmental impact, promotes efficiency, and enhances farm resilience. It is especially relevant for Vietnam, where smallholder farming and waste management remain key challenges.

2.6. Methodology: SWOT Analysis for Strategic Assessment

To assess the opportunities and challenges of applying green economy principles to livestock production in Vietnam, this study employs a **SWOT analysis**—a structured planning tool used to evaluate:

- **Strengths**: Internal capabilities such as local feed sources, labor availability, and emerging policy support;
- **Weaknesses**: Structural issues such as small-scale production, limited technology adoption, and low productivity;
- **Opportunities**: Growing consumer demand for sustainable products, international climate commitments (e.g., COP26), and advancements in green technologies;
- **Threats**: Climate change impacts, biosecurity risks, global market volatility, and insufficient investment in infrastructure.

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This method enables a comprehensive evaluation of Vietnam's livestock sector through both internal and external lenses, and guides the identification of feasible, strategic interventions aligned with green economic transformation.

To evaluate the feasibility and strategic potential of green economic transition in Vietnam's livestock sector, a **SWOT analysis** is employed. This tool helps identify internal strengths and weaknesses as well as external opportunities and threats.

Table 1: SWOT Analysis for Green Livestock Sector in Vietnam

Strengths	**Weaknesses**
Availability of agricultural by-products for feed	Small-scale, household-based production
Growing awareness of sustainable practices	Low productivity and technology adoption
Policy support from national strategies (e.g., COP26, Livestock Law)	Limited access to formal financing
Opportunities	**Threats**
Access to international climate funds	Climate change and extreme weather impacts
Rising demand for green-certified livestock products	Outbreaks of animal diseases and weak biosecurity
Advances in renewable energy and biotechnology	Global feed price volatility and trade disruptions

This framework allows for targeted strategy formulation, aligning policy, investment, and technological interventions with Vietnam's long-term sustainable development goals.

3. Challenges of the green economy in the livestock sector

3.1. Emissions from Livestock Activities Causing Climate Crisis and Greenhouse Effect

Methane and nitrous oxide produced from livestock negatively impact human health, cause acid rain, and pollute the environment. The Food and Agriculture Organization (FAO) reported in 2018 that livestock activities account for 37% of global methane emissions and 65% of global nitrous oxide emissions, presenting significant environmental challenges.

A Greenpeace study in 2020 revealed that the livestock sector in Europe contributes more to carbon dioxide emissions than all transport vehicles operating in the EU. Livestock activities contribute 9% of global carbon dioxide emissions, the most impactful greenhouse gas. Additionally, the livestock sector significantly contributes to the increase of nitrous oxide and

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methane, with heat-trapping potentials 296 and 23 times that of carbon dioxide, respectively, leading to global warming and climate change.

