



Solid Waste Management in Households in Rural Areas - Current Situation and Direction for Completion

Huynh Thanh Tuan, Do Quang Son, Tran Hoang Tuan Dat, Duong Nguyen My Han, Nguyen Thanh Phuong

Faculty of Law, Nam Can Tho University

DOI: <https://doi.org/10.55248/gengpi.5.0224.0572>

ABSTRACT:

Based on the study of legal regulations on waste treatment and the practical application of these regulations, the article focuses on analyzing the current state of awareness of each household in waste treatment. household solid waste and inadequacies in classifying, collecting, and treating waste according to the law in rural areas, setting out responsibilities from relevant units such as functional agencies and departments. production facilities and people in coordinating environmental protection. From there, propose solutions to solve problems surrounding solid waste treatment in rural areas.

Keywords: *solid waste, daily life, rural areas, waste separation at source, waste treatment.*

1. INTRODUCE

Domestic solid waste is one of the issues of concern, which has been in an alarming state since the previous period and is currently continuing to become more complicated . Due to being passive in managing and developing plans to prevent impacts from the industrialization process, it makes it difficult to manage and implement State protection policies in rural areas. Mainly the huge amount of solid waste in daily life is pushed out into the living environment every year. According to reports from provinces and centrally run cities, currently the amount of solid waste generated in rural areas is village about 32,000 tons/day¹. Main cause is that there are no specific plans and methods in managing and treating solid waste in daily life , on the other hand, Not being specific about the responsible entity in the process of collecting and treating solid waste has made household waste management less effective in practice. In section 2, chapter VI, the 2020 Law on Environmental Protection on solid waste management has outlined the steps in the waste treatment process, however, there is a lack of specific regulations on enforcement entities. focusing mainly on state agencies, not taking advantage of available resources at the grassroots level, as well as lacking accompanying legal responsibilities, making this process lose its practical feasibility. . In particular, in rural areas, people are still affected by long-standing living habits such as burning trash, discharging trash into the water environment,... and have not yet built a waste management and treatment system. firmly, the delay and slowness in developing plans to respond to the negative impacts of household waste disposal on the environment have destroyed the living environment of rural areas, many places have become a place to store trash but there is no thorough treatment plan. From there, lawmakers need to issue additional regulations to specify the process of implementing household waste treatment in rural areas, including implementation time, planning and implementation options. , the subject responsible for implementation and the accompanying legal responsibilities are the central content this article wants to address .

2. CURRENT SITUATION AND SOLUTIONS ON DOMESTIC SOLID WASTE MANAGEMENT

2.1. About living habits and waste treatment practices in rural areas

The volume of household solid waste generated in rural areas is increasing, from 18,200 tons/day in 2011 to 28,394 tons/day in 2019². Currently, household solid waste generated in many rural areas has not been collected and treated properly and is one of the main causes of rural environmental pollution³. Because the population density in villages and hamlets is low, each household has a vacant land area, in addition to the area to build houses .

¹ Ministry of Natural Resources and Environment, *Situation of common solid waste generation* , <https://monre.gov.vn/Pages/tinh-hinh-phan-sinh-chat-thai-ran-thong-thuong.aspx> . [accessed November 24, 2023]

² National environmental status report for the year (2019), Overview report on the current status of domestic solid waste management, Dan Tri Publishing House. Hanoi, page 15

³ Ministry of Natural Resources and Environment, National Environmental Status Report 2019, http://dwrn.gov.vn/uploads/news/2020_11/bao-cao-hien-trang-moi-truong-2019.pdf . [accessed November 23, 2023]

Therefore, many households convert that area into self-sufficient landfills or tanks to store unsorted garbage that has not been treated for a long time and gives off a foul smell, causing water pollution. soil and air, with many potential risks of causing pathogens in communities in rural areas .

