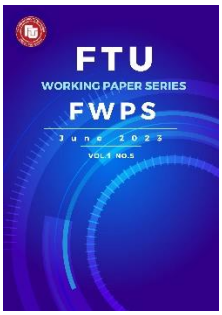

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MỘT SỐ ĐỀ XUẤT PHÁT TRIỂN KHO BÃI XANH TẠI VIỆT NAM

Nguyễn Mỹ Tâm[1], Nguyễn Trang Linh, Hoàng Thanh Trúc, Nguyễn Phương Anh, Trần Trọng Hiếu, Phạm Gia Khánh

Sinh viên K59 Logistics và QLCCƯ – Viện Kinh tế và Kinh doanh quốc tế

Trường Đại học Ngoại thương, Hà Nội, Việt Nam

Trịnh Thị Thu Hương

Giảng viên Viện Kinh tế và Kinh doanh quốc tế

Trường Đại học Ngoại thương, Hà Nội, Việt Nam

Tóm tắt

Để giải quyết tác động của biến đổi khí hậu, ngành công nghiệp phải chuyển đổi triệt để và áp dụng các giải pháp bền vững như sử dụng năng lượng tái tạo, phương thức vận chuyển bằng điện, triển khai hệ thống quản lý chất thải bền vững, điều chỉnh các giải pháp cơ sở hạ tầng xanh. Logistics xanh, bao gồm việc xây dựng kho bãi xanh, sẽ góp phần lớn trong việc cải thiện môi trường và hỗ trợ nền kinh tế phát triển bền vững. Mục đích của bài nghiên cứu nhằm đề xuất một số giải pháp phát triển kho bãi xanh tại Việt Nam. Theo đó, bằng nghiên cứu định tính, nhóm nghiên cứu phân tích thực trạng áp dụng kho bãi xanh tại Việt Nam, chỉ ra khó khăn mà doanh nghiệp tại Việt Nam đang phải đối mặt. Từ đó, nhóm nghiên cứu đề xuất giải pháp khắc phục khó khăn nhằm thúc đẩy phát triển kho bãi xanh tại Việt Nam.

Từ khoá: kho bãi xanh, logistics xanh, Việt Nam

SOME RECOMMENDATIONS FOR DEVELOPING GREEN WAREHOUSE IN VIETNAM

Abstract

To address the impact of climate change, the industry must radically transform and adopt sustainable solutions such as using renewable energy, electric modes of transport, exploiting sustainable waste management systems, and adjusting green infrastructure solutions. Green logistics, including the construction of green warehouse, will greatly contribute to improving the environment and supporting the sustainable development of the economy. Purpose of the study is

[1] Email: k59.2013530023@ftu.edu.vn, SĐT: 0852228547

to propose some recommendations to develop green warehouse in Vietnam. Accordingly, based on the qualitative research study method, the author team analyzed the current situation of developing green warehouse in Vietnam, pointed out the obstacles that enterprises in Vietnam have been facing. From there, the author team proposed recommendations to overcome difficulties to promote the development of green warehouse in Vietnam.

Keywords: green logistics, green warehouse, Vietnam

1. Introduction

The development of green warehouses has become a new trend, with an aim to contribute to the sustainable development of the logistics industry in particular and Vietnam's economy in general. The economy is continuously accelerating and accomplishing many remarkable achievements which mean that natural resources are increasingly exploited as well as gradually become exhausted, and environmental pollution is significantly increasing. In addition, warehousing activities account for 11% of the total emissions of logistics activities, so they should be taken into consideration for implementing the concept of sustainability (Iskandar & Sudiar, 2022). Therefore, green growth has progressively become a global issue and the ultimate goal of countries in all over the world.

