

Current status of formulation and implementation of policies on mitigation and adaptation to climate change in Vietnam agriculture

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Abstract: *Agricultural production plays a crucial role as the backbone of the economy, ensuring food security, stabilizing rural socio-economic conditions, and improving livelihoods for farmers. However, agricultural production in Vietnam faces numerous challenges amid global issues such as geopolitical factors, international commitments, negative impacts of climate change, resource depletion, and environmental degradation. Adapting to climate change is an urgent and long-term issue requiring comprehensive solutions, including developing policies for adaptation, which plays a vital role. This article focuses on studying the current status of formulation and implementation of policies on climate change in agriculture at both the sectoral and national levels and proposes solutions to address existing shortcomings.*

Keywords: *Climate change policies; food security; international responsibilities; comprehensive solutions; socio-political stability.*

1. Introduction

Agricultural production plays a crucial role as the backbone of the economy, ensuring food security, stabilizing rural socio-economic conditions, and contributing to the improvement and enhancement of livelihoods for farmers. In recent years, agricultural production has positively contributed to the economy's overall growth, with a

growth rate reaching 3.88%, contributing 0.34 percentage points to the value-added of the entire economy. In 2023, the total food production reached 47.9 million tons (of which 43.5 million tons were rice), and the total export value of the agricultural sector reached 54 billion USD, contributing to the overall increase in the country's import-export turnover. However, agricultural production in Vietnam

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faces numerous challenges amid global issues such as geopolitical factors, international commitments, negative impacts of climate change, resource depletion, and environmental degradation.

Global climate change is experiencing increasingly complex and bizarre developments. As a coastal nation with complex terrain and a hydrological system heavily reliant on other countries, Vietnam is facing significant challenges due to the impacts of climate change. Policies to adapt to climate change urgently need to be addressed in the long term in conjunction with comprehensive solution groups. Developing appropriate policies ensuring integration between economic growth and climate change adaptation is considered a driving force and prerequisite for the sustainable development of Vietnam's agriculture sector.

2. The current status of formulating and implementing policies on climate change in Vietnam agriculture

International commitments regarding climate change are exerting various impacts on agricultural production. Commitments such as achieving net-zero emissions by 2050 and reducing methane emissions by 30% at COP26, the Glasgow Declaration on forests and land use to halt and reverse deforestation by 2030, transitioning the food system, initiatives on agricultural innovation to address climate change, establishing innovation centers for food technology, the initiative to transition 100 million farmers to emission-free and environmentally friendly food production systems, transitioning the food system through agroecology, promoting sustainable agricultural productivity growth for food security and resource conservation, policy action plans for farming and food system transformation through adjusting supportive policies, sustainable food system

(SPS), and emission reduction alliances through enhanced forestry financing.

Vietnam's participation in these international commitments and initiatives sets forth many demands for innovation and improvement of policy systems. The urgency of climate change necessitates immediate and effective action, including adapting and improving policy mechanisms. This is a challenge and an opportunity for Vietnam's agriculture to integrate deeply with global agriculture. Implementing these commitments requires strong innovation in building policy mechanisms, promoting macroeconomic governance systems, monitoring and evaluation, and mechanisms for transparency and accountability in agricultural production.

In reality, agricultural production in Vietnam is transitioning from agricultural production to agricultural economy, developing ecological agriculture, circular agriculture, organic agriculture, low-carbon emission agriculture, multi-value agriculture, and transitioning the food system to transparent, responsible, and sustainable food production. Many policies have been issued along a roadmap to achieve development goals, aiming to harmonize economic, social, and environmental issues. However, many limitations and shortcomings still require more robust solutions to achieve development goals and effectively implement Vietnam's commitments to climate change.

Resolution No. 19-NQ/TW dated June 16, 2022, of the Central Executive Committee (Term XIII) on agriculture, farmers, and rural areas until 2030, with a vision to 2045, brings about many changes in the approach to agricultural production, support policies for farmers and rural development. It sets the goal of rapid, sustainable, and efficient rural development, ensuring an ecological

environment, climate change adaptation, comprehensive rural development, and improving the lives of farmers and rural residents. However, activities to concretize the contents of Resolution No. 19-NQ/TW still have many limitations, being fragmented and lacking comprehensive plans. More government resolutions and programs are needed to address the extensive issues of agriculture, farmers, and rural areas in response to the challenges of climate change.