Besides, the habit of treating trash in traditional ways such as burning, burying, etc. for all types of unsorted waste and some types of plastic waste such as: plastic bottles, rubber, nylon bags ... When burned manually (low temperature), these materials are not burned thoroughly and will produce toxic gases such as: Carbon oxides, Volatile hydrocarbons including benzene, dioxin, furin which are very toxic substances that ⁴pollute the atmosphere. atmosphere and have negative effects on human health . In addition , the problem of waste treatment in rural areas has become difficult to control, because support and coordination in the community regarding violations of environmental protection laws has not been encouraged. Therefore, plans to thoroughly control waste in households and individuals still lack decisiveness , actions are stagnant, and the plans are only reactive and temporary, causing environmental problems. becoming increasingly serious .

The above current situations originate from lifestyle, when environmental issues have not received proper attention in rural areas. On the other hand, lack of awareness in environmental protection, partly due to lack of knowledge about scientific waste classification and treatment, has made the problem of waste classification in localities extremely difficult and difficult. There is no plan to thoroughly control and handle it. In many places, there is still a situation where garbage is thrown in the wrong places, even though the authorities have propagandized and posted signs stipulating penalties for administrative violations, of which the alley 179/144 Vinh Hung street, Hoang Mai district is one examples ⁵.

In addition, the issue of waste treatment at source has been implemented in many localities by mobilizing on the self-awareness of households . However, persuading households mainly relies on local self-management teams to carry out alone, lacking specific plans, progress and targets, making the advocacy work seem to stop at just one method. formal aspect, does not bring practical value. For example, in Dien Trung commune, Ba Thuoc district (Thanh Hoa), although there have been directions and requests for associations and unions of the commune to have periodic general cleaning plans, and have implemented many solutions. , but maintaining environmental criteria in the commune faces many difficulties. Because it is a mountainous commune and has a large area, inspection, supervision as well as periodic cleaning are difficult. People's awareness of environmental sanitation is still limited, while the commune does not have a centralized landfill, so collection and treatment is mainly done in homes, thus posing many potential risks of unsanitary conditions. ⁶. The percentage of livestock households with barns that ensure environmental hygiene in the commune has now reached more than 80%, but people's awareness of cleaning barns is still limited, affecting environmental sanitation. From the perspective of the campaign, most of them rely on a sense of responsibility and are not equipped with knowledge about the current state of pollution, the negative impacts on the living environment and people's health due to waste and the ways to deal with them. normal waste treatment, so the working committee has not done a good job in educating people to change their awareness in voluntarily carrying out waste collection.

Faced with that situation, the prerequisite issue is to change the thinking and awareness of environmental changes in the consciousness of the community in the area. However , encouragement and voluntary advocacy must be associated with specific plans and policies to promote the process of environmental protection . In other words, advocacy and encouragement work is the first step in disseminating environmental knowledge, serving as a basis for implementing environmental protection plans, guaranteed by legal regulations. the law. Accordingly, imposing stereotypical legal regulations on environmental protection without carrying out propaganda and education to change awareness of environmental issues in localities will lead to difficulties in implementing environmental laws in life in rural areas. On the contrary, if we only propose movements but do not apply binding rules in practice, the problem of environmental protection will not bring any results. practical value.

2.2. Waste classification at source and waste treatment in localities

According to statistics from the Central New Rural Coordination Office, the volume of household waste generated is about 32,000 tons/day. Up to now, about 50% of communes nationwide have established domestic waste collection groups, however the recycling rate of domestic solid waste in rural areas is still low, only stopping at a modest number. costs 3.24% ⁷. In addition, the Law on Environmental Protection 2020 stipulates that domestic solid waste generated from households and individuals is divided into 3 types: Solid waste that can be reused and recycled; Food waste; other domestic solid waste ⁸.