In recent years, in the world and Vietnam, researchers have expressed special interest in green warehouse. Bartolini et al. (2019) analyzed green warehouse in an overview and identified the main trends in enterprise development. Mashud et al. (2022) analyzed the relationship between controlling emissions by building green warehouse, along with reducing order costs and reducing products' possibility of damage. The Ministry of Industry and Trade (2022) also mentioned the current situation of the development of green warehouse in Vietnam in Vietnam Logistics Report. Along with that, Doan Thi Hong Anh (2020) identified the importance of green warehouses as well as analyzed the current situation in Hanoi – the capital city of Vietnam and from there proposed some solutions to greening warehouses effectively and efficiently. In general, studies around the world have proven the importance, making a complete analysis of the development trend of green warehouse, contributing to the greening of logistics. Meanwhile, there are not many research papers in Vietnam focusing on the development of green warehouse.

Building and developing green warehouse is a good opportunity to help businesses increase the efficiency of product management from manufacturers to customers, reduce production costs, save energy and prevent harm to the environment, contributing to significant role in improving the environment and supporting the sustainable development of the economy (VnExpress, 2023), thereby improving competitiveness and position in the international market. However, enterprises in Vietnam are facing many obstacles in developing the green warehouse system, including low-qualified human resources, limited environmental awareness, etc. The research team proposed a number of solutions to overcome the difficulties that businesses are currently facing in Vietnam to develop green warehouses. The study was carried out on the basis of qualitative research method. Methods of data collection at the desk is used to collect secondary data sources from reports, articles, studies, topics domestically and internationally, data sources from official portals government and international organizations. Through methods of comparison, explanation,

statistics, interpretation, analysis, induction, synthesis... on the basis of that data source, the topic gives an overview of the research problem, and simultaneously in-depth analysis of each aspect of the problem to get accurate assessments.

2. Theoretical basis

2.1. Definition of green warehouse

The term "green warehouse" can be defined as the cluster of technological and organizational solutions designed for the efficiency of warehouse processes by maintaining the highest social standards and minimizing the effect on nature in terms of financial efficiency (Gokhan, 2016). Green warehouse development is a component to orienttowards green logistics - logistics activities towards sustainable, friendly and environmentally friendly goals, minimizing negative impacts on the environment.

2.2. Benefits of green warehouse

2.2.1. Wastage reduction

Using recyclable (or recycled) packaging, often looks like a greater initial cost, but the ability to re-use these materials can reduce this cost centre in the long run (Whichwarehouse Blog, 2022). As an example, cellulose rather than plastic packaging is compostable, which reduces your warehouse carbon footprint, boosts sustainability credentials with customers and allows staff to feel better about their work. Many warehouses can reuse pallets and storage materials which gives these materials a longer life, keeps them out of landfill and reduces disposal fees.

2.2.2. Technological advances

There are advanced technologies that can help create green warehouses, like robotics and automation, but even if warehouse rental does not give such highly sophisticated technology, there are much simpler but equally cost-effective technologies every warehouse can explore (Whichwarehouse Blog, 2022). LED lighting is becoming commonplace in warehouse settings and again, while the upfront cost is higher, the long term cost much lower because LEDs last longer and consume less power.

2.2.3. Efficient processes

Better inventory processes are not often seen as green initiatives but making sure inventory is properly packaged, effectively labelled and carefully stored means that people have less risk, lower spoilage and quicker pick and pack processes, which in turn means lower insurance premiums and injury rates, better usage of stock and more orders processed per day (Whichwarehouse Blog, 2022).

2.3. Evaluation criteria for a green warehouse

Basically, there are 5 requirements for assessing a green warehouse.

The first one of these requirements is the use of renewable energy (Ministry of Industry and Trade, 2022). Illumination criterion should be considered as a warehouse uses about 30% of total energy to light up and lighting also directly affects workers' efficiency and safety. For example,

instead of using normal bulbs with 100% artificial light, warehouses can utilize daylight sensors which adjust bulbs' luminous intensity upon natural lighting and allow warehouses to optimize natural illumination (Napolitano, 2013). Furthermore, there is another common way to achieve this is by mounting solar panels on the roof to generate electricity, and this will help warehouses to produce energy themselves (Akandere, 2016).

