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Pollution in the inland waterway transportation: Impacts and Solutions

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Abstract

Means of waterway transport in ports and wharves ensure integrity, no leakage, overflow, infiltration, spillage of goods and waste of the means into the environment. The draft circular regulating environment protection in inland waterway transportation activities is being published by the Ministry of Transport to collect people's comments. With this draft, the Ministry stipulated: If the vehicle needs cleaning, scrubbing, etc., the wastewater must be stored in the tanks and tanks of the vehicle. Solid wastes and pollutants on vehicles must be collected and treated up to standards before being discharged into the environment or entrusted to environmental-specialized agencies for reception and treatment. When operating on inland waterways, means must not dump waste or oily water into inland waterways. In case of an accident, an oil spill or toxic substances on inland waterways caused by the means, the master or the ship owner who caused the incident must notify the competent authority at the port, wharf and take appropriate and timely measures to prevent the spread or spread of oil or toxic substances. For ports, wharves, facilities for building, converting, repairing or restoring vehicles, the Ministry of Transport must have equipment suitable to the operation scale and pollution prevention needs of the units. such as equipment containing oil sludge, waste from oil, waste water, garbage, hazardous waste, as well as equipment for collecting, transporting and disposing of waste from waterway vehicles. In addition, the Ministry requests inland ports and wharves to organize the collection of wastes generated during the operation of ports and wharves and wastes from vehicles when the means are anchored at ports. For ports, wharves dealing in oil products and toxic and dangerous chemicals must develop a plan to prevent and respond to incidents, as well as invest in equipment for this activity.

Keywords: ship fleet, domestic transportation, inland waterway

Introduction

Climate change, sea level rise will increase the area of flooding, causing difficulties for drainage, increasing coastal erosion, affecting coastal construction works such as dykes, roads, The harbor. Hurricanes, floods, droughts, storm surges many road, sea, air, and air traffic systems are affected. According to the United Nations Development Program, climate change has a major impact on transport works. As the sea level rises, it will affect the foundations of coastal airports at the height of 5 m or less. According to the assessment, there will be six airports accounting for about 20% of Vietnam's airports affected with damage estimated at \$ 0.52 billion. Climate change and sea level rise have caused subsidence and floods in many roads; Increased slippage, erosion of the surface, road infrastructure causing traffic, traffic jams, increased traffic accidents. Roads are cut off many sections, many local roads after the floods weekly floods are still flooded, congested, traffic difficult to travel. In the rainy season, many of the harbors were flooded, reducing the height of the canals affecting the mining ability of the building. The dry season drowns the flow of water that is affecting navigation. The phenomenon of salinity intrusion will increase, the trade travel in the difficult areas, the daily life of the local community is shrinking rapidly. Infrastructures, especially ports, will be hit hard, even if they have to be rebuilt, renovated, upgraded or relocated. In aviation transportation, aviation activities have been and are having factors. Affects the atmosphere in the wrong direction and also reacts to climate change. Aviation industry has bad impact on the environment and is also heavily affected by climate change.

According to the International Civil Aviation Organization (ICAO), nearly 20% of aviation accidents in the world are related to climate and weather and account for 8% of deaths. Weather phenomena such as rain, wind, hail, thunderstorms, etc. are all challenges to flying safety. The transport sector in Vietnam, an energy-intensive industry and greenhouse gas emissions, is increasing in the future as it implements activities to meet the needs of socio-economic development; What this means will increase the impact of climate change. The Ministry of Transport has set up the Environment Department to assist the ministry in environmental protection, economical and efficient use of energy, and response to climate change. The branch has environmental centers and project management boards having full-time or part-timers to carry out environmental protection activities

for investment projects. Most of the units have the counseling, monitoring and implementation of environmental protection. However, at present, human resources and material facilities for environmental management of agriculture, especially for inspection and supervision, are still lacking, not often updated. bracelets. The application of new greenhouse gas emissions-friendly and environmentally-friendly technologies in transport requires a great amount of investment, while policy mechanisms to encourage research and application are not clear. The involvement of organizations and individuals is not encouraged. Hence, controlling and limiting the growth rate of greenhouse gas emissions requires industry to innovate and adopt low-waste technologies and clean technologies.