In household waste treatment in rural areas, encouraging maximum reuse of each type of waste is given top priority to minimize the amount of waste pushed out into the living environment . Food waste used to make organic fertilizer, animal feed, and solid waste that can be reused and recycled is

⁴ Department of Natural Resources and Environment of Vinh Loc district, Harmful effects of unsanitary waste treatment, <https://vinhloc.thanhhoa.gov.vn/portal/Pages/2020-4-15/Tac-hai-cua-xu-ly-rac-thai-khong-hop-ve-sinh24677t.aspx>, [accessed date November 14, 2023]

⁵Nguyen Hoai , Environmental pollution from spontaneous landfills, *Capital Labor Newspaper*, <https://laodongthudo.vn/o-nhiem-moi-truong-tu-nhung-bai-rac-tu-phat-153168.html>, [accessed December 14, 2023]

⁶According to Thanh Hoa Electronic Newspaper , Many difficulties in waste treatment in rural areas , <https://hoiongdan.thanhhoa.gov.vn/portal/Pages/2021-4-27/Nhieu-kho-khan-trong-xu-ly-rac-thai-khu-vuc-nong-tzb7yul.aspx> , [accessed December 14, 2023]

⁷Ministry of Natural Resources and Environment (2019), Overview report on the current status of solid waste management in Vietnam. Documents prepared for the National Conference on solid waste management. Hanoi.

⁸Moitruongvadothi.vn , *Regulations on waste classification at source* , https://moh.gov.vn/tin-lien-quan/-/asset_publisher/vjYyM7O9aWnX/content/quy-inh-ve-phan-loai-rac-tai-nguon?inheritRedirect=false , [accessed 14/ November 2023]

transferred to organizations and individuals for reuse; recycling or facilities with the function of collecting and transporting household solid waste. However, the problem is that for each specific type of waste, there will be separate reuse methods, moreover, some types of waste must go through the treatment process to be usable .

2.2.1. Treatment of organic waste at households and individuals

According to the provisions of Decree 38/2015/ND-CP on waste and scrap management: "Waste recycling is the process of using technological and technical solutions to recover valuable components from waste"⁹. Organic waste , also known as food waste, cannot be reused directly due to its decomposition properties but must go through a technical process of degradation by organic composting and fermentation. Currently, in households this type of waste is mainly used to make organic fertilizer for agricultural crops. However, the decomposition process produces many harmful microorganisms if proper regulations are not followed. Effective treatment will potentially spread harmful pathogens , create foul odors , and pollute the soil and air environment .

In fact, the application of technology to the process of treating organic waste in households is still quite sparse and not very effective , partly because of the negative impacts when not treated. Proper treatment of organic waste is still quite unfamiliar to the majority of people , and investing in the cost of building specialized tunnels to treat this type of waste has not received the necessary priority. On the other hand, during the process of construction and putting into use, technical management is also a big problem, requiring households to be carefully trained to avoid negative consequences later such as pollutes groundwater, poisons the soil, is a breeding ground for dangerous pathogens, etc. Therefore, in reality, people often put organic waste directly into the surrounding soil environment for natural decomposition. causing mold and dampness or discharging waste into canals at home, polluting water sources.

In addition, in rural areas, the amount of food waste is often concentrated in large yards at bridges near centralized markets and distributed among households that carry out business activities. such as buying and selling agricultural products, animal slaughterhouses, specifically: waste from slaughtering chickens and ducks, crushed green vegetables, rotten fruits; The smell of rotting agricultural products mixed with the strong smell of wastewater is extremely polluted¹⁰... However, because it does not bring direct benefits and the small- scale nature of the business , it is binding on the issue. Waste treatment is not as strict as the business sector, so awareness of environmental protection plays an important role in solving the problem of waste discharge at business and trading households. From the above analysis, it is found that the application of organic waste treatment models is not simply aimed at treating the amount of waste, but also needs to raise the issue of benefits and use of the product. After recycling waste , the mobilization and construction of works such as tunnels and septic tanks to treat organic waste but without drawing up a usage plan makes it difficult to deploy and mobilize households. people about the application of scientific methods to treat waste .