The second requirement is using environmentally friendly equipment and vehicles. For instance, the use of electric forklifts instead of diesel-powered ones is one of the methods to meet this requirement, or the use of HVLS fans can also maintain air conditioning in a warehouse while reducing energy consumption by 12-50% (Napolitano, 2013).

Third, warehouses need to apply technologies to optimize warehouse activities, in which Warehouse Management System (WMS) can be considered as a suitable technology as it connects stores and distribution centers with warehouses, and helps businesses maintain inventory control and quickly spot areas for improvement.

The fourth requirement is the promulgation of waste treatment procedure. Waste before being processed should be sorted right at the warehouse. Degradable organic waste is the type of garbage that quickly rots in natural conditions, producing stench such as leftovers, spoilage (vegetables, dead fish...), fruit peels, etc. Non-biodegradable waste is divided into two categories which are recyclable and non-recyclable waste. Recyclable garbage can be reused many times directly or reprocessed such as paper, cardboard, metal (iron frame, broken train engine...), plastics, etc. Non-recyclable waste is the waste part that has to be treated and handled by regulation (Nguyen Thi Thao, 2020).

Last but not least, warehouses have to sign a contract with a professional company for waste treatment. For recyclable waste, there must be recycling factories to handle it and manufacture new stuff. Especially for non-recyclable waste, it must be carefully and professionally dealt with as it may harm the environment (Nguyen Thi Thao, 2020).

3. Current status of developing green warehouses in Vietnam

In general, Vietnam's current warehousing system is of lower quality than other Asian countries. Many warehouses are built of bricks on sandy floors which are not flat, easy to damage goods instead of concrete floors. What is more, warehouses with eco-friendly features such as using solar energy, natural light, suitable area, thick walls and floors, and on-site recycling are requirements in warehouse construction and operation of Vietnamese enterprises (Ministry of Industry and Trade, 2022).

In accordance with information from the Vietnam Chamber of Commerce and Industry (VCCI), as of October 2021, Vietnam only has a total of about 24 logistics and warehousing businesses certified meeting the International Organization for Standardization 14001 (ISO 14001) environmental management standards. It is a low propotion of green warehouses meeting ISO 14001 standards compared to the total number of warehouses today.

According to the Ministry of Industry and Trade (2022), the current statement of applying WMS in Vietnam is reported in the following charts. Statistics are collected from 115 logistics companies combined with those from related ministries and organizations.

3.1. The use of renewable energy

Regarding energy for the warehouse system, Vietnam warehouses mainly use regular grid system of electricity to serve the needs of lighting and control the temperature of the warehouse when necessary (Ministry of Industry and Trade, 2022).

As demonstrated in figure 3.1, there is up to 68.6% of businesses answered that they have not used energy renewable energy in the operation of warehouse operations or have not rented warehouses using renewable energy. Regarding the reason, 65.3% of enterprises stated that they did not have enough resources to design the operating system, and 29.2% of enterprises said that the cost to set up a warehouse system using renewable energy was high which makes the business unable to invest. Among 31.4% of enterprises that have used renewable energy in warehouse operations, 81.8% of enterprises use solar energy, 18.2% use hydroelectricity, and 12.1% use wind energy (Ministry of Industry and Trade, 2022). Survey data also shows that the management of warehouses is not logical, and not up to date with modern technologies, especially applications of information technology in the coordination and management of warehouses. This is the reason why it is still difficult for businesses to control the amount of energy consumed at the warehouse (Ministry of Industry and Trade, 2022).