Vietnam's Freight Traffic

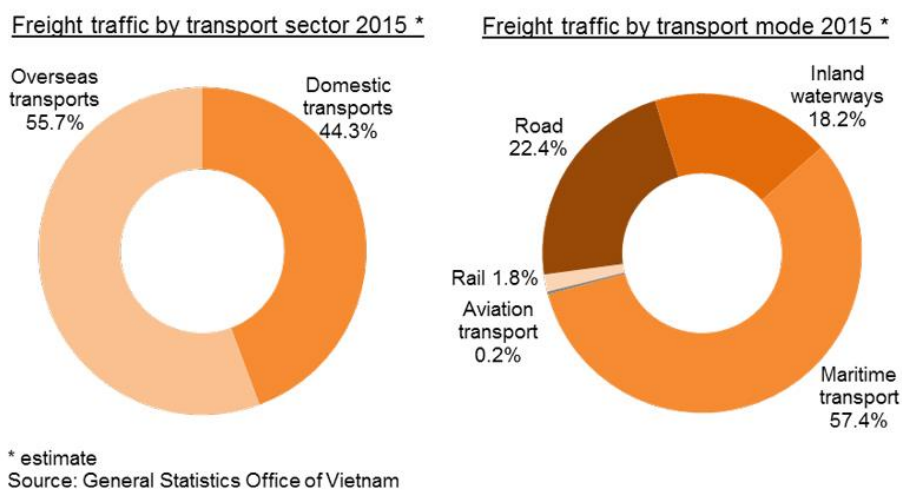


Fig. 1: Infrastructure transport in Vietnam

It needs to see a limitation to find a way to prevent widespread pollution. Waterway traffic control is closely linked to the protection of the water environment. Water pollution treatment systems in rivers and seas seem to be very rare, sewage sucking activities, sewerage ... will not be used. To operate the system of ships at sea, the river requires full supply of raw materials such as petrol, oil, grease. No one can guarantee these materials do not leaking out pollution. Incidents such as oil spills into the sea are not rare, and green seawater poisoned by too much oil will affect marine habitats. Submarine sewers are still maintained and operate when there is a waste incineration. In addition, the discharge of toilet water in the deck of the ship, discharge of lacquer solution directly into the sea also causes widespread pollution. The consequences of it leave no small, do not think the vast ocean, it is only too small things, you are wrong. Each day, each day it will accumulate into large black spots pollution. Then the source of water where the ships operate will be polluted, and the activities of the cruise will be affected.

The vast river and ocean environment, however, is vast, and our little actions also contribute to environmental pollution. It is necessary to further raise the awareness of everyone involved in boat trips on the protection of the marine environment when navigating. To support the development of inland waterway transport, the Ministry of Transport is encouraging all economic sectors to participate

in transport business. SOEs only hold a market share of around 10-15% to ensure a leading role, focusing on major flows, some key commodities. Assessing the status of Vietnam's inland waterway industry, the World Bank said that restrictions on infrastructure conditions, especially inland waterway corridors, hindered Vietnam's inland waterway industry. develop. Specifically, only 29% of the national waterways (about 2,033 km) are capable of operating barges of at least 300 DWT due to the shallow depth of the canal, small vessel sizes and low bridge clearance. In particular, many ports have outdated facilities with low mechanization, poor maintenance or poor domestic connectivity. Meanwhile, all inland waterway transport networks of China, Europe and the United States have been developed appropriately for vessels with a tonnage of over 1,000 tons to operate, normally the tonnage of the vessels. According to the WB, the challenge for Vietnam in the coming time is to ensure the mobilization of capital for operation and maintenance of inland waterway transport infrastructure after 2020. At the same time, also must ensure sufficient capital to invest in upgrading infrastructure and improving the capacity of inland waterway transport on technical and market facilities. Notably, if reducing the proportion of investment in road infrastructure 2-3% will not cause much impact on transport efficiency. But if the investment for water transport is 2-3%, it will bring huge economic benefits to