From the above analysis, it can be seen that the placement of waste treatment works needs to take into account natural factors in the process of processing organic waste, which easily generates toxic gases that cause odors and pollute the air environment. soil and underground water. Construction requires the participation of technical experts to ensure that construction and operation do not cause side effects that seriously affect the surrounding environment. On the other hand, in the process of implementing organic waste treatment, periodic supervision and monitoring by the authorities is required. After treatment, there should be a plan to put the decomposed products into the process of being used as fertilizer to serve local organizations and households. instead of chemicals in agricultural cultivation, creating a closed, self-service model that turns organic products into useful products for the economic conditions in the region.

2.2.2. Treatment of inorganic waste at households and individuals

For inorganic waste, reuse is somewhat simpler than for organic waste, it is possible to start a new cycle of use without treatment, most of which is still waste . plastic. On August 20 , 2020 , Directive No. 33/CT-TTg of the Prime Minister on strengthening the management, reuse, recycling, treatment and minimization of plastic waste clearly stated: Plastic pollution is becoming into one of the biggest challenges countries face. Each year, the amount of plastic waste generated by humans globally is enough to cover four times the Earth's surface area, of which 13 million tons of plastic waste is dumped into the ocean¹¹. This can be caused by many reasons, first of all the awareness of environmental protection from the issue of minimizing the amount of plastic waste is still low from the majority of households, followed by the issue of recycling. The mechanism is still quite limited, lacking recycling advocacy models or lacking practical application¹².

waste is always a top concern because of its difficulty in decomposing in the natural environment, as well as the complex metamorphoses that pollute the environment and hinder the natural development of the ecosystem. At the recent seminar "Defeating plastic pollution - Current situation and solutions in Vietnam", Associate Professor Dr. Luu Duc Hai, Chairman of the Vietnam Environmental Economics Association, said : "In Vietnam, the average On

⁹ Clause 14, Article 3 , Decree 38/2015/ND-CP

¹⁰Nguyen Ha, Market and worries about waste, *Ho Chi Minh City Law Electronic Newspaper*, <https://plo.vn/cho-va-noi-lo-ve-rac-thai-post448312.html> , [accessed December 14, 2023]

¹¹ Manh Hung , *Plastic waste in Vietnam: current situation and solutions* , <https://tapchiconsan.org.vn/bao-ve-moi-truong/-/2018/826009/rac-thai-nhua-o-viet-nam--thuc-trang-va-giai-phap.aspx> , [accessed November 16, 2023]

¹²Hoang Tho , Vietnam seriously lacks waste recycling plants, <https://baomoi.com/viet-nam-thieu-nghiem-trong-nha-may-tai-che-rac-c47342337.epi> , [accessed on December 14, 2023]

average, about 1.8 million tons of plastic waste is generated each year, including more than 30 billion plastic bags, 80% of which are discarded after being used once. Vietnam ranks 4th out of the top 20 countries, with about 0.28 - 0.73 million tons/year, equivalent to 6% of the world's total amount of plastic waste entering the ocean. Plastic waste causes death to many organisms, and chemical additives in plastic products can directly impact humans and animals.¹³

In addition, some types of solid waste contain toxins that during use or exist outside of natural conditions will release toxins into the environment. Therefore, these types of waste are almost impossible to treat in households and if left in the environment, they will decompose radioactive substances, ... poison the water and air environment, and cannot be recycled. In daily life due to toxic properties that require a specialized process and treatment, at production facilities such as: Explosive (battery, petroleum-stained objects...) , flammable (gas cylinders, lighters...), toxic substances (batteries or pesticides). Besides, there are some plastic bags, plastic bottles... For these wastes, classification at source becomes even more urgent and determines the entire treatment process.

Accordingly, waste classification at source requires the formation of a control team similar to the issue of organic waste classification mentioned previously. Focus For toxic waste such as gas cylinders, pesticides, etc., it is necessary to focus on transferring it to a place with professional technical treatment measures to avoid negative impacts on the environment when handling this type of waste. This issue also needs to be implemented and implemented quickly right after the classification process to avoid remaining in the natural environment for a long time. For all types of plastic waste, it is necessary to strengthen propaganda and education to recognize the chemical characteristics of each type of plastic. From there, there are effective reuse plans in daily activities to ensure health in community life, avoiding the case of using mixed reuse plans that do not follow the standards and recommendations of experts. family. At the same time, strengthen coordination with local political and social organizations to launch movements to reuse plastic waste for application in daily life, encouraging economic development models, creating produce products from all kinds of plastic waste through investment development policies from budget sources.

