

Sustainability Transformation in Rural Areas for Climate Change: Cage-Free Practices and Animal Welfare Regulation

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abstract

Sustainable development stands as a primary objective globally, with rural areas key to achieving the Sustainable Development Goals (SDGs) set by the United Nations. In this context, cage-free farming practices have emerged as part of a potential approach to connect sustainability with improved well-being in rural communities. By analyzing the environmental, social, and economic aspects, this article unveils the correlation between cage-free practices and sustainable rural development for SDGs.

Keywords: Cage-Free, Sustainable, Development, SDGs, Rural

Introduction

A. Background on sustainable development and rural areas

The focus of "Sustainability Transformation in Rural Areas for Climate Change" is on altering lifestyles and resource utilization in rural settings to reduce negative environmental impacts and address climate change. Initiatives include sustainable farming practices, prudent natural resource management, and the promotion of eco-friendly lifestyles. Additionally, "Cage-Free Practices" in the livestock sector involves allowing animals to move freely, enhancing their well-being by minimizing stress associated with confinement. "Animal Welfare" refers to ensuring animals experience physical and psychological comfort, addressing basic needs through practices like Cage-Free Practices. "Animal Welfare Regulation" establishes rules to guide sustainable practices, ensuring correct implementation for sustainability and animal welfare goals.

In the broader context, "Sustainable Development" is gaining attention as an approach to meet present needs without compromising future generations. It integrates environmental protection, social equity, and economic development for a balanced society. Rural areas, with their close ties to natural resources, biodiversity, and renewable energy, play a vital role in sustainable development. As significant contributors to sectors like agriculture and tourism, rural areas offer immense potential for fostering sustainability on a global scale.

B. Significance of cage-free farming practices for sustainable rural development and Animal Welfare Regulation

Cage-free farming practices play a crucial role in sustainable rural development and align with Animal Welfare Regulation. This agricultural approach prioritizes animal welfare and environmental sustainability by allowing chickens to roam freely and express natural behaviors instead of being confined to cages. Recognized as an ethical and sustainable alternative, cage-free farming is gaining attention. Aligned with Sustainable Development Goals (SDGs), these practices contribute to sustainable rural development by promoting animal welfare, reducing environmental pollution, and fostering social connections.

The close link between cage-free practices and animal welfare is evident, as the freedom granted to animals directly impacts their well-being and reflects a commitment to fair treatment and respecting natural rights. In essence, cage-free farming practices not only enhance sustainability but also uphold animal welfare, achieving a crucial balance between ethical treatment, environmental sustainability, and sustainable rural development.

C. Objective of the study: Cage-Free Practices and Animal Welfare Regulation

This paper aims to investigate the correlation between cage-free farming practices and sustainable development in rural areas, focusing on their impact on village-level Sustainable Development Goals (SDGs) in Indonesia. The study utilizes interviews, surveys, field observations, and data analysis to uncover the benefits and challenges associated with cage-free farming practices. It explores their potential positive impacts on livelihoods, environmental sustainability, animal welfare, and community empowerment. The study aims to contribute to the field of sustainable agriculture and rural development by providing insights for informed decision-making and policy development.

The primary objectives include evaluating the adoption of cage-free practices in rural agricultural settings, analyzing the effectiveness of Animal Welfare Regulation, assessing ecological benefits, and exploring socio-economic implications of transitioning to cage-free practices. The study also intends to provide recommendations and policy suggestions for optimizing the integration of cage-free practices and animal welfare regulations within broader sustainability initiatives in rural areas, emphasizing their role in climate change mitigation and sustainable rural development. Overall, the study aims to offer valuable insights into the effectiveness and potential improvements of these practices as essential components of sustainable rural development strategies amidst climate change challenges.

Methodology/Approach

Site selection and data collection

1. Interviews and surveys with farmers, community members, and stakeholders

Structured interviews were conducted with local farmers, community members, and relevant stakeholders to gather qualitative insights into the implementation and impact of cage-free practices on sustainable rural development. The interviews captured participants' perspectives, experiences, and knowledge related to cage-free farming and its effects on various aspects of rural development. Surveys were also distributed to collect quantitative data on the perceived benefits and challenges of cage-free farming, providing a broader understanding of community perceptions.

