

DELMAR INTERNATIONAL

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## Professional Research

*The impact of sustainable development on raising the  
efficiency of livestock and poultry*

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# SUMMARY

*Livestock and poultry are among the most vital sectors, closely linked to the food, health, and economic security of communities. They constitute a primary source of animal protein and income in many countries, particularly those where a significant portion of the population relies on agriculture and animal husbandry for livelihood. Given the world's increasing population, climate change, and environmental pressures, the challenges facing this sector have become more complex, necessitating the adoption of new developmental visions and strategies capable of addressing these challenges systematically and sustainably.*

*In this context, sustainable development emerges as a core concept that now serves as a reference framework for formulating policies and developmental plans across various sectors. It is based on the principle of balancing economic, social, and environmental needs without compromising the rights of future generations to utilize resources. Implementing this concept in the livestock and poultry sector is of paramount importance, not only to achieve self-sufficiency but also to ensure continuity of production, improve rural livelihoods, support the local economy, and preserve biodiversity.*

*It has become evident that the irrational use of natural resources, land degradation, climate change, the spread of animal diseases, and weak veterinary infrastructure represent real challenges that threaten the sustainability of this sector. Hence, there is a critical need to develop efficient and sustainable livestock and poultry production systems through improving breeding practices, adopting modern nutrition and healthcare technologies, and developing genetically enhanced breeds, while taking into account environmental, social, and economic factors within the production environment.*

*Investing in the development of livestock and poultry according to sustainable development principles contributes effectively to narrowing the food gap, providing employment opportunities, and reducing poverty, particularly in rural areas. It also helps minimize the negative environmental impact associated with traditional production methods. Moreover, applying circular economy principles and utilizing animal waste for energy production or organic fertilizers are among the most prominent sustainable practices that enhance the efficiency of this sector.*

*In light of the above, this study aims to analyze the impact of sustainable development on improving the efficiency of the livestock and poultry sector through several key areas, including: assessing the current state of*

*resource management in this sector; measuring the effect of introducing sustainable practices on production levels and quality; analyzing the challenges to achieving sustainability; and reviewing relevant national and international policies. The study also examines several successful experiences and models from Arab countries and beyond, aiming to extract lessons learned and assess the potential for replication in similar environments.*

*Accordingly, this research seeks to address a set of scientific questions concerning the nature of the relationship between sustainable development and the efficiency of the livestock and poultry sector, the effectiveness of various policies and initiatives in achieving this integration, and ultimately to provide an evidence-based scientific perspective and practical recommendations for developing this vital sector within a comprehensive and sustainable developmental framework.*

## The study Problem.

*Despite the strategic importance of livestock and poultry in supporting food security and promoting economic development, this sector continues to face numerous structural, technical, and administrative challenges in many countries, particularly developing ones, which hinder the full utilization of its potential. Declining production efficiency, high mortality rates, poor quality of animal products, and the degradation of environmental resources associated with animal production are all factors that indicate a clear gap between the current reality and the sector's expected performance.*

*Traditional production patterns, weak planning, and inadequate policies have contributed to hampering development efforts. Moreover, excessive reliance on imported inputs and the absence of sustainable resource management practices have exacerbated the problem. In light of global climate change, environmental pressures, and the steadily increasing demand for animal products, there is a growing need to reconsider the mechanisms used to manage this sector and adopt new developmental visions based on the principles of sustainable development, as they provide the most comprehensive framework for balancing economic efficiency, environmental sustainability, and social equity.*

*The study problem, therefore, stems from the paradox between the abundance of livestock production potential in many Arab environments and the limited actual contribution of this potential to achieving food security and environmental and social sustainability. The study also raises essential questions regarding the success of sustainable development initiatives in enhancing the efficiency of this sector, the awareness of*

*institutions and producers about the importance of implementing these principles, and the obstacles that impede their practical application on the ground.*

*Accordingly, this study aims to diagnose the dimensions of this problem scientifically and objectively by analyzing the relationship between the application of sustainable development strategies and the enhancement of livestock and poultry management efficiency, with the goal of providing a practical perspective that contributes to improving the overall performance of the sector and achieving integrated and sustainable development within it.*