In short, waste classification at source needs to be turned into a centralized form of classification with a control team, and the law needs to give this control team certain powers in managing the classification. Specific waste at source is as follows: i) Depending on natural and socio-economic conditions, each region or inter-region establishes a centralized location and receives waste classification at households. family - individual, so waste classification is no longer a voluntary awareness of each household at home but a mandatory condition at the place receiving waste classification; ii) Increase coordination and take advantage of available forces in villages and hamlets to coordinate mobilization, guidance, and inspection of waste collection and transportation to waste storage locations in different areas and forces. This quantity is responsible for inspecting and reporting to the competent authorities on the collection and classification of waste in the locality for appropriate and timely treatment options, and devising further plans to respond to the problem. response situation in localities; iii) Focus on increasing meetings and orientation exchanges with households with the purpose of educating and propagating the importance of waste classification, the meaning of local action directions, and thereby listening and receive comments to adjust the implementation of plans to suit the economic and social characteristics, limit opposing opinions, and gain the support of a large number of people: iv) Increase Strengthen inspection and supervision from competent authorities and apply sanctions to deter acts of intentionally not following instructions on how to classify waste at source.

2. 3. Entities responsible for building infrastructure and providing solid waste collection and treatment services locally

2.3.1. Responsibilities of waste collection and treatment entities

C Pursuant to Point b, Clause 1, Article 69 of Decree 08/2022/ND-CP stipulating organizations and individuals collecting products and packaging arising from households, individuals, and the list of products and packaging specified in Appendix XXII issued with this Decree and the list of hazardous waste issued by the Minister of Natural Resources and Environment to carry out recycling responsibilities as prescribed in Section 1 Chapter VI This Decree does not require an environmental license with the content of treating hazardous waste, but must fulfill the responsibilities of the hazardous waste source owner according to the provisions of Article 71 of this Decree, the author believes that The above regulations are unreasonable, specifically:

According to the provisions of Point a, Clause 1, Article 71 of Decree 08/2022/ND-CP, the responsibility of the hazardous waste source owner must be "self-responsible for the identification, classification, and determination of the amount of hazardous waste to be declaration and management" . Accordingly, the law giving waste source owners the autonomy to delineate, classify and determine the amount of hazardous waste does not ensure effectiveness in environmental protection, due to the characteristics of the waste. Hazardous substances easily decompose into toxic substances under certain temperature conditions. If there are no specific measures during the collection and storage process, it will cause environmental pollution. Therefore, treatment needs to follow a specific scientific process appropriate to each type of waste to ensure that environmental pollutants do not arise during storage and treatment. According to statistics, the whole country currently has 1,322 domestic solid waste treatment facilities including domestic solid waste incinerators, 37 compost processing lines, and 904 landfills, including many unsanitary landfills¹⁴. From that situation, the author believes that lawmakers need to promulgate regulations on classification and delimitation for each type of waste. This is the basis for waste source owners to apply the classification

¹³ Khanh Huong, Alarming plastic waste pollution, <https://dangcongsan.vn/ban-doc/y-kien-ban-doc/bao-dong-tinh-trang-o-nhiem-rac-thai-nhua-640706.html>, [accessed November 18/ 2023]

¹⁴ Ministry of Natural Resources and Environment (2019), Overview report on the current status of solid waste management in Vietnam. Documents prepared for the National Conference on solid waste management. Hanoi.

and delimitation process at the facility, and is also the basis for state agencies to inspect, supervise and handle implementing organizations. contrary to the standards set by law.