2. Field observations of cage-free farming practices

Researchers conducted on-site observations to assess infrastructure, animal welfare conditions, and environmental sustainability aspects of cage-free farming practices. Through direct observation, researchers gained insights into the practical implementation of cage-free practices, identified potential challenges,

and evaluated the alignment of these practices in the context of sustainable development objectives.

Data analysis

The qualitative findings from interviews and observations were compared and synthesized with the quantitative data obtained from surveys to identify consistencies, discrepancies, and relationships. The synthesis of findings provides a more comprehensive understanding of the connections between cage-free practices, sustainable rural development, and the SDGs.

Limitations of the Study

1. While this study has provided valuable insights, it is crucial to recognize certain limitations. The sample size of farmers, community members, and stakeholders interviewed or surveyed might have been insufficient, potentially limiting the comprehensiveness of understanding the impacts of cage-free practices. Additionally, the study's findings may be region-specific, restricting the generalizability of results to areas with different socio-economic, cultural, or environmental conditions.
2. Time constraints could have also impacted the depth and breadth of data collection and analysis, potentially limiting the study's ability to capture long-term effects of cage-free practices. Furthermore, like any research, there is a potential for bias in data collection, analysis, and interpretation. While efforts were made to mitigate bias, it is important to acknowledge that individual perspectives and researcher influence may have influenced the findings. These limitations highlight areas for consideration and potential improvement in future research on the subject.

Environmental Impact of Cage-Free Practices

A. Benefits of cage-free practices on environmental sustainability

Cage-free practices offer several environmental benefits over conventional confined animal systems. These practices prioritize animal welfare and promote a more sustainable approach to farming, resulting in positive impacts on the environment. The following are some key benefits of cage-free practices on environmental sustainability:

Cage-free systems promote natural behaviors, reduce stress, improve animal health, minimize the need for environmentally harmful medications, decrease environmental pollution through open spaces, support soil health with organic fertilizers, and contribute to biodiversity preservation by allowing animals to interact with their natural habitats, fostering ecosystem health and conservation efforts.

B. Alignment with SDGs related to climate action, clean water and sanitation, and responsible consumption and production.

Cage-free practices align with various environmental sustainability SDGs, including:

1. SDG 13: Climate Action: Cage-free practices contribute to climate action by reducing methane emissions, improving air quality, promoting resource efficiency, and supporting sustainable land use and farming practices.

2. **SDG 6: Clean Water and Sanitation:** Cage-free farming minimizes water pollution, preserves water quality, and conserves water resources, aligning with the goal of ensuring clean and accessible water for all.
3. **SDG 12: Responsible Consumption and Production:** Cage-free practices support responsible consumption and production by prioritizing ethical animal welfare, reducing environmental impact, emphasizing sustainable feed and production practices, promoting consumer awareness, and fostering industry innovation for more sustainable food production systems.

Social Impact of Cage-Free Practices

A. Enhancing public perception and consumer trust in agriculture.

The adoption of cage-free practices in agriculture can have a positive impact on public perception and consumer trust in the industry. By prioritizing animal welfare and promoting more ethical farming methods, cage-free practices address growing concerns about the treatment of animals in food production. This can lead to enhanced public perception of the agricultural sector and build trust among consumers, who are increasingly seeking transparency and sustainability in their food choices. The promotion of cage-free practices demonstrates a commitment to responsible and ethical farming, contributing to the overall social acceptance and support for the industry.