## The importance of studying:

*The importance of this study stems from the nature of its subject, which represents a central focus in sustainable development efforts currently being pursued by many countries. Livestock and poultry are not merely an economic resource; they constitute a vital component with multidimensional impacts extending to food security, public health, the environment, and the welfare of rural communities. This makes the advancement of this sector a strategic objective of high priority at both national and international levels.*

*Amid rapid global transformations, including climate change, diminishing natural resources, and increasing environmental and economic challenges, there is a growing need to adopt a new developmental approach based on sustainability principles in the management of animal resources. Such an approach aims to ensure production efficiency on one hand and continuity of production and environmental protection on the other. Accordingly, this study seeks to shed light on one of the most pressing contemporary issues: how to activate sustainable development as a means to enhance the efficiency of livestock and poultry production while achieving the necessary balance between production and consumption, as well as between development and environmental preservation.*

*The significance of this study is further enhanced by its integrative perspective, combining theoretical analysis with field observation. It contributes to bridging the existing knowledge gap regarding the relationship between sustainable development concepts and the reality of livestock and poultry production, by providing a scientific and*

*methodological framework that helps guide agricultural and environmental policies toward more efficient and sustainable practices.*

*Moreover, the findings and recommendations generated by this study can benefit policymakers, farmers, research institutions, and investors in this sector by providing them with an evidence-based scientific vision informed by data and successful experiences on how to develop the livestock and poultry production system in alignment with current needs and future aspirations. Therefore, this study not only adds to the academic body of knowledge but also aims to deliver practical value applicable in real-world settings, contributing to achieving balanced and comprehensive development.*

## Objectives of the study:

- ✓ *To identify the concept of sustainable development and its dimensions in the context of livestock and poultry.*
- ✓ *To analyze the current efficiency of the livestock and poultry sector in light of environmental and economic challenges.*
- ✓ *To examine the relationship between the application of sustainable development principles and the enhancement of livestock and poultry production efficiency.*
- ✓ *To monitor and evaluate the policies and strategies employed in managing this sector from a sustainability perspective.*
- ✓ *To identify the obstacles hindering the achievement of sustainable development in this sector.*

## Study hypotheses and questions.

### *Research Questions*

- *What is the concept of sustainable development, and what are its dimensions related to the livestock and poultry sector?*
- *What is the current efficiency of the livestock and poultry sector?*
- *To what extent does the application of sustainable development principles contribute to improving the efficiency of this sector?*
- *What policies and practices are currently adopted in managing livestock and poultry, and do they align with sustainable development concepts?*
- *What are the possible ways to enhance the role of sustainable development in effectively and sustainably supporting this sector?*

### *Research Hypotheses*

- *There is a positive relationship between the application of sustainable development principles and the enhancement of the livestock and poultry sector's efficiency.*
- *Adopting sustainable policies and practices positively affects the productivity and quality of livestock and poultry.*
- *There are positive differences in sector efficiency between regions or countries that implement sustainable development and those that do not.*
- *Increasing awareness and knowledge of sustainability concepts among workers and producers contributes to improving livestock and poultry performance and production.*

## Study Approach.

*The descriptive-analytical approach was employed to examine "the impact of sustainable development on enhancing the efficiency of the livestock and poultry sector."*

**The limits of the study:**

**Spatial boundaries: Arab Republic of Egypt.**

**Time limits: 2003–2025.**

## **Study plan.**

*The study will be structured into several chapters, each containing multiple sections and subsections, as follows:*

### ***Chapter One: Theoretical Framework and Scientific Concepts***

#### ***Section One: Sustainable Development***

- 1. The Concept and Characteristics of Sustainable Development*
- 2. Dimensions of Sustainable Development*
- 3. Objectives and Challenges of Sustainable Development*
- 4. Indicators of Sustainable Development*

#### ***Section Two: An Introduction to Livestock and Poultry***

- 1. The Concept and Classification of Livestock and Poultry*
- 2. Economic and Social Importance of Livestock and Poultry*
- 3. The Current Status of Livestock and Poultry in Arab Countries*