The Political Bureau has also issued Resolution 24-NQ/TW dated June 3, 2013, on strengthening natural resource management and environmental protection, by Conclusion No. 56-KL/TW dated August 23, 2019, of the Political Bureau (Resolution No. 26/NQ-CP dated January 21, 2021), setting many objectives for enhancing capacity to respond to climate change. In the context of rapid and profound international changes through international forums (COP), there is a demand for policy innovation, updating new international issues on climate change.

The legal framework

The Environmental Protection Law (Law No. 72/2020/QH14) and Government Decree No. 08/NĐ-CP dated January 10, 2022, provide detailed regulations for implementing the Environmental Protection Law regarding climate change adaptation (Circular No. 01/2022/TT/BTNMT dated January 7, 2022). These regulations aim to address environmental protection issues and adapt to climate change, promoting sustainable production, including agriculture, forestry, and aquaculture sectors, while ensuring environmental protection requirements and enhancing climate change adaptation capacity. Despite containing many provisions related to climate change adaptation and greenhouse gas emission reduction, specific policies for these sectors and the resources for

implementation remain limited and lack coherence.

Decree No. 06/2022 on greenhouse gas emission reduction and ozone layer protection sets a target to reduce greenhouse gas emissions from the agricultural sector by 129.8 million tons by 2030, which strongly impacts sectoral development due to the significant efforts required to reduce greenhouse gas emissions, particularly methane emissions from rice cultivation and livestock farming. However, there has yet to be an allocation of quotas to localities for proactive implementation, and there are limitations in terms of resources and capacity at the local level of authorities.

The National Environmental Protection Strategy by 2030, with a vision towards 2050 (Decision No. 450/QĐ-TTg dated April 13, 2022, by the Prime Minister), aims to specify the objectives and tasks in implementing the sustainable development strategy for the agriculture and rural development sector (Decision No. 150/QĐ-TTg by the Prime Minister). This strategy has initiated several programs and projects related to the sustainable development of agriculture, forestry, aquaculture, environmental protection, and climate change adaptation. However, the prime minister currently reviews and approves critical tasks related to climate change in the sector's environmental protection plan.

The National Strategy on Climate Change Towards 2050 (Decision No. 896/QĐ-TTg dated July 26, 2022) has identified various directions for climate change adaptation and greenhouse gas emission reduction in the agricultural sector, focusing on rice cultivation, shrimp-rice farming system conversion, organic agriculture, and crop residue management. However, the technical solutions in the new strategy are calculated at

the national level and divided into three ecological regions, which may not be suitable for the specific agricultural environmental conditions. At the same time, national strategy content is often incorporated into sectoral action plans, apart from the climate change adaptation action plan approved in Decision No. 819/2016/QĐ-BNN-KN, which has yet to be updated since 2016 to align with the national strategy. Furthermore, the national climate change strategy towards 2050 has a long-term vision, but climate change issues evolve continuously, and the plan needs a roadmap and resource allocation for implementation.

The National Green Growth Strategy for the period 2021-2030, with a vision towards 2050 (Decision No. 1658/QĐ-TTg dated October 1, 2021), and the National Action Plan on Green Growth for the period 2021-2030 (Decision No. 882/QĐ-TTg dated July 22, 2022), have outlined various aspects of green production. However, many of these aspects overlap with national strategies on climate change and require clarification to integrate or streamline them, focusing resources on ongoing and practical activities.

The implementation plan for Decision No. 1055/QĐ-TTg dated July 20, 2020, by the Prime Minister on the national strategy for climate change adaptation for the period 2021-2030, with a vision towards 2050 (Decision No. 156/QĐ-BNN-KHCN dated January 11, 2021), has now expired. It's important to note that although a new climate change strategy has been issued, the national action plan for adaptation has not been updated promptly, which is a matter of immediate concern.