the country, because the average cost / ton-km of road transport is 5 times higher than transport by inland waterway. Agreeing with the above view, WB's Country Director in Vietnam, Ousmane Dione (WB), said that according to the WB's review, in the 2011-2015 period, the inland waterway sector accounted for 2-3% of the budget. Annual investment in the transport sector, however, in the period 2016-2020, this rate decreased to 1.2% of the budget estimate. This level of investment is not enough for the expansion of transportation capacity and maintenance. After decades of development, the length of inland water transport network receiving barge over 300 tons accounted for only 30% of the 7,000 km of the entire route. This rate is very low compared to the successful commercial inland waterway transport systems in the world. This fact shows that the need to continue investing and making significant investments in essential backbone infrastructure systems is also the main commercial corridors. These large-scale investment needs need to be met through a strategic allocation of limited public resources, while mobilizing the participation of the private sector in capital financing and service provision. The elimination of infrastructure restrictions to attract private investment into their fleet, and encourage international service providers with new technologies to cooperate with domestic businesses, will give increased authorization as well as improved standards for these critical services, with lower logistics costs and less emissions," proposed Ousmane Dione. Therefore, the WB recommends that the transport sector should encourage investment from the private sector into the port system, while the state budget focuses on investing in the development of transport infrastructure. In addition, Vietnam may consider further development of a transport infrastructure development project (except for a port) that has the potential to implement a public-private partnership (PPP) model. For potential projects to focus on creating practical conditions and supporting successful deployment. In order to initiate the Inland Waterway Bureau of Vietnam, it is possible to consider expanding some small-scale contracts for short-term channel dredging (most of which are yearly contracts) into conventional PPP contracts small tissue taken over several years. Waterway transportation is more efficient and environmentally friendly than other modes of transport. But alongside these advantages, the waterway rotation still has a major impact on the quality of the water environment.

Solutions for development

In order to alleviate the vulnerability of climate change, the sector needs to make adjustments in the development of energy and transport development plans, taking into account the elements of Climate Change. Upgrading and rehabilitation of transport facilities in areas often threatened by floods and sea level rise, ensuring the management of energy demand on the basis of high energy efficiency, Energy management; Developing a response strategy and adapting to abnormal weather conditions ... To build a complete system of sea dykes, when the whole country has 2,800 km of sea dykes in provinces and cities. The complete construction of the sea dike system in Vietnam not only protects the security of the country, but also protects the transport infrastructure in order to reduce the impacts of climate change, reduce storms, floods and water. The sea devastates the coastal provinces and cities and

transport works. On the other hand, complete construction of sea dykes that prevent saltwater from entering the mainland, destroying transportation works. The transport sector should plan and redesign the transport infrastructure system on land, sea and coastal areas, ports, warehouses, canals, inland waterways, especially in Coastal and mountainous plains; Develop technical standards and norms appropriate to climate change. In the planning or construction of roads, especially rural transport, attention should be paid to the impacts of climate change, with emphasis on measures to strengthen sea dykes and drainage when flooding, especially in stormy season, Flood ... Implement the integration and protection of environmental resources in strategies, planning, plans and projects for development of transport; To concretize the implementation of the policy on solutions to cope with climate change and the protection of natural resources and environment; To popularize and thoroughly grasp the Party's and State's undertakings and policies on response to climate change and the protection of natural resources and the environment. The industry should focus on strengthening human resources, facilities and techniques for the state management, training, research on Flood and Storm Prevention and Fighting. To review, supplement and amend the land law system along the direction of prioritizing the use of land for development of transport infrastructure; To step by step develop transport towards less greenhouse gas emission, focusing on developing mass transit in Hanoi and Ho Chi Minh City. Ho Chi Minh (urban railway, fast bus) and increase the proportion of freight by rail, inland waterway and coastal. In addition, the transportation sector has also focused on developing and implementing incentive and incentive policies to motivate organizations and individuals to use vehicles that are less likely to emit greenhouse gases. Good environment; Use alternative fuels, renewable fuels. The sector has asked the agencies and units to coordinate with the concerned agencies to step up the inspection, propagation, dissemination and education to raise the awareness of environmental protection, the use of energy saving and Effectively, responding to climate change for cadres, civil servants, employees and laborers. Building and implementing plans, using energy economically and effectively, actively responding to climate change; Develop and implement a scientific plan to promote the research, development and application of climate change adaptation technologies.