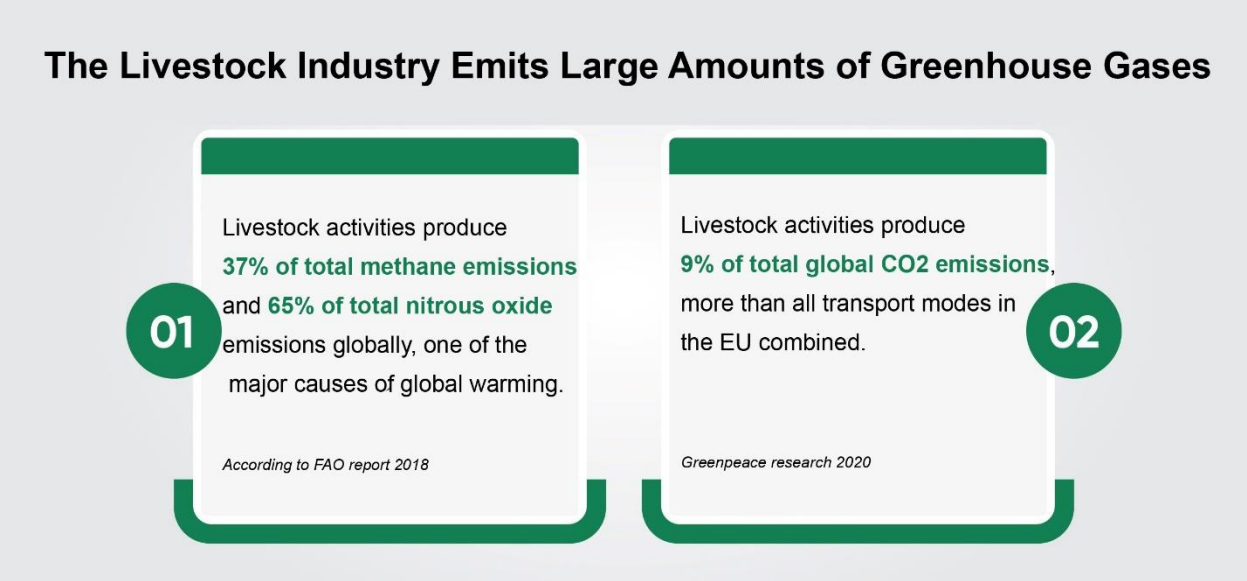

Figure 03: The livestock industry emits large amounts of greenhouse gases

Greenhouse gas emissions from livestock include two main sources: methane from the rumen of ruminants and CH4, N2O from animal manure. The Ministry of Natural Resources and Environment issued Decision No. 2626/QD-BTNMT on October 10, 2022, announcing the emission factors for greenhouse gas inventory.

Accordingly, among animals emitting methane from the rumen, dairy cows emit the most, about 78kg CH4 per head per year, buffaloes about 76kg CH4 per head per year, and beef cattle 54kg CH4 per head per year. For pig farming, emissions exceed 4.8kg CO2 per kg of meat. Considering the average weight of standard market pigs is 90kg, one pig emits about 438kg CO2. With an average farm size of 3,000 pigs, this results in approximately 3,000 tons of CO2 per year.

Thus, industrial livestock farming is one of the major sources of environmental pollution and large-scale greenhouse gas emissions.

The inventory results show that greenhouse gas emissions from cattle and pig farming always account for the largest proportion of total greenhouse gas emissions in the sector. Methane emissions from animal manure occur under anaerobic conditions in biogas tanks or in places with large amounts of animal manure but poor ventilation. Therefore, the largest methane emissions typically occur in concentrated livestock operations that use a lot of water for cleaning barns, such as pig farming. Greenhouse gas emissions from the livestock sector are increasing annually.

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In the Livestock Development Strategy for the 2021-2030 period, with a vision to 2045 by the Ministry of Agriculture and Rural Development, developing industrial farming and livestock waste treatment is one of five priority projects.

3.2. Livestock Wastewater Causing Pollution of Freshwater Sources and Infectious Diseases

Wastewater from livestock farms is becoming a serious problem as water use in animal care and barn cleaning increases. The Vietnam Livestock Department reports that livestock activities are currently discharging 304 million cubic meters of wastewater, nearly six times the amount of wastewater that the To Lich River receives annually. Particularly, livestock wastewater contains high levels of organic matter with high pollution, as well as a significant amount of microorganisms that cause gastrointestinal diseases, cholera, typhoid, and dysentery. If not treated properly, this wastewater can pollute human drinking water sources.

3.3. Solid Waste Causing Environmental Pollution, Water Pollution, and Diseases

Solid waste from livestock activities, including manure, leftover feed, and residues from animal care processes, is causing serious environmental pollution problems. Data from the Vietnam Livestock Department shows that the livestock sector produces about 74 million tons of waste annually, but only about 20% is treated or reused. This solid waste not only affects water quality but also significantly damages ecosystems and public environments. If not properly treated, livestock waste can pollute water and negatively impact the already scarce freshwater resources. The toxins in the waste also have a large impact on ecosystems and biodiversity. Additionally, exposure to waste and carcasses of animals that died from diseases can spread infectious diseases to other animals or even humans.

Figure 04: Report on emissions activities from the Vietnam Department of Livestock Production

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3.4. Experiences in Green Transition of the Livestock Sector

Vinamilk promotes the Net Zero action program, focusing not only on applying advanced global technologies but also on expanding innovative, sustainable models and initiatives by its employees. One notable initiative is using biogas, clean energy generated from cow manure, which significantly reduces CO2 emissions, transforming waste into resources such as organic fertilizer for pastures, methane for pasteurizing milk for calves, and drying grass for cow feed.

This improvement not only increases productivity but also efficiently utilizes resources and green energy, thereby reducing greenhouse gas emissions. This initiative is implemented uniformly across all farms in the system. In factories, units have researched and designed a complete system to recover and reuse cooling water, saving up to 91,250 cubic meters of water in 2022. Currently, 100% of Vinamilk's Green Farm livestock farms use renewable energy (such as solar energy) in production. The factories apply organic carbon atom technology to reduce methane emissions and odors in livestock. This technology involves using organic substances containing carbon atoms, such as sugar, flour, or bagasse, to spray on cow waste, activating beneficial microorganisms to quickly and effectively decompose waste.