In 2023, the Prime Minister planned to produce 1 million hectares of high-quality, low-emission rice in the Mekong Delta (Decision No. 1490/QĐ-TTg, dated November 27, 2023).

The plan focused on low-emission technical solutions in rice production and promoted carbon credit markets through existing mechanisms, emphasizing international exchanges. Technological solutions under this plan can be implemented through successfully applied cultivation models.

The government has proposed reducing methane emissions by 2030 (Decision No. 942/QĐ-TTg dated August 5, 2022) to reduce methane emissions by at least 30% in various sectors. The agricultural sector (including rice cultivation and livestock farming) accounts for a large proportion of methane emissions, representing 62.5% of the total national methane emissions. This ambitious goal significantly impacts rice production and livestock activities, requiring substantial prioritized resources and investments in technical measures. However, despite efforts, significant limitations still need to be made in prioritizing resources for implementing this plan. Resource allocation and clarification could be improved, making assessing the completion of plan objectives easier.

The Ministry of Agriculture and Rural Development has also issued an action plan to reduce greenhouse gas emissions (including methane emission reduction) by 2030, based on alignment with the government's plan to reduce methane emissions and commitments in implementing the Nationally Determined Contributions (NDC) (updated for 2020 in the 2022 update report, preparing for 2022 update in the 2024 update report). Due to the need for more resources and evaluation indices, the assessment of progress is challenging.

The Ministry of Natural Resources and Environment has also approved the national greenhouse gas emission factor inventory for greenhouse gas accounting (Decision No. 2626/QĐ-BTNMT dated October 10, 2022), which includes numerous greenhouse gas

emission factors for agriculture but primarily focuses on national greenhouse gas inventory. These factors have not been internationally reviewed for project implementation, and greenhouse gas emission reduction plans mainly involve providing activity data to support the application of national greenhouse gas emission factors according to Tier 2 and Tier 3 instead of using default factors as outlined in the IPCC National Greenhouse Gas Inventory Guidelines.

The Livestock Law (Law No. 32/2018/QH14) and Decree No. 13/2020/NĐ-CP dated January 21, 2020, issued by the Government providing detailed guidance on the Livestock Law; the Crop Law (Law No. 31/2018/QH14) and Decree No. 94/2019/NĐ-CP dated February 1, 2020, detailing some provisions of the Crop Law; the Irrigation Law (Law No. 08/2017/QH14); the Sustainable Agricultural and Rural Development Strategy for the period 2021 - 2030 and vision to 2050 (Decision No. 150/QĐ-TTg dated January 28, 2022, by the Prime Minister) have introduced numerous provisions regarding the transformation of growth models from agricultural production to agricultural economy, restructuring of production towards increasing value-added and multiple values; Vietnam's Irrigation Strategy by 2030 and vision to 2045 (Decision No. 33/QĐ-TTg dated July 1, 2020, by the Prime Minister); the Livestock Development Strategy for the period 2021 - 2030, vision to 2050 (Decision No. 1520/QĐ-TTg dated October 6, 2020); the Restructuring Plan of the agricultural sector for the period 2021 - 2025 (Decision No. 255/QĐ-TTg dated February 25, 2021); the Plan for the development of the fruit and vegetable processing industry for the period 2021 - 2030 (Decision No. 417/QĐ-TTg dated March 22, 2021); organic agriculture production (Decree No. 109/2018/NĐ-CP dated August 29, 2018) and the Organic

Agriculture Development Plan for the period 2020 - 2030 (Decision No. 885/QĐ-TTg dated July 21, 2020); the Comprehensive Program for Sustainable Agricultural Development Adaptation to Climate Change in the Mekong Delta until 2030, vision to 2045 (Decision No. 324/QĐ-TTg dated March 2, 2020) and action plan (Decision No. 4115/QĐ-BNN-KH dated March 2, 2020) have been promulgated by the Government and the Ministry of Agriculture and Rural Development to concretize the contents of resolutions, laws, and national strategies. However, while the timely development of related policies is commendable, the transition from enacted policies to specific programs and projects with actual implementation resources still needs to be improved. Many policies have been issued but need more supporting mechanisms, leading to ineffective implementation or insufficient basis for evaluating their results and effectiveness.