B. Creation of employment opportunities

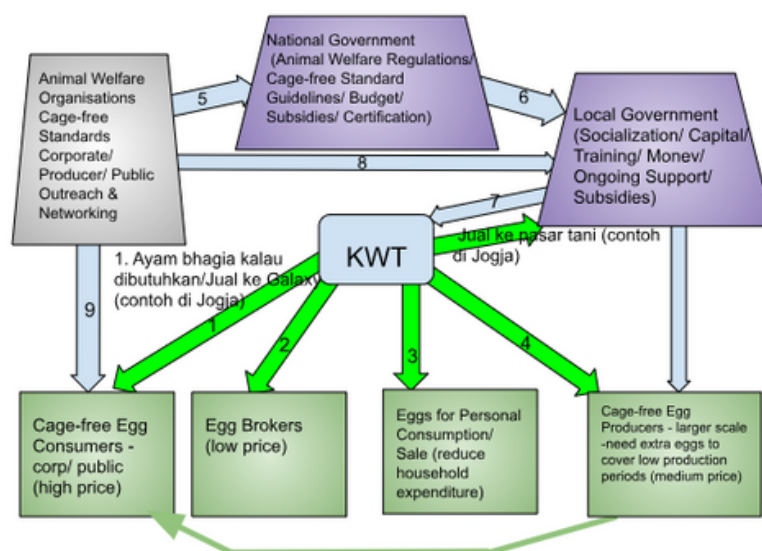
The shift towards cage-free practices can create new employment opportunities, particularly in the management and maintenance of larger farming spaces. As cage-free systems often require more space and infrastructure compared to conventional confinement systems, there is a need for skilled workers to oversee the operations, ensure animal welfare standards are met, and maintain the facilities. These employment opportunities can provide rural communities with additional sources of income and contribute to local economic development. By creating jobs in the agricultural sector, cage-free practices contribute to the Sustainable Development Goal (SDG) 8 of promoting decent work and economic growth.

C. Contribution to SDGs related to decent work and economic growth, and partnerships for the goals.

The adoption of cage-free practices aligns with the SDGs related to decent work and economic growth (SDG 8) and partnerships for the goals (SDG 17). By generating employment opportunities and promoting economic growth, cage-free practices contribute to creating sustainable livelihoods in rural areas. The shift towards cage-free systems requires collaboration and partnerships between farmers, community members, and relevant stakeholders. This collaboration fosters social connections and contributes to the development of strong networks and partnerships that are crucial for achieving sustainable development goals. By embracing cage-free practices, rural communities can actively engage in partnerships for the goals, working together towards a more sustainable and inclusive future.

The activities described involve multiple stakeholders and their interactions in the context of cage-free egg production and consumption. Here is a narrative based on the description:

1. The Women Farmers' Group (KWT) collaborates with cage-free egg consumers, including corporations and the public, who are willing to pay higher prices, ensuring a stable market and increased income. Despite a lower price, KWT's partnership with an egg broker provides a consistent outlet, reducing household expenditure. Some eggs are used for personal consumption or community sale, contributing to local food availability and reducing expenses.
2. Larger-scale cage-free producers address low production periods by collaborating with KWT, ensuring a steady supply and providing higher prices compared to brokers. Animal welfare organizations work with corporations to establish and promote cage-free standards, engaging in outreach and networking for regulations, guidelines, and government involvement. Collaborations extend to local governments, supporting KWT with socialization, capital, training, and ongoing assistance. Joint efforts with local governments and consumers aim to promote cage-free practices, animal welfare, and the success of the industry.



The social impact of cage-free practices extends beyond animal welfare and reaches various aspects of society, including public perception, employment opportunities, and partnerships for sustainable development. By enhancing public trust, creating jobs, and fostering collaboration, cage-free practices can contribute to social well-being, economic growth, and the achievement of the SDGs.

Economic Impact of Cage-Free Practices

KWT stands for Kelompok Wanita Tani, which is a women farmers' group in Indonesia. The group aims to empower women in rural areas by providing them with training, resources, and support to improve their livelihoods through agriculture. KWT promotes sustainable farming practices, including cage-free egg production, and collaborates with various stakeholders to establish a sustainable market for their products.

AFJ, as an organization supporting the cage-free movement, has provided guidance and best practices to KWT in implementing their cage-free program. The success of KWT in running the program is evidenced by the results of the monitoring and evaluation (M&E).

These activities highlight the collaborative efforts between various stakeholders in the cage-free egg industry. The partnerships between KWT, consumers, brokers, producers, animal welfare organizations, and both national and local governments contribute to the adoption of cage-free practices, improved animal welfare, increased income for farmers, and consumer awareness and demand for ethical and sustainable food choices.