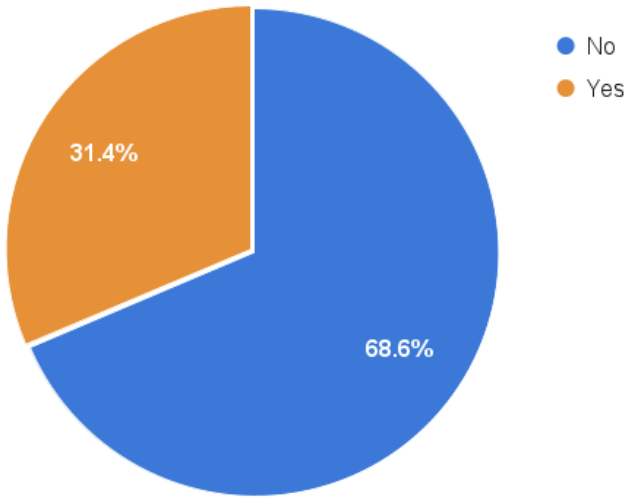

Figure 3.1. Proportion of enterprises using renewable energy in warehouse operation

Source: Ministry of Industry and Trade (2022)

3.2. The use of technology

Distribution warehouses and Container Yard/ Container Freight Station (CY/CFS) warehouses have not connected to the customer's information network to serve the inspection, storage, and tracking of each shipment from the warehouse to any destinations, and they have not applied

warehouse management systems as well such as specialized software, barcode, etc. (Ministry of Industry and Trade, 2022).

Figure 3.2 demonstrates the proportion of using and non-using WMS logistics companies in Vietnam. As shown in the chart, 63.8% of them responded that they are applying WMS in setting up and managing their warehouse activities. For the counterparts, the quantity of responding "No" enterprises accounts for more than a third of respondents (merely 36.2%). These statistics present a growth in the number of logistics enterprises utilizing WMS, as in 2019, according to Vietnam Logistics Business Association (VLA), there were approximately 15% of respondents answered that they had been using WMS for their warehouse (VnExpress, 2019).

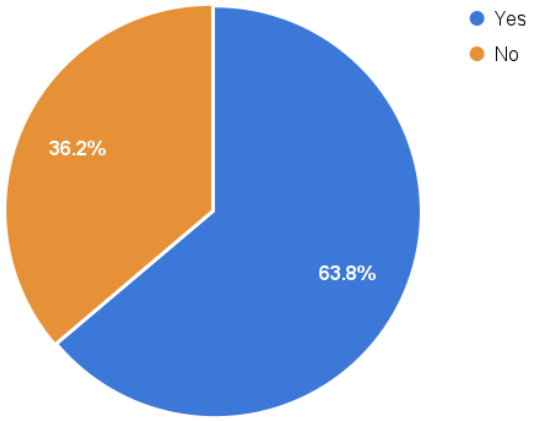

Figure 3.2. Proportion of enterprises using WMS

Source: Ministry of Industry and Trade (2022)

Furthermore, companies that have applied WMS also responded to the survey of the performance of this system. Shown in figure 3.3 are the feedback and assessments of logistics companies applying WMS for this method expressed in a 5-level scale of efficiency. It is clearly seen that the number of companies that rated WMS as a fairly efficient method overwhelms other levels with nearly 60% of the total. Following this, the high-efficiency level is the second largest sector with votes from about a third of respondents. Besides, normal level and less efficiency level respectively hold the third and fourth positions. While the former level makes up 5.5% of the total, the quantity of logistics enterprises voted for the latter level is 2.7%. In the last place, the inefficiency level makes up 0% as there was not any company assessed WMS as a totally ineffective method.

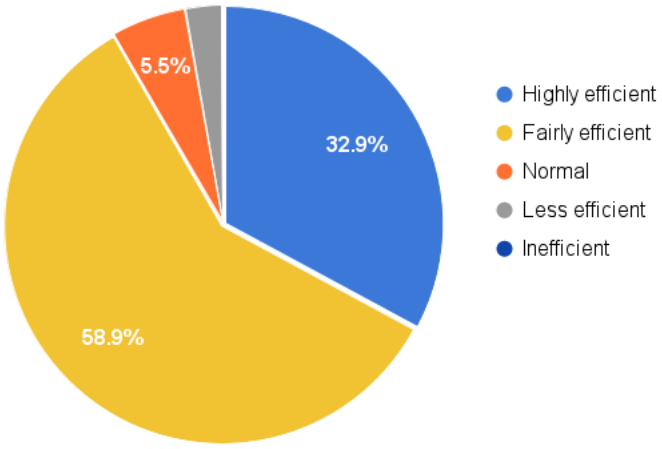

Figure 3.3. Enterprises' assessment of using WMS

Source: Ministry of Industry and Trade (2022)