3. The limitations of climate change policies in Vietnam's agricultural sector

According to preliminary statistics, there are 16 laws related to promoting the transition to ecological agriculture, low-carbon agriculture, and circular economy in agriculture in Vietnam. These include the Livestock Law of 2018, Crop Law of 2018, Plant Protection and Quarantine Law of 2013, Forestry Law of 2017, Biodiversity Law of 2008, Natural Disaster Prevention and Control Law of 2013, Veterinary Law of 2017, Irrigation Law of 2017, Environmental Protection Law of 2020, and Land Law of 2024. Alongside the legal framework, there are also 33 guiding decrees under these laws, many of which directly regulate various industry sectors. For instance, Government Decree No. 62/NĐ-CP dated September 12, 2022, amending Decree No. 35/2015/NĐ-CP dated April 13, 2015, on the management and use of rice-growing

land; Decree No. 23/2020/NĐ-CP dated February 24, 2020, providing detailed guidance on the Livestock Law; and Decree No. 109/2018/NĐ-CP dated August 29, 2018, on organic agriculture production.

Alongside the decrees, preliminary statistics also reveal the existence of 47 specialized circulars issued by the Ministry and related ministries/departments regarding agricultural transformation. Among these, notable examples include Circular No. 23/2019/TT-BNNPTNT dated November 30, 2019, providing guidelines for implementing the Livestock Law (although it only covers guidance on artificial insemination and livestock declaration); Circular No. 01/2022/TT/BTNMT dated January 7, 2022, issued by the Ministry of Natural Resources and Environment detailing the implementation of environmental protection laws concerning climate change adaptation, primarily focusing on natural resources and environmental sectors, while specific guidelines for implementing provisions of the Environmental Protection Law and Government Decree No. 08/2022/NĐ-CP dated January 10, 2022, detailing some articles of the Environmental Protection Law, in the agricultural sector are yet to be developed.

Many legislative documents include decree guidance but need circulars or only have circulars guiding partially or on isolated issues, causing difficulties in implementation. Additionally, numerous amending circulars need more consistency, further complicating the implementation process. Besides the guiding circulars, there are 22 standards, regulations, and criteria related to ecological agriculture, low-carbon agriculture, and circular economy, along with over 70 Prime Ministerial and ministerial decisions from relevant ministries and sectors concerning agricultural transformation.

Recent statistics from the Institute of Agricultural and Rural Development Policy and Strategy (IPSARD) reveal a staggering 741 policy documents related to the transformation of the food system. Despite the abundance of relevant policy documents, practical challenges persist in issuing and implementing these policies.

(1) There are numerous detailed provisions in agricultural transformation, particularly regarding input control, agricultural production, and service provision for agriculture. However, the connection between specialized laws still needs to be improved, especially in sectors with a cross-cut nature, such as ecological agriculture systems and circular economy in agricultural production. The sectoral management approach contributes to these deficiencies as it fails to address interconnected issues across sub-sectors comprehensively.

(2) Many specialized decrees mainly address certain aspects or parts, causing significant difficulties in referencing and implementation. Some governmental decrees lack accompanying circulars, while others need more detailed guidance. For instance, decrees guiding the implementation of the Livestock Law, Crop Law, etc., may need more comprehensive or timely circular guidance. Furthermore, some decrees may have associated circulars that are either delayed in issuance or provide incomplete guidance, such as Circular No. 23/2019/TT-BNNPTNT dated November 30, 2019, which only addresses artificial insemination and livestock declaration. These deficiencies in the decrees can lead to confusion and hinder the effective implementation of the laws.

(3) Decisions related to agricultural production are relatively diverse but often remain specialized and need more alignment with relevant laws and legal documents. While

these decisions primarily aim to address sectoral development challenges and specificities, they may fail to ensure consistency and coherence in the transformation towards ecological agriculture and low-carbon practices according to new requirements. Moreover, many decisions need legal basis citations for their issuance, relying primarily on functional duties, thereby encountering difficulties in establishing connections with party resolutions and laws.