On the other hand, according to the provisions of Clause 1, Article 71, Decree 08/2022/ND-CP also sets out the responsibility for declaration and management of hazardous waste source owners. However, from the perspective of organizations and individuals collecting and treating hazardous waste, the law does not specify regulations on time for declaration and management. In addition, in case there is a change in the quantity of hazardous waste, the law has not set out the procedures that organizations and individuals with changes must carry out before state agencies, specifically as follows: : time to make declaration; Registration dossiers and information serving the appraisal process, causing difficulties in unified management for organizations and individuals who are owners of hazardous waste sources.

In addition, the issue of responsibility for treating hazardous waste is also an issue that needs attention and increased control from the authorities. Pursuant to Clause 3, Article 71 of Decree 08/2022/ND-CP stipulates: "*Self-treat hazardous waste at the generating facility or sign a contract to transfer hazardous waste to the service provider. handle hazards appropriately*". Accordingly, the hazardous waste source owner can choose to treat the waste themselves or can sign a contract to transfer the hazardous waste to a facility that provides appropriate hazardous treatment services. However, the obligation to treat waste is a responsibility closely linked to waste collection activities. Therefore, the organization receiving the transfer of waste treatment obligations must make commitments and be responsible to state agencies for treatment measures. On the other hand, according to the provisions of the contract between the hazardous waste generator and the facility providing hazardous treatment services, it is an important basis to determine the time of transfer of the meaning and content of the rights and obligations of the hazardous waste. parties, but the law has not yet specifically stipulated the form of the transaction contract and the mandatory terms of agreement when entering into a contract to specify issues related to the time of transfer of the obligation to handle substances. waste. Therefore, the author believes that the law needs to supplement regulations on organizations and individuals that receive the transfer of hazardous waste treatment obligations and are required to carry out commitment procedures before state agencies before committing. Contract according to Clause 3 of Decree 08/2022/ND-CP. In addition, lawmakers need to specifically stipulate the form of the contract and the contents required to be agreed upon in a hazardous waste transfer contract to strictly manage and determine the responsibilities of the parties in the transfer of hazardous waste. Hazardous waste treatment.

2.3.2. Attract and encourage non-state investors in waste collection and treatment in rural areas

Recently, waste collection service providers have begun to appear to solve the problem of waste in densely populated areas or traditional markets, but those services only stop. On a small scale, there is not enough capacity to collect and treat waste comprehensively and regularly. Therefore, the current situation of large amounts of garbage stagnating along main roads, especially in towns, markets, and concentrated residential areas, has hardly been improved, and concentrated landfills exist. not processed. Currently, in some regions, campaigns have been launched to promote the use of public waste collection services. However, the campaign takes place in a single, inconsistent and drastic manner, causing the issue of waste treatment to be inconsistent in a certain area, making the collection and treatment of waste by suppliers more difficult. The service is not actually performed at all.

On that basis, it is necessary to promote attracting and encouraging non-state investors to participate in waste collection and treatment to reduce pressure on state agencies on management issues and costs. Carry out waste treatment . Accordingly, investors are required to publicly disclose specific waste collection plans within a certain period, without delay, without arbitrarily stopping providing collection services, and depending on the level of committed violations. but apply the punishment equivalent . On the other hand, when implementing an investment project, it is necessary to set the responsibility for ensuring facilities with the ability to treat waste according to usage needs and the average amount of waste recorded each year. The above issue includes including the issue of arranging trash containers with classification instructions along walkways in rural areas.

Regarding individual households , the author believes that it is necessary to outline two specific stages to gradually bring regulations on waste collection and treatment into the awareness of each household, specifically: i) Mobilizing and publicly disseminating waste collection and treatment plans through seminars; ii) Establish pilot areas and model localities for applying waste collection and treatment models. However, to ensure sustainable development, it is necessary to coordinate from the authorities and integrate into meetings with voters of National Assembly deputies on the issue of implementing regulations on garbage collection and treatment in the city. each locality.