On the whole, the number of businesses developing green warehouses in Vietnam is still limited. It can be said that there are few businesses paying enough attention to the development of green warehouses. Since green warehouse is a new terminology in Vietnam, three evaluation criteria which are using environmentally friendly equipment and vehicles, the promulgation of waste treatment procedure, and signing a contract with a professional company for waste treatment are not either attached special importance to or taken into account. Hence, the specific data on the current status of businesses that apply these criteria is still in progress of collecting, therefore it is currently not publicized for easy access in any report. As a result, the current status of green warehouse application of enterprises in Vietnam has not been comprehensively reflected since it is demonstrated in two criteria of using renewable energy and using technology, namely WMS. According to the data collected, although there has been a number of businesses answered that renewable energy systems have been applied at their warehouses, it is not remarkable and is still a modest quantity. In contrast, regarding the use of technology, there is a considerable number of companies responded that they have utilized WMS in managing and operating, and it witnesses significant growth in quantity compared to statistics of previous years.

4. Difficulties in developing green warehouse in Vietnam

There are still many businesses that have not implemented green warehouses due to various obstacles, including limited financial capacity, lack of high-quality human resources, low environmental awareness of enterprises, and insufficient regulatory policies related to green warehouses. As a result, the research team analyzes these challenges by interpreting the causes that restrain the development of green warehouses for businesses in Vietnam.

4.1. Limited financial capacity

The most serious difficulty for Vietnamese enterprises today to implement greening logistics in general and green warehousing, in particular, is the financial problem (Ministry of Industry and Trade, 2022). According to a report by the General Statistics Office, Vietnam has more than 98.1% of SMEs, and 99% of these enterprises face capital difficulties. Of these, 90% of enterprises have

less than 10 billion VND, and 5% have capital from 10 to 20 billion VND, so applying green warehousing solutions is relatively difficult (Vu Trong Nghia, 2021). Moreover, the cost of applying technologies to support the synchronous greening of warehouses is a big challenge for most small and medium-sized logistics enterprises in Vietnam. From an expert perspective, developing green logistics at the first stage would be challenging to cut costs that even increase costs (Trinh Thi Thu Huong, cited by Thu Duyen, 2023). Furthermore, when costs increase, the profit of the business will decrease. For small and medium enterprises, the initial cost of investing in warehouse management applications to achieve data synchronization between the shipping, inventory management, and financial accounting departments is currently a significant barrier (Ministry of Industry and Trade, 2022).

4.2. Lack of high-quality human resources

The lack of human resources with high qualifications in terms of skills and specialized knowledge related to warehousing is a significant obstacle leading to many difficulties in warehouse management. According to a survey by the Vietnam Logistics Research and Development Institute (VLI), 53% of Vietnamese enterprises lack qualified staff and logistics knowledge, 30% of enterprises have to retrain staff and only 6,7% of enterprises are satisfied with the professional qualifications of their employees (Nguyen Xuan Phuong & Nguyen Phuoc Quy Phong, 2018).

4.2.1. Human resources outside the enterprises

Currently, logistics students of many training institutions, although specialized in Logistics and supply chain services, lack an understanding of warehouse management software or in-depth knowledge of barcodes to apply in the green warehouse process. Besides, most universities provide intensive training in theory; there is nearly no practical practice environment for logistics students. Therefore, in many cases, logistics students are still inexperienced in operating warehouses, applying modern technology and equipment to serve e-commerce, or how to classify and pack goods to meet standards. The main reason is that the skills or professional knowledge that employees are trained in the school have not met the recruitment needs of enterprises, and equipment in training institutions have not caught up with the strong development of science and technology today (Nguyen Minh Quang & Van Cong Vu, 2020).