Delving into specifics, certain legal documents related to agricultural transformation-including ecological agriculture, low-carbon agriculture, organic farming, and the circular economy-still exhibit shortcomings, limitations, and barriers.

a. Regarding specific laws:

(1) Environmental Protection Law of 2020: Guidance on implementing Articles 90 and 91 regarding climate change needs specific instructions for the agricultural sector; the guidance provided by the Ministry of Natural Resources and Environment focuses solely on environmental resources. The Environmental Protection Law of 2020 lacks specific provisions for protecting aquatic and forestry environments as the basis for agricultural transformation. However, Government Decree No. 155/2016/NĐ-CP, dated November 18, 2016, includes penalty provisions for aquaculture activities, posing challenges in determining scientific bases for identifying pollution parameters hindering artisanal activities and aquaculture. Article 61, Clause 4 of the Environmental Protection Law regulates the termination of outdoor burning of agricultural by-products but lacks specific provisions, especially regarding sanctions for violations and related technical guidance.

(2) There needs to be more consistency between the 2020 Environmental Protection Law and the 2018 Livestock Law regarding

managing livestock waste, despite having provisions on this matter. Livestock waste contains high nutrients and can be valuable for fertilizer production and energy generation. Yet, most environmental management regulations for livestock waste consider it as waste that needs to be disposed of. The guidance provided by the Environmental Protection Law needs more detailed specialized information on chemicals, plant protection products, packaging disposal, climate change adaptation, and mitigation. In contrast, specialized laws need to be completed and consistent.

In the 2018 Livestock Law, there is a lack of provisions on the treatment of solid and liquid waste. Conversely, the 2020 Environmental Protection Law has provisions but needs more specialized guidance, especially technical standards for using livestock waste for crop cultivation or aquaculture feed. Articles 62 and 63 of the Livestock Law regulate the management of products from livestock waste treatment, including quality management. However, these regulations are not aligned with environmental protection laws because the Livestock Law does not define the term "products from livestock waste treatment."

(3) The 2013 Law on Science and Technology Transfer lacks explicit provisions regarding technologies for environmental management, greenhouse gas emission reduction, and climate change adaptation. In contrast, the 2018 Biodiversity Law overlaps state management functions between the Ministry of Natural Resources and Environment, the Ministry of Agriculture and Rural Development, and the Ministry of Science and Technology regarding agricultural biodiversity.

(4) The 2010 Environmental Protection Tax Law specifies the subjects and framework

for environmental protection tax, including nylon bags, herbicides, pesticides, wood preservatives, and restricted-use disinfectants. However, it needs to be clarified whether the responsibility lies with the producers of these products, the users, or the consumers of products derived from these chemicals, especially regarding nylon film and plant protection chemicals.

b. Regarding some decrees and circulars related:

(1) Decree No. 45/2022/NĐ-CP, a significant government issuance dated July 7, 2022, has specified and increased the penalty levels stipulated in the 2020 Environmental Protection Law for various violations. These include burning non-agricultural waste, chemical management, plant protection products, and veterinary drugs (Article 41); violations related to environmental protection reporting (Article 43); violations related to greenhouse gas inventory reporting (Article 45); ozone layer protection (Article 46); and payment for ecosystem services (Article 48). The provisions regarding penalty levels are particular and increasingly severe, covering various production sectors of the industry. However, the guidelines for implementing these penalties have not been clearly outlined, particularly regarding the limited role of agricultural sector authorities in handling violations and the inadequate authority granted to grassroots-level local authorities compared to the provisions of the Decree. Furthermore, although high penalties are stipulated, the legal basis for determining these penalties is not clearly defined, leading to difficulties in applying the penalty levels for violations. These challenges in implementing the Decree must be addressed to enforce environmental regulations effectively.

(2) Decree No. 08/2022/NĐ-CP dated January 10, 2022, issued by the Government,

provides detailed regulations on certain provisions of the Environmental Protection Law but lacks specific provisions for agriculture, apart from general rules concerning traditional craft villages and adaptation to climate change. Meanwhile, specialized agricultural guidelines remain insufficient and tend to be more localized for certain entities.