A. Initial costs and long-term economic benefits

Transitioning to cage-free practices may involve some initial costs for farmers, such as infrastructure modifications and training. However, in the long term, cage-free practices can bring significant economic benefits. By prioritizing animal welfare and environmental sustainability, cage-free systems align with consumer preferences for ethical and sustainable food choices. This creates market opportunities for farmers who adopt cage-free practices, as consumers are willing to pay a premium for products that meet their values and preferences. The potential for higher prices and increased market demand can contribute to improved profitability and long-term economic viability for farmers.

B. Market demand for cage-free products

There is a growing market demand for cage-free products driven by consumer awareness and concerns about animal welfare and sustainable food production. By adopting cage-free practices, farmers can tap into this market demand and differentiate their products. This can lead to increased sales, market share, and potentially higher profit margins. Moreover, by meeting consumer expectations for ethical and sustainable farming practices, farmers can build stronger relationships with their customers and foster brand loyalty, further enhancing their market position and economic sustainability.

C. Resilience to climate change and market fluctuations

Cage-free practices can contribute to the resilience of agricultural systems to climate change and market fluctuations. By diversifying farming practices and investing in sustainable systems, farmers can mitigate the risks associated with climate variability and market volatility. Sustainable farming methods, such as cage-free practices, promote environmental conservation, reduce resource consumption, and improve soil health. These practices can enhance the ability of farmers to adapt to changing climatic conditions and mitigate the impacts of extreme weather events. Additionally, by reducing reliance on conventional intensive systems, farmers can potentially reduce their exposure to market fluctuations and price volatility, creating more stable and sustainable income streams.

D. Alignment with SDGs related to sustainable economic growth, industry innovation, and responsible consumption and production.

The adoption of cage-free practices, particularly through initiatives like Kelompok Wanita Tani (KWT), aligns with SDG 8 (Decent Work and Economic Growth) and SDG 9 (Industry, Innovation, and Infrastructure). By promoting sustainable farming, cage-free activities create employment opportunities, especially in rural areas, and contribute to economic growth.

The transition to cage-free egg production not only improves employment rates but also fosters skill development through training programs, enhancing the overall economic well-being of farmers and supporting entrepreneurship in related industries. Cage-free activities contribute to SDG 9 (Industry, Innovation, and Infrastructure) by promoting sustainable agricultural practices and technological advancements. The emphasis on animal welfare, environmental sustainability, and the use of technologies like automated systems supports efficient and sustainable farming. Collaboration among farmers, organizations, and research institutions fosters innovation, aligning with SDG 9's focus on research and technological development. Infrastructure development for cage-free production contributes to sustainable agricultural infrastructure. Knowledge transfer and capacity building within the industry align with SDG 9's goal of promoting inclusive and sustainable industrialization, fostering continuous learning and best practice dissemination. Embracing cage-free practices not only enhances sustainability in egg production but also drives technological innovation, research, infrastructure development, and knowledge sharing in alignment with the broader objectives of SDG 9.

Cage-free activities relate to SDG 12 (Responsible Consumption and Production) by promoting more sustainable and ethical food production systems. Here's an explanation of how cage-free activities align with SDG 12: Cage-free practices in food production, in line with SDG 12, prioritize animal welfare, environmental sustainability, and resource efficiency, reducing pollution and resource consumption. Driven by consumer awareness and demand, this trend supports responsible consumption and production, aligning with SDG 12's goal. Cage-free activities contribute to minimizing food waste by promoting healthier eggs, addressing SDG 12's target. The transparency in the supply chain associated with cage-free practices empowers consumers for informed choices, fostering responsible consumption and production as encouraged by SDG 12. In summary, cage-free practices enhance sustainability, animal welfare, respond to consumer preferences, reduce food waste, and promote transparency in the supply chain, aligning with the objectives of SDG 12.

Cage-free activities can contribute to SDG 1 in several ways: Encouraging cage-free activities creates employment opportunities in agriculture, reducing poverty by generating income for farmers and workers. Adoption of cage-free practices enhances productivity and profitability, leading to improved livelihoods, increased income, and decreased vulnerability to poverty in agricultural communities. Cage-free activities contribute to food security and nutrition, offering sustainable and high-quality options such as cage-free eggs, thereby addressing key aspects of poverty eradication.

