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The legal provisions of waste-to-energy development assistance during the climate change in Vietnam

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Abstract
Reducing greenhouse gases and ensuring energy security are important solutions to the climate change adaptation process. It requires efforts from all countries around the world in many ways, including developing waste-to-energy. In particular, according to the recent COP 26 Conference (November 2021), harnessing the potential of waste-to-energy, following the trend of phasing out coal power to address climate change, needs specialized attention. This article breaks down some of the needs for waste-to-energy growth and the legal provisions of waste-to-energy development assistance for the purposes of reducing greenhouse gases, ensuring energy security, and improving the effectiveness of the climate change response.

Keywords: waste-to-energy, assistance, climate change, legal

Introduction

Disposing of waste effectively and turning it into energy for human benefit is currently a matter of concern in most countries around the world. It does not only solve the environmental pollution problem and use the land fund effectively, but it also contributes to solving the energy challenge in the context of climate change adaptation. For that reason, in efforts to respond to climate change, energy recovery from waste is one of the most important problems. In Vietnam, from a legal perspective, energy recovery from waste is defined as "the conversion of waste materials into energy" [1]. This process can be performed by many different subjects, from waste-treatment facilities to organizations, households, and individuals who are waste-source owners.

Energy recovery from waste is a key that brings many benefits to society and the environment, as well as the value of conserving energy and generating sustainable energy sources. In recent years, energy from waste materials has gained recognition. Waste is considered an alternative energy resource. Harnessing energy from waste can be carried out by different methods, such as converting non-recyclable waste materials into heat through combustion, gasification, anaerobic digestion, and landfill gas recovery. Energy obtained from this process can be used directly as fuel for cooking, heating, or steaming turbine-generator boilers [2].

Currently, waste incineration technology has been widely adopted worldwide due to some outstanding advantages compared to other technologies, such as reducing the volume and mass of waste by 90-95%, making good use of heat, saving more area compared to disinfection technology, reducing water pollution and bad smell, reducing greenhouse gas emissions compared to disinfection technology, etc. In 2018 in the EU, overall energy production from all waste (industrial waste, renewable and non-renewable municipal solid waste, non-renewable waste) amounted to about 2.4% of the total energy supply.18 million European citizens receive electricity, and 15 million receive heating from Waste to Energy plants [3].

Results and Discussions

The need for Vietnam's waste-to-energy development in order to respond to climate change

In Vietnam, several waste-to-energy plants are operating, such as the waste-to-energy plant of EB Environmental Energy Co., Ltd., which has a designed capacity of 400 tons/day and a current capacity of 350 tons/day in Cantho. A waste treatment, biogas, and fertilizer production plant owned by Vietnam Project Development Co., Ltd., in Quang Binh, which is a complex of domestic waste treatment and renewable energy production, has a total capacity of 10MW and uses 100% equipment that is synchronous, closed, modern, and advanced technology from the Federal Republic of Germany. In addition, as of 2019, several projects for waste-to-energy incineration plants have started construction, such as: the Vinh Tan waste-to-energy plant project, Dong Nai (capacity of 600 tons/day, generating capacity of 30MW); Soc Son waste-to-energy plant, Hanoi (capacity of 4,000 tons/day, generating capacity of 75MW); Tram Than domestic waste treatment plant for electricity generation, Phu Ninh, Phu Tho (capacity of 500 tons/day); and two waste-to-energy plants located in Cu Chi, Ho Chi Minh City (owned by Vietstar and Tam Sinh Nghia, each factory has a capacity of 1,000 tons/day) [4]. With tens of thousands of tons of waste per day, if properly treated, Vietnam has great potential for recovering energy from waste. As of 2019, Vietnam has 9.03 MW of electricity generated from urban waste. In the Electricity Planning VIII approved by the Prime Minister in Decision No. 2068/2019/QD-TTg, the percentage of urban solid waste for energy targets is expected to increase to 30% in 2030 and most solid waste will be used to produce energy in 2050 [5].

Both in theory and in practice, the development of waste-to-energy is considered one of the most effective solutions to environmental and energy security challenges. In particular, the development of waste-to-energy has an important and undeniable role in addressing climate change. This is reflected in two main aspects:

1. *Development of waste-to-energy is one of the most effective solutions to reduce the causes of climate change.*

This role is shown through the development of waste-to-energy that will contribute to reducing greenhouse gases, the fundamental cause of climate change. As energy demand around the world increases and resources become increasingly scarce, the impact of climate change on the environment also becomes increasingly significant. Human development has become heavily reliant on the exploitation of fossil fuel sources. The extraction of conventional energy sources is the main cause of the increasing greenhouse gas effect, which is the direct cause of climate change. In this context, technological innovation across all sectors of energy supply and consumption is the most effective instrument for mitigating the risk of accelerating climate change. So, greenhouse gases can be greatly reduced through available technologies with superior features in terms of energy saving and sustainable use of resources. With this approach, in many countries around the world, waste incineration power generation is regarded as an effective solution to climate change mitigation strategies.