(3) Decree No. 06/2022 on greenhouse gas reduction and ozone layer protection sets a target of reducing greenhouse gases by 129.8 million tons by 2030, which may affect the implementation of goals outlined in the Agricultural Development Strategy due to the need for significant efforts in methane reduction. The regulations regarding inventorying, and developing emission reduction plans within short intervals, performed biennially (with the first cycle set for January 2024 for the agriculture sector), could create significant pressure due to technical limitations and diverse operational entities without clear sectoral policy guidance. Although emission reduction quotas for the sector are specified, there is still a lack of allocation to localities for greenhouse gas emission reduction quotas in agriculture, hindering proactive implementation.

The Measurement, Reporting, and Verification (MRV) system has yet to be fully established (both at the national and sectoral levels). The complexity and diversity of production entities result in significant errors in MRV implementation for different agricultural techniques in various ecological regions-directives on new emission quota exchanges and offsets at the policy level lack specific guidance. Guidelines on emission reduction rights, contributions to national shares, and domestic and international carbon market exchanges are currently in progress, with no particular instructions

available. At the same time, 2023 marks the year for reporting results. Although there are decrees guiding the registration of projects implementing carbon offset mechanisms domestically and internationally, it remains to be seen who the registering authority is and which authority is responsible for issuing registrations to implement agricultural projects under the carbon offset mechanism in the carbon market.

(4) The fixed fee regulations, as outlined in Decree No. 53/2020/NĐ-CP on wastewater, directly impact product costs for transitioning to eco-friendly livestock farming and developing low-emission livestock farming. Policy mechanisms supporting low-emission livestock farming, emission-free, or water-saving farming are needed to address this. These mechanisms should be accompanied by specific measures, as detailed in management documents and implemented through state resources.

In addition to decrees, the Prime Minister has issued many specific decisions such as Decision No. 888/QĐ-TTg dated July 25, 2022, regarding tasks and solutions to implement the results of COP26 on climate change, which includes various contents related to the industry such as developing eco-agriculture, circular economy, low-carbon emissions; Decision No. 687/QĐ-TTg dated June 7, 2022, approving the Economic Circular Development Plan in Vietnam; Decision No. 01/2022/QĐ-TTg dated January 18, 2022, on issuing a list of sectors and facilities emitting greenhouse gases required to inventory greenhouse gases; National system for monitoring and evaluating climate change adaptation activities (Decision No. 148/QĐ-TTg dated January 28, 2022); Agricultural sector development strategy for the period 2021-2030, vision to 2050 (Decision No. 150/2022/QĐ-TTg dated January 28, 2022);

National strategy for disaster prevention and control (Decision No. 379/2021/QĐ-TTg dated March 17, 2021); National strategy for green growth (Decision No. 1658/2021/QĐ-TTg dated October 1, 2021); National nutrition strategy for the period 2021-2030 and vision to 2045 (Decision No. 02/2022/QĐ-TTg dated January 18, 2022); Policies on public-private partnership investment (Decree No. 62/2018/NĐ-CP dated May 2, 2018); Agricultural insurance support policies (Decision No. 22/2019/QĐ-TTg dated June 26, 2019); Policies to encourage development cooperation and linkages between production and consumption of crops, livestock, and aquaculture products (Resolution No. 98/2018/NĐ-CP dated July 5, 2018); National digital transformation program by 2025, vision to 2030 (Decision No. 749/2020/QĐ-TTg dated June 3, 2020); Economic support program for collectives, cooperatives (Decision No. 1084/2020/QĐ-TTg dated November 13, 2020); International program on climate change adaptation for the period 2021-2030 (Decision No. 1055/2020/QĐ-TTg dated July 20, 2020); Organic agriculture development plan for the period 2020-2030 (Decision No. 885/2020/QĐ-TTg dated June 23, 2020); Action plan for implementing the 2030 Agenda (Decision No. 622/2017/QĐ-TTg dated May 10, 2017) etc. However, most of these specific decisions by the Prime Minister currently lack resource allocation and monitoring indicators, making it difficult to achieve clear objectives, tasks, and implementation timelines. This complicates the implementation of program content and poses challenges in reviewing and evaluating effectiveness.