### ***Chapter Two: The Relationship Between Sustainable Development and Livestock and Poultry Efficiency***

#### ***Section One: Applying Sustainable Development Principles in the Livestock and Poultry Sector***

- 1. Sustainable Production Methods in Animal and Poultry Rearing*
- 2. Legislation and Policies Supporting Sustainable Development in the Livestock Sector*
- 3. The Role of Technology and Innovation in Improving Production Efficiency*

## ***Section Two: Impacts of Applying Sustainable Development on Production Efficiency***

- 1. Economic Impact of Implementing Sustainable Development in this Sector*
- 2. Environmental and Social Impacts of Developing Livestock and Poultry Production Systems*
- 3. Challenges to the Sustainability of Livestock and Poultry and Proposed Solutions*

## ***Section Three: Strategies for Developing the Livestock Sector in Egypt***

- 1. Improving Animal Rearing Methods and Veterinary Care*
- 2. Investing in Infrastructure for the Livestock Sector*
- 3. The Role of Government Policies in Supporting the Livestock Sector*

## Conclusion.

*In conclusion, this study, which examined the impact of sustainable development on enhancing the efficiency of livestock and poultry, demonstrated that the relationship between sustainability and achieving production efficiency in this vital sector constitutes a fundamental pillar for ensuring food security, supporting the national economy, and preserving environmental resources simultaneously. The research findings, both theoretical and practical, indicate that integrating sustainable development principles into livestock and poultry rearing and production activities leads to improved product quality, increased economic efficiency, reduced environmental impact, and enhanced social equity by supporting small producers and rural communities.*

*The study also identified several challenges and obstacles that hinder the broader implementation of sustainable practices, including weak infrastructure, inadequate supporting policies, and insufficient awareness among producers. Addressing these issues requires an integrated governmental and societal intervention focused on capacity building, providing incentives, and adopting appropriate technologies.*

*While this study does not claim to cover every aspect of the topic comprehensively, it contributes to highlighting the importance of adopting a sustainable development model that considers the environmental, economic, and social particularities of the livestock and poultry sector. It also opens new avenues for researchers and policymakers to further develop this sector in alignment with the goals of sustainable development.*

*The study recommends continuing field research, evaluating current policies, and developing planning and management tools to ensure a balance between production and efficiency on one hand, and the preservation of natural resources for future generations on the other.*

## Results:

- ✓ *The study demonstrated a strong relationship between the application of sustainable development principles and improved efficiency in livestock and poultry management.*
- ✓ *It was found that the sustainable use of natural resources contributes to enhancing animal and poultry productivity while reducing operational costs.*
- ✓ *The results indicated that integrating modern technologies in breeding, nutrition, and veterinary care significantly boosts production efficiency.*
- ✓ *The study confirmed that low awareness of sustainability concepts represents a major obstacle to their implementation in the livestock and poultry sectors.*
- ✓ *The absence of supportive policies and advisory programs limits the widespread adoption of sustainable practices among producers.*
- ✓ *Comparisons between international and local experiences revealed that countries adopting clear sustainability strategies achieve better results in both production and quality.*
- ✓ *The study established that achieving a balance between economic, environmental, and social dimensions is essential for enhancing the long-term efficiency of this sector.*

## Recommendations:

- ✓ *Integrate sustainable development principles into national policies for the development of the livestock and poultry sector.*
- ✓ *Promote awareness of sustainability concepts among producers and farmers through specialized extension and training programs.*
- ✓ *Enhance the use of modern technologies and environmental innovations in breeding, nutrition, and animal waste management.*
- ✓ *Encourage investments in livestock and poultry projects that rely on renewable resources and environmentally friendly production systems.*
- ✓ *Develop legislation and regulations governing the use of natural resources in the livestock sector to ensure sustainability.*
- ✓ *Support scientific research in areas such as genetic improvement, sustainable nutrition, and modern veterinary care.*
- ✓ *Strengthen the role of educational and research institutions in transferring knowledge and technology to farmers and producers.*
- ✓ *Provide financial and technical incentives to small producers to encourage the adoption of sustainable practices in managing their projects.*

## The reviewer:

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