4.2.2. Human resources in the enterprises

About the management team, many managers are hesitant to embrace change and improvement, particularly when it comes to the implementation of sustainability initiatives. This reluctance may stem from a lack of knowledge about the latest green warehouse models or uncertainty about the potential impact of such initiatives on their business. This can lead to barriers to promoting the green warehouse.

About warehouse staff, most of them are trained in vocational schools, and their primary jobs are loading and unloading, calculating in warehouses, driving trucks, or using loading and unloading equipment at warehouses and yards of warehouses. Although they have received training, their work skills are insufficient, lacking in industrial proficiency and low discipline when

compared to the manual labor force in certain developing countries (Nguyen Minh Quang & Van Cong Vu, 2020).

4.3. Low environmental awareness of enterprises

These days, green warehouse development in Vietnam is still relatively primitive (Dinh Huu Thanh, cited by Thu Duyen, 2023). The business's awareness of environmental preservation still needs to be improved. The existing environmental projects are still heavily coping and seasonal. Many businesses have not fully recognized the crucial role that the environment plays in supporting their operations and the well-being of their employees. As a result, they have not taken voluntary actions to promote environmental awareness and responsibility within their organizations (Ha Huy Phong, cited by Vuong Lieu, 2021).

The company heads are still doubtful of capital recovery, therefore, they have a tendency to allocate their budgets to direct business activities that maximize their profit. If Vietnamese enterprises fully comply with environmental protection measures, it would create a substantial financial burden. Consequently, many companies seek to avoid fulfilling their environmental protection obligations to minimize costs (Ha Huy Phong, cited by Vuong Lieu, 2021).

4.4. Insufficient regulatory policies related to green warehouse

While current regulations and policies in Vietnam are already oriented towards the development of green logistics, they remain general and have not been specifically applied to all green logistics activities. Currently, the government's regulations and policies regarding the greening of logistics activities in Vietnam are primarily focused on transportation, particularly road transport, as demonstrated by Prime Ministerial Decision No. 876/QD-TTg approving the Program of Action on Green Energy Conversion, Carbon and Methane Emission Reduction for the Transport Sector (Ministry of Industry and Trade, 2022). Deficiency in regulations related to different types of logistics infrastructure such as warehouses lead to a lack of synchronization in the adoption and implementation of green logistics. At the Vietnam Logistics Forum 2022 with the theme "Green Logistics", Mr. Tran Tuan Anh - Head of Central Economic Commission emphasized some directions in the coming time regarding the specific implementation and institutionalization of the Party's viewpoints and policies on the development of logistics services in general and green logistics in particular, creating a favorable legal basis to promote the development of green logistics activities in Vietnam (Nguyen Van, 2022).

5. Recommendations for developing green warehouse in Vietnam

In the world, there are two popular approaches to green logistics in general and green warehousing in particular. The first is "Top-down" which means from top to bottom - the state makes regulations, forcing people to comply. The second approach is "Bottom-up", which is from the bottom to the top. Vietnam should choose a combination of Top-down and Bottom-up. That is, the State must have regulations and policies to encourage and at the same time, businesses must have awareness to have better capacity when deploying and operating the green warehouse model (Trinh Thi Thu Huong, cited by Thu Duyen, 2023). Based on the mentioned difficulties, the author team made a number of recommendations for businesses as well as proposals to the State and management agencies to promote the development of green warehouses in Vietnam.

5.1. Recommendations for enterprises

5.1.1. For limited financial capacity

Taking advantage of the State's existing incentives of the State

Enterprises need to take advantage of the support, encouragement, and incentives of the Government and organizations to receive financial support such as Credit Guarantee Funds for small and medium enterprises to borrow capital at preferential interest rates, Small and Medium Enterprise Development Fund, etc. This will help reduce the financial burden on businesses in the short term.