(5) Circular No. 01/2022/TT-BTNMT, issued by the Ministry of Natural Resources and Environment on January 7, 2022, guides on implementing the Environmental Protection Law regarding climate change

adaptation. Still, it only specifies provisions for the environmental resources sector. However, Government Decree No. 08/2022/NĐ-CP, dated January 10, 2022, does not guide climate change adaptation. This outcome creates many difficulties for agricultural management agencies in implementing the provisions of the Environmental Protection Law regarding climate change adaptation in agriculture.

c. Existing shortcomings and overlaps in some circulars:

The provisions of Circular No. 12/2021/TT-BNNPTNT dated October 26, 2021, of the Ministry of Agriculture and Rural Development show that some feed additives for livestock to reduce greenhouse gas emissions (biochar, zeolite) are included. Still, many feed additives in this circular need to be listed in the approved list, causing difficulties for food production enterprises and livestock facilities. There are regulations on treating livestock waste and agricultural by-products reused for other purposes. Also, there are no regulations on reusing crop residues or low-quality crop products that do not meet consumer demand and are included in the feed processing for livestock, poultry, and aquatic products. Circular No. 02/2020/TT-BNNPTNT, dated February 28, 2020, stipulates a relatively small scale of 1 hectare, which does not fully meet the economic requirements, making it difficult to apply consistent technologies, especially environmentally friendly technologies, climate change adaptation, and greenhouse gas emissions reduction.

Circular No. 04/2020/TT-BNNPTNT, dated March 9, 2020, provides regulations on maximum allowable levels for safety criteria production materials but does not include by-products, leading to the waste of crop residues, agricultural and aquatic processing by-products, and mineral additives in animal

feed to reduce greenhouse gas emissions in rumen fermentation. Circular No. 19/2019/TT-BNNPTNT dated November 15, 2019, on the collection, treatment, and use of crop residues needs to consider solutions for burying crop residues that emit greenhouse gases, by-products generated from processing, but lacks policies for reusing these by-products as resources, and guiding the development of waste economy, circular economy. Circular No. 38/2018/TT-BNNPTNT, dated December 25, 2018, stipulates that establishments that do not meet the scale of livestock farms, animal production, and business establishments, animal products for consumption, must be certified as meeting food safety conditions. However, according to Circular No. 09/2016/TT-BNNPTNT dated June 1, 2016, these establishments are not required to obtain certificates of veterinary hygiene conditions. Still, they will be administratively sanctioned if they do not have certificates of veterinary hygiene conditions (Decree on administrative handling of violations in the veterinary field). Processing establishments handling export goods are only allowed to process export goods at production facilities that have been granted certificates of veterinary hygiene conditions (Clause 3, Article 11 of Circular 25/2016/TT-BNNPTNT). These provisions need to be revised.

Inter-ministerial Circular No. 05/2016/TTLT-BNNPTNT-BTNMT dated May 19, 2016, jointly issued by the Ministry of Agriculture and Rural Development and the Ministry of Natural Resources and Environment, guides the collection, transportation, and disposal of pesticide packaging after use, which needs to be updated following the effectiveness of the Environmental Protection Law 2020 and the issuance of Decree No. 45/2022/NĐ-CP dated July 7, 2022, by the Government. The provisions of this Circular only clarify the roles

of users, the collection and disposal process, and the responsibilities of local management authorities, while the duties of pesticide manufacturers and suppliers have not been clearly defined, lacking mechanisms for handling responsibilities, insufficient processing capacity in many localities, mainly mountainous, remote, and rural areas; unable to address the root cause of plant protection packaging waste. Currently, there is a draft regulation on the responsibility of fertilizer and pesticide manufacturers in collecting, recycling, and disposing of packaging, so it is necessary to consider amending Inter-ministerial Circular No. 05/2016/TTLT-BNNPTNT-BTNMT to comply with current regulations.