Regarding the impact of cage-free activities on SDGs at the desa (village) level, it largely depends on the local context and implementation strategies. However, some potential impacts can be observed: Promoting cage-free activities in rural areas enhances local poultry industries, fostering economic development by creating jobs, generating income, and stimulating local markets. Aligning with sustainable agricultural practices, cage-free activities contribute to SDG 2 (Zero Hunger) at the village level, ensuring sustainable food production while reducing the ecological footprint. Cage-free initiatives empower local communities in villages by promoting ownership and participation through capacity-building programs, knowledge sharing, and cooperative initiatives, enabling active contributions to poverty eradication efforts.

Cage-free activities can contribute to SDG 3 (Good Health and Well-being) in several ways: Promoting cage-free practices in the poultry industry prioritizes animal welfare, ensuring healthier and less stressed animals that produce safer and healthier food products. This approach enhances food safety and quality through improved hygiene and sanitation practices, reducing the risk of diseases and contamination. Cage-free eggs and animal products are perceived as nutritionally superior due to animals' natural behaviors and improved diets, positively impacting human health. Additionally, cage-free activities contribute to reducing antibiotic use in animal farming, addressing global antibiotic resistance challenges and aligning with the goal of preserving effective antibiotics for human health. In summary, advocating for cage-free practices not only prioritizes animal welfare but also enhances food safety, nutritional value, and supports global efforts to reduce antibiotic resistance.

Regarding the impact of cage-free activities on SDGs at the desa (village) level, the specific benefits to SDG 3 can vary depending on the local context. However, some potential impacts include: Promoting cage-free activities in rural areas enhances local nutrition by producing healthier and more nutritious food, positively impacting the well-being of the community and contributing to SDG 3. These activities also reduce environmental health risks through sustainable practices, minimizing chemical use and improving waste management, thereby decreasing pollution and associated health risks for the local population. Additionally, the promotion of cage-free practices involves educational campaigns and awareness programs, fostering community awareness about animal welfare, healthy food choices, and sustainable farming practices, contributing to overall health and well-being.

Cage-free activities can contribute to SDG 12 (Responsible Consumption and Production) in several ways: Cage-free activities prioritize animal welfare and advocate for sustainable farming practices, aiming to mitigate environmental impacts associated with confined animal farming. These practices reduce water and air pollution, minimize chemical use, and improve waste management. Additionally, cage-free activities enhance overall animal health, resulting in higher-quality food products and reduced food waste along the production chain. Promoting cage-free practices raises consumer awareness about responsible consumption, empowering individuals to make informed choices and drives market transformation toward sustainability. Collaboration across the supply chain in cage-free activities fosters the development of sustainable supply chains, aligning with SDG 12 and encouraging responsible consumption and production patterns. In summary, cage-free practices prioritize animal welfare, contribute to environmental sustainability, reduce food waste, empower informed consumer choices, and promote the development of responsible supply chains.

Regarding the impact of cage-free activities on SDGs at the desa (village) level, the specific benefits to SDG 12 can vary depending on the local context. However, some potential impacts include:

Cage-free activities contribute to Sustainable Development Goals (SDGs) at the desa level in the following ways:

1. Environmental Conservation: Cage-free practices align with SDG 15 (Life on Land) and SDG 14 (Life Below Water) by adopting sustainable production methods that contribute to the conservation of natural resources, reduction of pollution, and preservation of biodiversity in desa areas.

2. **Local Market Development:** Promoting cage-free activities stimulates the growth of local markets, fostering economic opportunities, diversifying markets, and supporting the development of small-scale farmers and businesses within the desa community.
3. **Education and Awareness:** Cage-free activities involve educational programs and awareness campaigns at the desa level, contributing to SDG 4 (Quality Education) and SDG 12 (Responsible Consumption and Production). These initiatives raise awareness about responsible consumption, animal welfare, and sustainable farming practices, fostering a culture of sustainability and responsible choices in the local community.