Exploiting development support from abroad

Businesses need to make the most of foreign development assistance sources, have special incentive mechanisms and policies, and exploiting all external resources from domestic and foreign organizations to invest in the development of green warehouses in order to attract foreign investment (FDI) into the construction and development of green warehouses in Vietnam, enterprises also need to loosen the ratio of investment capital in warehouses to foreign investment capital so as not to constrain FDI capital (Kim Sang Mo, cited by Viet Nga, 2022).

Innovating warehouse system innovation in stages

Investing in developing a warehouse system in a uniform and synchronous manner can cause businesses to suffer a great deal of financial pressure, at the same time, businesses also need to change a series of systems and processes in the past time. This is detrimental to businesses in the short term. Therefore, the solution given to enterprises, especially small and medium enterprises, is to consider applying system innovation in stages for long term development. Enterprises can break down the investment process according to each business cycle or consider improving each stage to reduce the pressure on investment capital. In addition, this also helps enterprises to gradually grasp new trends in green logistics in general and greening warehouses in particular in the world, applying the latest and effective methods for their businesses, avoiding the situation of improving then obsoleting, and then continuing to implement the new improvement process.

5.1.2. For lack of high-quality human resources

In order to meet human resource needs in terms of both size and quality, the training of human resources with expertise in warehousing is not only the task of management levels, associations, and training institutions but also requires the active participation of businesses. Therefore, the research team proposes solutions based on the coordination and connection between enterprises and educational institutions for two subjects which are human resource outside the company and human resource in the company.

Training human resource outside the company

Establish linkages between businesses and educational institutions. Strengthen cooperation with educational institutions in organizing training programs for students to link theory with practice. Specifically, experts from enterprises should be invited to universities and colleges to teach students. Businesses should also create opportunities for students to have an internship

program from the second and third year. Furthermore, organize field trips to warehouses, ports, and depots for students to have practical experience. Promote scientific seminars, especially on green warehouses, between experts, logistics managers of enterprises, enterprises with high demand for logistics, and universities with majors relating to logistics. Through the exchange, universities know the recruitment needs of businesses to develop training programs suitable to those needs. At the same time, businesses in the field of warehouses can support schools to coordinate internships for students.

Improving the qualifications and skills of human resource in the company

For managers, businesses should consider creating opportunities for middle and senior managers to go on business trips to work in countries with a strong and efficient logistics service industry and visit large warehouse systems to gain experience, improve knowledge on how to apply technology, and develop green warehouses. From there, focus on researching, setting up, and deploying a green warehouse model suitable for their business in Vietnam.

For warehouse staffs, enterprises should promote medium and short-term training programs specialized in the field of warehousing. Enterprises should cooperate with foreign experts or organizations to train and teach about green warehousing. Enterprises can use on-the-job training to ensure employees are trained according to the characteristics and requirements of enterprises in warehouse management. Professional courses will help the staffs apply the knowledge immediately to their current work as well as introduce a disciplined and cooperative working style.

5.1.3. For low environmental awareness of enterprises

It is necessary for large enterprises to pioneer and initiate in green warehouses. In order to develop green logistics in the early stages, it is necessary to have strong participation of the "leading cranes" (Trinh Thi Thu Huong, cited by Thu Duyen, 2023). From there, small and medium enterprises can learn experiences and green warehouse management models from large enterprises.

Actively consult with experts. Enterprises can look for consultants in the field of green warehousing to come up with long-term strategies as well as a roadmap to transform the system in accordance with the company's distinct features, such as size, quantity, and type of warehouses, import and export goods, human resources or equipment and facilities, etc. From there, businesses can better understand the potential, as well as opportunity, costs when investing in different methods of greening warehouse projects.

5.2. Proposals for the State and regulatory agencies

For sustainable development, including the development of green logistics, the Government and functional agencies need to focus on promulgating relevant legal documents and policies to create a favorable legal corridor and support for enterprises to develop green warehouses.