2. *Development of waste-to-energy is a smart choice to respond to climate change.*

This role is demonstrated through the development of waste-to-energy as an effective measure to contribute to energy security in the context of climate change. It has actually been shown that besides the direct negative impacts of climate change threatening food security and agricultural development, climate change also causes significant impacts on energy security. This is a matter of great concern to many countries around the world, including Vietnam. Climate change increases the level of energy dependence. The instability of energy sources, especially primary energy supplies, will have a great impact on ensuring national energy security due to the effects of climate change [6]. In that context, the development of waste-to-energy is seen as a way to contribute to diversifying energy sources for climate change adaptation.

Regulations on supporting the development of waste-to-energy in Vietnam

To encourage businesses to invest and develop activities for the purpose of environmental protection in general and the development of waste-to-energy in particular, the Vietnam Law on Environment Protection 2020 has general regulations on the government's incentives and support for projects and businesses operating in this field. Accordingly, enterprises producing and providing waste treatment combined with energy recovery technology are one of the objects of business investment activities in environmental protection that receive incentives and support [7]. These incentives and support are specified in Decree No. 08/2022/ND-CP of the Government detailing a few articles of the Law on Environment Protection. It is generally prescribed for waste energy recovery activities, including waste-to-energy, as follows:

1. Investors in projects for the production and supply of waste treatment combined with energy recovery technology are entitled to support investment in the construction of infrastructure. Accordingly, the government prioritizes the allocation of land funds associated with existing works and technical infrastructure works (roads, electricity, water and sewerage, communications, energy) connected to the general technical infrastructure system of the area outside the project scope, rather than using the auction form of land use rights. In case the government can't arrange the land fund associated with existing works and technical infrastructure works connected to the general technical infrastructure system of the area outside the scope, the project investor may enjoy policies such as support for investment in building infrastructure in accordance with the law on investment. In addition, project owners who invest in the production and supply of waste treatment combined with energy recovery technology are entitled to incentives in terms of exemptions and reductions for land use fees and land rents in accordance with the land law, as are the subjects that belong to projects, industries, and professions with special investment incentives.
2. If the investors of a waste treatment project apply waste treatment technology and the proportion of waste that must be buried after treatment is less than 30% of the total collected solid waste, they may borrow a loan at an interest rate. The maximum preferential interest rate is not more than 50% of the state investment credit's interest rate announced by the competent authority at the time of lending. The total loan amount is not more than 80% of the total construction investment. They will also be prioritized for post-investment support from the annual revenue and expenditure difference.
3. Investors of projects on production and supply of waste treatment combined with energy recovery technology are entitled to a loan with a maximum priority of not more than 50% of the state investment credit's interest rate announced by the competent authority at the time of lending. The total loan amount is not more than 70% of the total construction investment. They will also be prioritized for post-investment support from the annual revenue and expenditure difference. The state budget provides direct interest rate support to investors after making medium and long-term credit payments to carry out environmental protection activities and projects that are granted green credit at credit institutions and foreign bank branches in Vietnam.
4. Businesses' incomes from investment projects in production and supply waste treatment combined with energy recovery technology are entitled to corporate income tax incentives in accordance with the law on corporate income tax. Incentives for other tax, charge, and fee policies are implemented in accordance with the law on taxes, fees, and charges [8].

Particularly for the encouragement of waste-to-energy, the development of power projects using solid waste in Vietnam is entitled to the following support policies [9]:

Firstly, support power consumption.

To support the consumption of electricity produced from the plants using solid waste, the electricity purchaser is responsible for purchasing all the electricity produced from the power plants using solid waste in the area under its management.

Secondly, incentives for investment capital and taxes.

These incentives include:

- Mobilization of investment capital: Investors may mobilize capital from domestic and foreign

organizations and individuals to invest in power generation projects using solid waste under the provisions of existing laws.
- Investment credit incentives: Power generation projects using solid waste are entitled to investment credit incentives under the provisions of the state's existing laws on investment credit and export credit.
- Import tax incentives: Power generation projects using solid waste are exempt from import tax on imported goods to create fixed assets for the project; imported goods are raw materials, supplies, and semi-finished products that cannot be produced domestically, which are imported to serve the project's production in accordance with current laws on import and export taxes.
- Corporate income tax incentives: The exemption and reduction of corporate income tax for power generation projects using solid waste are implemented as for projects in the field of investment incentives.

Thirdly, the land incentive

Power generation projects using solid waste and transmission lines, and transformer stations to connect to the national electricity grid are exempted or reduced from land use levy and land rent in accordance with current laws applicable to projects in the field of investment incentives.