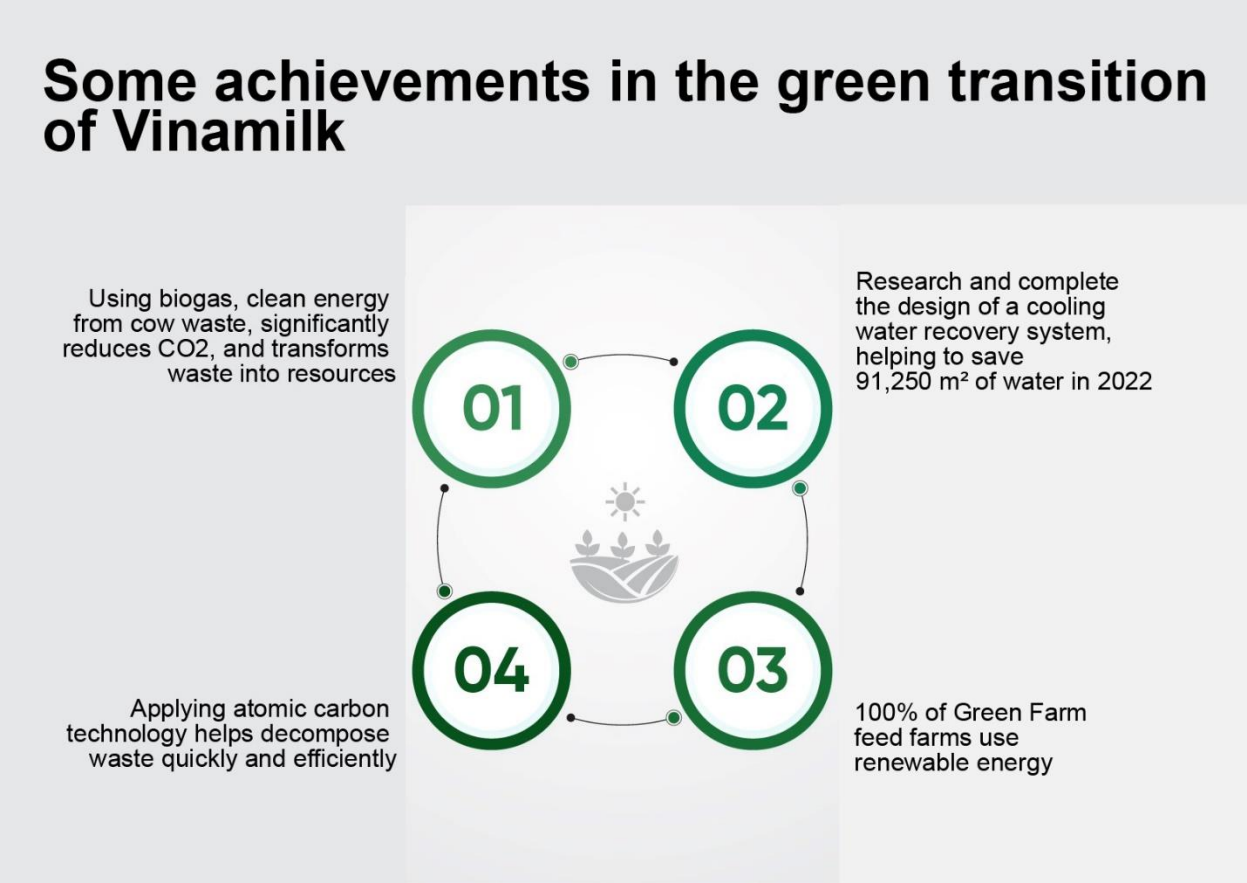

Figure 05: Some achievements in green transformation of livestock production of Vinamilk

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4. Some Solutions

4.1. Efficient Use of Natural Resources and Reduction of Greenhouse Gas Emissions

Reducing food waste and using sustainable feed ingredients, such as agricultural by-products, helps reduce consumption and demand for livestock feed, thereby reducing upstream greenhouse gas emissions in the livestock value chain.

Livestock farming needs to develop in the direction of a circular economy, reusing livestock waste, quickly addressing environmental pollution, reducing greenhouse gas emissions, transitioning to green energy, contributing to forming a low-emission agriculture to achieve the government's net-zero emission target by 2050.

Supporting research and applying technologies to reduce methane emissions from livestock, such as using feed additives that reduce emissions, or using biological products to inhibit methane-producing microorganisms in the cow's stomach.

Improving energy efficiency: Using renewable energy such as solar energy, wind energy; applying energy-saving solutions in production and processing.

Effective waste management: Using advanced waste treatment technologies, such as biogas systems to convert waste into energy; reusing waste as organic fertilizer. Applying systems to recover and reuse water in production and processing.

4.2. Promote Circular Economy Practices in Livestock Systems

Applying circular economy principles can significantly reduce environmental impact and enhance resource efficiency.

Key actions:
Reuse agricultural by-products such as rice bran, cassava pulp, and bagasse as animal feed inputs.