3. CONCLUDE _

The situation of household waste control is still a hot issue and requires more attention and positive assessment from the authorities and more serious recognition from the people. To deeply resolve the local pollution situation, great efforts are needed from both competent authorities and people living in the areas. Social reality shows that the management of household solid waste in rural areas is an issue that deserves attention and needs more attention in propaganda, management and awareness raising. people. Most of the shortcomings mentioned mainly stem from management work with the collection, treatment and classification of household solid waste in rural areas not being focused and lacking policies. , the decree promulgating instructions on waste treatment, this has been posing challenges for competent authorities. In addition, people's living habits and improper waste disposal habits in rural areas also contribute to the difficulties in solid waste management. The solution proposed by the author is to support and supplement new regulations on waste discharge management in rural areas. On top of that is stricter regulations in waste control and management. Competent authorities need to strengthen and issue specific regulations on waste classification and treatment. Clearly propose the rights and obligations of the entities responsible for managing the waste discharge situation. In addition, competent authorities need to set sanctions to strengthen the awareness of households, contributing to improving the effectiveness and ability to implement the guidelines and policies that the State has established. fabricate.

REFERENCES

- [1] Law on Environmental Protection 2020
- [2] Decree No. 38/2015/ND-CP dated April 24, 2015 of the Government on waste and scrap management
- [3] Decree No. 45/2022/ND-CP dated July 7, 2022 of the Government Regulations on sanctions for administrative violations in the field of Environmental Protection
- [4] Ministry of Natural Resources and Environment (2019), Overview report on the current status of solid waste management in Vietnam. Documents prepared for the National Conference on solid waste management. Hanoi.
- [5] Ministry of Natural Resources and Environment, Situation of common solid waste generation, <https://monre.gov.vn/Pages/tinh-hinh-phat-sinh-chat-thai-ran-thong-thuong.aspx>, accessed November 24, 2023
- [6] Ministry of Natural Resources and Environment, National Environmental Status Report 2019, http://dwrn.gov.vn/uploads/news/2020_11/bao-cao-hien-trang-moi-truong-2019.pdf, accessed November 23, 2023
- [7] Vinh Loc District Department of Natural Resources and Environment, Harmful effects of unsanitary waste treatment, <https://vinhloc.thanhhoa.gov.vn/portal/Pages/2020-4-15/Tac-hai-cua-xu-ly-rac-thai-khong-hop-ve-sinh24677t.aspx>, accessed on April 14 November 2023
- [8] Manh Hung, Plastic waste in Vietnam: current situation and solutions, <https://tapchiconsan.org.vn/bao-ve-moi-truong/-/2018/826009/rac-thai-nhua-o-viet-nam--thuc-trang-va-giai-phap.aspx>, transcribed updated November 16, 2023
- [9] Khanh Huong, Alarming plastic waste pollution, <https://dangcongsan.vn/ban-doc/y-kien-ban-doc/bao-dong-tinh-trang-o-nhiem-rac-thai-nhua-640706.html>, accessed November 18, 2023
- [10] Duy Phi EIG, 7 Types of Recycled Plastic, Applications to Reduce Plastic Waste, <https://baobieig.com/7-loai-nhua-tai-che/>, accessed November 16, 2023
- [11] Hoang Ngan, Vietnam strives to reduce plastic waste, <https://monre.gov.vn/Pages/viet-nam-no-luc-giam-thieu-rac-thai-nhua.aspx>, accessed November 24, 2023
- [12] Son Bach, The journey of "turning household waste into gold" still has many difficulties, <https://nhandan.vn/hanh-trinh-bien-rac-thai-sinh-hoat-thanh-vang-con-nhieu-kho-khan-post756872.html>, accessed November 24, 2023
- [13] moitruongvadothi.vn, Regulations on waste classification at source, https://moh.gov.vn/tin-lien-quan/-/asset_publisher/vjYyM7O9aWnX/content/quy-inh-ve-phan-loai-rac-tai-nguon?inheritRedirect=false, accessed November 14 /2023