Recently, the Ministry of Transport has issued Directive No.02/CT-BGTVT "On actively responding to climate change, thrifty and efficient use of resources, enhancing environmental protection in the industry. Transportation". Implement the Resolution No. 24-NQ/TW of the Party Central Committee; Resolution No. 08/NQ-CP of the Government promulgating the program of action for the implementation of Resolution No.24-NQ/TW. The sector focuses on organizational and management solutions such as reviewing, supplementing and perfecting the system of legal normative documents, systems of standards and technical regulations in the sector in order to actively respond to Climate change, strengthening of natural resources management and environmental protection. Strengthening training, enhancing and developing human resources attach importance to the work of propagation, dissemination, education, raising awareness, formulating a

sense of initiative in responding to climate change, enhancing the management of natural resources and environmental protection.

In addition, it is necessary to step up research and application of scientific and technological advances, diversify and combine resources, expand international cooperation on climate change, resource management and protection environment. Mekong River is a very valuable and potential resource for great navigation. For centuries, water transportation in the Mekong was the main mode of transportation between the coastal communities wave. With the advantage of low cost, it is possible to carry large quantities of cargo today. Along with the rapid economic development, the navigation system on the Mekong system has also rapidly developed with the rapid increase in the number of vessels, ports and infrastructure to meet the needs transportation of goods, passengers and tourism, etc. When the waterway transportation activities of economic sectors become bustling, it is also the inadequacies affecting traffic safety and environment. Schools such as the poor safety of vehicles, especially when transporting toxic goods, signal systems, signs asynchronous, waste from vehicles into the river, oil spills, etc. increased. With funding from the Kingdom of Belgium and the Australian Government, the NAP has achieved the following key results.

The Vietnamese Register has instructed the registry offices to pay more attention to improving the quality of ship registration, VR-SB vessels and other waterway facilities to limit technical incident meetings. Strengthen the inspection of the performance of duties of the registrars in the work of registration, to strictly handle the violations. To study the

amendments and supplements of technical regulations to ships and waterway vessels in the direction of raising safety standards for crewmembers and passengers and step by step approaching the minimum requirements of the International Convention that Vietnam Nam is a member of maritime safety, maritime security and prevention of environmental pollution. Strengthening the guidance of enterprises and ship owners on the regulations related to maritime safety, maritime security and prevention of pollution of the sea environment.

Ship owners, companies managing and operating sea-going ships and waterway means shall strictly observe the law provisions on maritime safety, maritime security and prevention of environmental pollution; Instruct the ship's captain to uphold the responsibility, perform his duties seriously ...Port enterprises shall only be allowed to load cargo on board the ships and vessels permitted to carry them; Goods are loaded onto the right vessels and vessels as prescribed; The goods are lashed and tied in accordance with the regulations, guidelines on packing and tying goods before the ship leaves the port. The provincial/municipal Communications and Transport Services shall intensify the inspection and raising of the quality of training and testing activities and the professional certificates of crew members and riders; approve and strictly manage the business of passenger transport by fixed routes, passenger transportation under contract and transportation of tourists. The Legal Department reviews and synthesizes new behaviors and violations of VR-SB inland waterway vessels and port owners to supplement the draft decree on sanctioning administrative violations in the field Maritime and inland waterways.



Fig.2: Pollution due to inland waterway transportation

The Traffic Safety Department shall assume the prime responsibility for, and coordinate with the Inspectorate, the Legal Department and concerned units in, organizing periodical or extraordinary inspections of agencies and units on the implementation of this Directive. The task of ensuring maritime safety and safety of inland waterways is one of the key tasks of the Ministry of Transport and Communications, the Minister requests the Heads of agencies and units to seriously implement perform.