The provisions of Circular No. 04/2016/TT-BTNMT dated April 29, 2016, issued by the Ministry of Natural Resources and Environment, also stipulate the maximum value (Clause 2); the sources of waste reception include rivers, streams, creeks, canals, ditches, lakes, ponds, marshes, swamps, etc. (Section 1.3, Clause 1), but do not clearly define whether irrigation canals serving agriculture fall within the scope of environmental infrastructure. This has impacted the utilization of livestock waste for agriculture and aquaculture, resulting in organic waste wastage and fertilizer loss for crops. On the other hand, many businesses have reported that transporting livestock waste to paddy fields is a violation, which hinders livestock businesses from using livestock waste for grasslands.

In Circular No. 01/2020/TT-BKHDT dated February 19, 2020, issued by the Ministry of Planning and Investment, 15 main criteria for assessing cooperatives are provided (Article 7). However, it is crucial to note that there is no cooperative relationship related to environmental services, greenhouse gas emissions reduction, plastic waste reduction,

and environmental factors not emphasized in the classification and assessment criteria. This omission is significant as it fails to recognize the growing importance of environmental sustainability in cooperative operations and, therefore, needs to be addressed urgently.

Currently, there is a lack of guidance and mechanisms, as well as support policies for climate-adaptive cultivation as stipulated in the 2018 Agricultural Law; guidance on mechanisms and policies for the treatment and use of crop residues is lacking, while the 2020 Environmental Protection Law stipulates that outdoor burning of crop residues may confuse implementation; there is a lack of guidance on establishing support mechanisms for greenhouse gas emissions reduction, detailed guidance on collection, treatment, and support mechanisms for crop residues for both users and producers to ensure sustainable value creation and promote circular economy in agriculture.

4. Conclusion and recommendation

4.1. Conclusion

Firstly, to ensure sustainable development in agriculture and fulfill international commitments on environmental protection, mitigation, and adaptation to climate change, Vietnam has issued a system consisting of numerous mechanisms and policies, manifested at various levels, such as laws, decrees, circulars, resolutions, strategies, and related documents. However, many guiding documents are still slow to be issued and lack coherence, leading to difficulties in implementation.

Secondly, feasibility studies are needed to identify appropriate priority actions, timelines, and deployment solutions for policies, avoiding overlap, spread-out responsibilities, and unclear responsibilities among ministries, sectors, and localities. At the same time, when developing mitigation

and adaptation policies to climate change, it is essential to integrate them organically with socio-economic development goals to ensure resource concentration and coherent, appropriate deployment solutions.

4.2. Recommendation

Firstly, to ensure consistency and coherence in the legal framework to promote the transition to eco-friendly agriculture, low-carbon practices, circular economy, mitigate greenhouse gas emissions, reduce pollution, and contribute to the national goal of achieving net-zero emissions by 2050 and other international commitments made by Vietnam at COP26, it is necessary to review existing policies comprehensively. This should involve converting specific resolutions into actionable legal documents, issuing guiding decrees, and limiting specialized circulars. It's important to consolidate and unify guidance documents through revisions.

Secondly, the process of reviewing and developing policies should:

(1) Integrate potential economic, social, and environmental benefits with climate change mitigation and adaptation efforts, building resilience to climate change and protecting agricultural ecosystems. Encourage the development of value chains, with economic, environmental, and social values guiding policy development rather than focusing solely on regulatory solutions.

(2) Uphold the principle of inclusivity in policy development, especially involving those impacted and benefiting from policy implementation. Prioritize policies for smallholder farmers, small and medium-sized enterprises, and ethnic minorities, with specific policies tailored to different groups and vulnerable regions. This approach ensures that all voices are heard and considered, fostering a sense of ownership and commitment to the policies.

(3) Strongly emphasize clear resource allocation and establish monitoring and evaluation targets when formulating policies. Develop mechanisms for transitioning policy states into specific programs and projects, with unequivocal implementation responsibilities between central and local authorities. This minimizes situations where central authorities issue policies, but localities are responsible for implementation. This ensures that policies are not just on paper but are effectively implemented for the desired outcomes.

(4) Encourage localities to develop specialized policies based on their unique characteristics to maximize effectiveness and suitability.

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