Develop biogas and composting systems to convert manure and organic waste into energy and fertilizer, particularly in medium- and large-scale farms.

Implement nutrient recycling loops by connecting livestock farms with crop-growing areas to close the “farm-to-field” cycle.

Policy support:
Introduce subsidies or low-interest loans for farms investing in circular technology (e.g., biogas digesters, composting units).

Mandate waste separation and treatment standards in livestock production.

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4.3. Strengthen Technological Innovation and Digital Transformation

Technology plays a vital role in increasing productivity, monitoring environmental indicators, and reducing emissions.

Key actions:

Adopt precision livestock farming technologies (e.g., automated feeders, climate sensors, health monitoring wearables).

Encourage smart breeding and feeding strategies to optimize feed conversion ratios and reduce methane output.

Digitize traceability systems to ensure product safety, transparency, and access to green certification schemes.

Policy support:

Provide matching grants for smallholders to adopt smart technologies.

Create open data platforms to share best practices in green farming techniques.

4.4. Improve Access to Green Finance and Incentives

Lack of capital is a major barrier, particularly for small-scale farmers aiming to upgrade to sustainable practices.

Key actions:

Establish green credit lines tailored to smallholders and cooperatives for investments in clean technologies and infrastructure.

Leverage international climate finance through partnerships with the Green Climate Fund (GCF), the World Bank, and bilateral donors.

Develop results-based financing models, where farmers are rewarded for verified reductions in emissions or waste.

Policy support:

Enact a national “Green Livestock Investment Fund” administered through agricultural banks or local development funds.

Provide tax incentives for companies in the feed, veterinary, and slaughterhouse segments that meet environmental performance standards.

4.5. Enhance Human Capital and Awareness through Education and Training

Sustainable transformation depends on changing behaviors and upgrading skills across the livestock value chain.

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Key actions:
Implement training programs for farmers on green farming, waste management, and animal welfare.

Integrate sustainability modules into agricultural education curricula at vocational schools and universities.

Develop awareness campaigns to increase consumer knowledge of eco-labeled and traceable livestock products.

Policy support:
Support extension services and agricultural cooperatives to serve as knowledge hubs.
Encourage media and digital platforms to disseminate green farming success stories and techniques.

4.6. Build Risk-Resilient Livestock Systems
To sustain long-term green growth, Vietnam must strengthen the sector's resilience to climate change and global market fluctuations.

Key actions:
Develop and scale climate-smart livestock shelters, feed storage, and water-saving systems.
Improve veterinary health systems to prevent disease outbreaks and reduce biosecurity risks.
Pilot agricultural insurance models targeting risks from floods, droughts, and epidemics.

Policy support:
Mainstream climate adaptation measures into all livestock development strategies.
Promote integrated early-warning and risk-monitoring systems in rural areas.

The proposed solution set is not only technically feasible but also aligned with national development priorities and international climate commitments. A successful green transition in Vietnam's livestock sector will require coordinated action among government, private sector, civil society, and international partners. By institutionalizing circular economy models, fostering innovation, improving financial access, building capacity, and preparing for risk, the country can lay the groundwork for a resilient and sustainable livestock industry.

5. Conclusion

Thus, although the role of developing a green economy in livestock is necessary and urgent for our country, research results show that developing a green economy in livestock in Vietnam has not received adequate attention from both state management agencies and enterprises, farms, and household livestock farms. Currently, our livestock sector mainly develops in a fragmented, small-scale, household-based manner, utilizing available feed resources, mainly agricultural by-products. Free-range livestock farming negatively affects the surrounding ecological environment. Moreover, the productivity of our livestock sector is relatively low, and meat

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quality does not meet food safety standards, affecting consumer health, economic efficiency, and farmers' income.

Over the past period, livestock diseases in our country have occurred due to various reasons. Climate change causes extreme and abnormal weather conditions, such as heat waves and severe cold, reducing the number of buffaloes and cows due to food shortages and inadequate farming models and shelters. Additionally, livestock and slaughtering facilities that do not meet food safety and hygiene standards affect the output quality of livestock products and their competitiveness in the international trade market, hindering the development of the livestock sector in Vietnam.

These challenges are significant, posing a need to seek new measures, tools, and transformation of existing growth models to effectively address global issues. At the same time, they present opportunities for development and a new growth driver to wards sustainable livestock development. Developing a green economy in livestock is extremely necessary for Vietnam, as it creates a breakthrough in sustainable livestock development policies. Developing a green economy in livestock in a modern, sustainable direction in the new context in Vietnam, with a focus on making livestock a key economic sector, based on diverse domestic raw materials, associated with processing industries and markets, increasing value, international integration, climate change adaptation, high technology application, resource saving, and environmental protection.

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