Fourthly, supporting electricity prices.

The electricity purchaser is responsible for purchasing the entire electricity output from power generation projects using solid waste at the electricity purchase price at the electricity delivery point (excluding value-added tax) as follows:

+ For power generation projects that burn solid waste directly, it is 2,114 VND/kWh (equivalent to 10.05 US cents/kWh).

+ The rate is 1,532 VND/kWh (equivalent to 7.28 US cents/kWh) for power generation projects that use gas recovered from solid waste landfills.

Conclusion

To improve the effectiveness of promoting the development of waste-to-energy, it is necessary to issue further regulations as follows:

Firstly, encourage all types of businesses to invest in the development of waste-to-energy to diversify the types of businesses operating in this field and more effectively exploit the potential of waste-to-energy in Vietnam. In fact, the potential of waste-to-energy in Vietnam is very large but has not been effectively exploited. According to the State of Environment Report 2017, the potential for energy recovery from solid waste in our country is very large, only for 07 waste treatment complexes, reaching about 1,400 million kWh/year with annual revenue of about 140 million USD (10.05 USCent/kWh). In the period of 2015-2020, the average amount of waste in big cities such as Hanoi, Ho Chi Minh City, Hai Phong, etc. is a stable source of fuel for waste-to-energy plants, which have a capacity of 500 tons/day (8 MW), equivalent to nearly 350MW of electricity produced from waste. For the project of generating electricity from bagasse, there are currently 41 potential power sources with a total capacity of >500 MW distributed in rural areas. Although the potential for energy recovery in our country is great, most of the waste-to-energy projects in our country are still on paper. According to the Ministry of Industry and Trade, there are only a few projects implementing waste incineration technology to recover energy from domestic solid waste: 01 rice husk-fired thermal power plant project, 01 power generation project from livestock and poultry manure, and 06 power generation projects from bagasse [10]. In particular, according to the recent COP 26 Conference (November 2021), the potential of waste-to-energy, following the trend of phasing out coal power to address climate change, needs specialized attention to ensure energy security.

Secondly, diversify forms of support for waste-to-energy development in order to attract more participants. Waste treatment activities for power generation require special incentives and support because they command large investment capital, high technical requirements, high operating costs, and long capital recovery time. When compared with the cost of electricity production from other types of electricity generation, the cost of electricity production from waste is much higher [10]. Building a waste-to-energy plant with modern technology requires a large investment of capital from enterprises. However, the efficiency of waste-to-energy plants is about 20-25%, much lower than that of thermal power plants by about 40-42%. Due to the small capacity of the national electricity grid, the payback period of these projects usually lasts 10 to 20 years [4]. Currently, although the state has preferential prices for power generation projects using direct solid waste incineration technology as analyzed above, the new electricity purchase price is only applied to power generation projects that burn solid waste directly and power generation projects that burn gas recovered from waste landfills. In addition, it is necessary to add regulations on price incentives for projects applying new technologies in the field of waste-to-energy, such as gasification-based electricity generation technologies, combustion-based electricity generation technologies, electricity generation technologies based on biogas produced from fermentation, etc.

References

1. Hockenos P. "Waste to Energy - Con controversial power generation by incineration," 2021. [Online]. Available: https://www.cleanenergywire.org/factsheets/waste-energy-controversial-power-generation-incineration.
2. Thuy VTD. "Responding to Climate Change and the Role of Environmental law," European Journal Of Economics, Law, And Politics,8(2). doi: 10.19044/elp.v8no3a1, 2021.
3. Eduardo Jacob-lopes, Leila Queiroz Zepka, Maria Isabel Queiroz, Waste to Energy, Nova Science Pub Inc, 2018.
4. Government of the Socialist Republic of Vietnam, Article 3, Decree No. 38/2015/ND-CP on waste and scrap management, 2015.
5. Mão DV. "Increasing power production from waste contributes to energy development and environmental protection," Environmental Journal, no. 05, 2020.
6. Nhi TTY. "Environmental pollution from domestic waste and the benefits of waste-to-energy," [Online]. Available: https://oshe.vn/Home/News/34.
7. National Assembly, Article 141 of the Law on Environmental Protection, 2020.

8. Government of the Socialist Republic of Vietnam, Article 132,133,134 Decree No. 08/2022/ND-CP detailing a number of articles of the Law on Environmental Protection, 2022.
9. Socialist Republic of Viet Nam, Prime Minister, Decision No. 31/2014/QD-TTg stipulates the mechanism to support the development of power generation projects using solid waste in Vietnam, 2014.
10. MONRE, "Report on the State of the National Environment, Special Topic on Domestic Solid Waste Management," Hanoi, 2019.
11. MONRE, "National State of the Environment Report, Waste Management Topics," Hanoi, 2017.