The state can support financial capital for businesses in many ways. Firstly, continue making plans to reduce corporate tax. Secondly, enhance access to aid packages of the State such as loosening the conditions for accessing preferential loans for businesses, and improving the speed of disbursement. Thirdly, provide loans with preferential interest rates if enterprises with projects request loans to carry out environmental protection activities. Enterprises will be allowed to

borrow for a period of not more than 5 years for a project, with a maximum limit of 70% of the total investment of the project, and the interest rate is 3.6%/year. Furthermore, sponsor or co-sponsor for businesses that have researches and apply solutions to protect, limit, avoid, and treat environmental pollution with a maximum grant of no more than 50% of the total cost to implementation of programs, projects, and activities for environmental protection (Da Nang Department of Natural resources and Environment, 2021).

With a view to training and supplying high-quality human resources, the State needs to review and continue to implement policies to facilitate enterprises and training institutions to promote human resource training. In particular, it is necessary to closely coordinate between regulatory authorities and enterprises in order to accurately identify labor and recruitment needs, thereby making a reasonable plan for training logistics and supply chain management. In addition, there should be regulations on compulsory training qualifications and certificates for warehouse staff on energy saving, safety, and greening the environment.

In order to raise awareness of enterprises of environmental protection, local authorities need to review, correct, and enhance the quality, effectiveness, and efficiency of state management tools and measures for environmental protection; soon put into effect criminal sanctions on the environment; complete the plan to thoroughly deal with establishments causing serious environmental pollution, in order to act as a deterrent and warning to businesses that still lack awareness and responsibility for environmental protection, and promote greening warehouses development-oriented. The State needs to coordinate with the Ministry of Natural Resources and Environment, the Vietnam Union of Science and Technology Associations as well as related organizations to carry out legal consultancy, dissemination, propaganda, and education activities for businesses about environmental protection to see that quickly accessing technology, using sustainable energy to protect the environment is not only an incentive but also a responsibility of each business.

In terms of regulatory policy, the State should continue to complete the synchronous legal framework for green logistics activities, avoid overlapping between ministries and branches, and supplement regulations on environmental pollution control. Without regulations on environmental pollution control, it will be difficult for businesses to voluntarily deploy green warehouses because businesses often prioritize measures to optimize revenue sources for businesses over environmentally friendly options.

6. Conclusion

Through research on solutions to develop Green Warehouse in Vietnam, the following conclusions can be drawn:

Green warehouse is now a new trend in the world in general and the logistics service industry in Vietnam in particular, bringing a lot of benefits not only to people's daily lives but also to other production and business activities of enterprises and help develop the development of the national economy. Green warehouse development plays an important role in sustainable development, increasing competitiveness and expanding domestic and foreign service markets. However, the number of enterprises developing green warehouses in Vietnam is still limited. Currently,

enterprises are facing many difficulties such as limited financial capacity, low awareness of environmental issues, shortage of highly qualified human resources, regulations and policies. Government policies related to green warehouses have not been focused.

After researching, analyzing and synthesizing data and figures, in order to promote the development of green warehouse in Vietnam, the research team has made a number of recommendations to the State regarding the issuance of regulations, decisions and policies to support businesses in developing green warehouse, propose solutions for businesses in Vietnam around three main issues including improving financial capacity, focusing on human resource training and improving environmental awareness of enterprises in order to contribute to creating a favorable environment for the greening of warehouses in Vietnam. The difficulties that Vietnam faces need close coordination between the State, management agencies, ministries, agencies and businesses to solve. The State should have regulations and policies to encourage; at the same time, businesses also need to participate more actively in the process of implementing and operating the green warehouse model.

In the process of researching and implementing the topic, the research team has faced many difficulties in finding and collecting information and data on the current status of green warehouse development in Vietnam. Studies, reports and articles concentrated more on green logistics analysis compared to green warehouse. Along with that, out of 5 evaluation criteria of green warehouse, the research team only found data on the current status for 2 criteria namely the use of renewable energy and the use of technology. As a consequence, the current status only partially reflects the reality through two criteria. The next research direction of the research team is to carry out survey for the remaining criteria in the current situation and conduct in-depth interviews with enterprises in Vietnam, from which to collect primary data for analysis, and increase the realism of the research.

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