Cage-free activities in desa areas contribute to SDG 15 by preserving local ecosystems, fostering environmental awareness, and promoting sustainable agriculture. These practices enhance biodiversity, protect endangered species, and support the long-term health of the natural environment. Additionally, cage-free activities align with SDG 17 by fostering collaboration, multi-stakeholder engagement, knowledge sharing, capacity building, and advocacy. Partnerships formed in the context of cage-free activities involve various stakeholders, including farmers, producers, retailers, consumers, and governmental or non-governmental organizations, facilitating a collective effort toward achieving the Sustainable Development Goals and promoting sustainable development in desa areas.

Cage-free activities in desa areas impact SDG 17 by fostering strengthened local networks, increased community engagement, and policy influence at the local level. These activities facilitate the formation of partnerships among farmers, businesses, and community organizations, enhancing cooperation and promoting collective action towards SDG achievement. The promotion of cage-free practices involves community engagement, raising awareness and understanding of the SDGs within the desa community, fostering local ownership and commitment to sustainable development efforts. Partnerships formed in the context of cage-free activities can also influence local policies and regulations related to animal welfare, agriculture, and sustainability, creating an enabling environment for the implementation of initiatives that contribute to multiple SDGs within the desa.

Findings

The cage-free egg industry has gained prominence as Animal Friends Jogja (AFJ) and the Women Farmers Group (KWT) collaborate to promote cage-free egg production in their local community. Through partnerships with stakeholders, they've established a sustainable market, increasing income for KWT and addressing challenges for large-scale producers. This collaboration enhances animal welfare, boosts farmers' income, and raises consumer awareness about ethical food choices. Animal welfare organizations and corporate producers advocate for cage-free standards and regulations at the national level, while local governments provide support for socialization, training, and subsidies. This collaborative effort showcases a noteworthy model for sustainable development in rural areas, with potential implications for broader positive impacts on a larger scale.

Best Practices Cage-Free Model (2 Communities)

1. Tri Manunggal Bhakti



The picture shows the Cage-Free system that has been implemented by Tri Manunggal Bhakti. The Tri Manunggal Bhakti Livestock Group was formed on April 4, 2022, with the availability of empty cages previously used for Joper chicken farming, which went bankrupt due to the Covid-19 pandemic, and the high number of unemployed community resources, there is potential to utilize these assets for economic activities. The group has 20 members.

In August 2022, the Department of Agriculture, Food and Fisheries and Sleman Regency launched a field school program called the Community Food Business Improvement Program (PUPM) with the theme of free-range laying hens under the brand name "Happy Chicken". The field school started on September 22, 2022, and ended on October 19, 2022. The assistance provided was 150 laying hens with equipment, and 200 chickens from Global Food Partner on May 17, 2023.

Sales were conducted to households and communities, with the cooperation of local events, community members, other women's groups, Bengkel Sapi, shops, and restaurants. However, the economic impact on the community has not been significant yet due to the small profit margin. The group aims to make a more reliable economic impact in the future.

2. PT Inti Prima Satwa Sejahtera (PT IPSS)



PT. Inti Prima Satwa Sejahtera, established in 1979, grew from maintaining 70 broiler chickens to a cage-free farm in 2000. With 10,000 chickens and 12 employees, it markets cage-free eggs across Java, benefiting local residents and farmers. The company supports local communities by purchasing rice husks and rice from rice millers, contributing to village development. The adoption of cage-free farming practices improves farmers' livelihoods, aligning with SDG 8.

Additionally, it enhances environmental sustainability by promoting responsible consumption (SDG 12) and preserving biodiversity (SDG 15). The implementation of cage-free practices results in improved animal welfare, supporting SDG 3 and SDG 15. Moreover, it empowers communities by fostering a sense of ownership, knowledge exchange, and social cohesion, contributing to SDG 1, SDG 4, and SDG 17.

Conclusion

This study explores the correlation between cage-free practices and sustainable rural development, revealing improved livelihoods for farmers, enhanced environmental sustainability, better animal welfare, and increased community empowerment. Challenges like initial investment costs and the need for technical support are noted. The findings inform policymakers, rural communities, researchers, and SDG advocates. Policymakers can develop supportive policies, communities can make informed decisions, researchers can further explore connections, and advocates can promote sustainable farming practices aligned with global sustainability goals. The study underscores cage-free practices as a pathway to sustainable rural development, emphasizing a holistic approach considering local contexts and stakeholder engagement for a more sustainable future.

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