According to environmental experts, the means of ship are a great source of pollution to the environment. Especially in the port and coastal cities because they use poor quality asphalt fuel, with very high emissions. The operation of ships (including fishing vessels and cargo ships) is one of the artificial sources that contribute significantly to air pollution. Meanwhile, oil and spill pollution, even though the concentration of oil in water is only 0.1mg / l can also kill the plankton and greatly affect the young and larvae of

the seabed. After 21 years of operating in the field of response to oil spill response and handling, it is found that the total amount of mineral oil discharged into the environment from onshore facilities and underwater floating facilities is more than doubled. hundreds of times more than the total amount of mineral oil from oil spills known to the media and regulatory agencies. Oil pollution arises from fishing vessels and inland vessels. In order to prevent oil pollution in the water environment, the Ministry of Transport issued Circular 20 / VBHN-BGTVT dated November 19, 2013 on the national technical standard to prevent pollution caused by inland waterway vehicles. According to the Ministry of Transport, inland water transport is one of the five modes of transport in our country play a very important role. Inland waterway transport not only plays a major role in transporting large volumes of goods and passengers, but also creates millions of jobs, contributing to ensuring social security and national defense and security. However, there are still many inadequacies in waterway transportation such as unequal waterway traffic; The phenomenon of exploitation of river resources as planned or Process technology is not as planned (exploitation of sand, gravel, etc.) are common in most rivers and canals in the country. The signaling system is not synchronized between the signal of the inland waterway management unit and the signal of the owner; The handling of domestic goods transportation and inland port management is inadequate; The force of the means of development is fast, uneven but concentrated in some urban areas and industrial parks. Therefore, the Ministry of Transport has proposed a scheme to facilitate the development of a synchronized inland waterway infrastructure linking with other modes of transport; To improve the capacity of the crew and the inland waterway transport crews. To create favorable conditions for inland waterway transportation business with reasonable transportation costs; Improve the quality of water transport services; Ensure safety and environmental friendliness; Make a distinct advantage over other modes of transport. Specifically, will develop, promulgate mechanisms, The policy is to facilitate the development of inland waterway infrastructure; Build and promulgate mechanism, The policy of supporting the development of the fleet has a reasonable structure with a fleet of about 30%, self-propelled ships accounting for about 70% of the total number of inland waterway vessels; To prioritize the development of the container fleet; Inland waterway transportation and training , retraining of human resources for inland waterway transportation. However, this document only affects a small part of the total number of floating vehicles operating on water in Vietnam. On the other hand, compliance with the Regulations on pollution prevention caused by inland waterway vessels QCVN 17/2011 / BGTVT is entangled. Specifically, inland waterway vessels with hydraulic engines of a capacity of under 220kW must collect oil-contaminated bilge water into tanks / cans, bringing ashore to concentrated treatment stations. Meanwhile, at present, there are no bilge treatment stations in ports. Even if there is such a centralized bilge treatment plant, there are dozens or hundreds of boats in each port, which takes most of the production time to wait for the turn to carry water / pump water from ship to the processing station at the port. Oil leaks from marine engines, pipes, valves ... fell into the water of the bilge;

Marine engines of fishing boats are often old, so the amount of oil leaks and is more common. Floating oil will be quickly diffused, the emulsion in the bilge compartment due to the vibration of the marine engine, the waves, forming the oil colloidal particles or oil water colloid increases the volume of water contaminated with oil many times. When the pump discharges water from the bottom of the ship into the environment, the naked eye only see a thin oil slick floating on the water surface for this reason. Therefore, the amount of oil released into the environment of hundreds of thousands of fishing boats in particular and millions of other floating facilities, onshore facilities in general cause serious water pollution, damaging irrigation resources production.

Conclusion

Inland waterway vessels and ships operating on inland waterways must comply with regulations on environmental protection, specifically: Inland waterway vessels must comply with the current law provisions on technical regulations. national techniques for preventing pollution caused by inland waterway vehicles; the ship must comply with applicable laws on national technical regulations on the ship's pollution prevention systems; inland waterway vessels, ships operating on inland waterways must have shielding equipment, so as not to drop cargoes, scattered dust causing environmental pollution; do not dump waste into inland waterways; inland waterway vessels and ships must have a Plan to rescue oil and chemical pollution in accordance with the current law; inland waterway vessels and ships causing oil spills, owners of means and ship owners must respond to oil spills according to current law provisions. For establishments building, converting, repairing and restoring vehicles; in planning the development of inland waterway transport infrastructure; in construction, renovation and upgrading of inland waterway transport infrastructure; as well as the responsibilities of the Ministry of Transport, the Ministry of Natural Resources and Environment, the People's Committees of the provinces and centrally-run cities and organizations and individuals related to inland waterway transport activities.

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