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# SUSTAINABLE DEVELOPMENT OF INLAND WATERWAYS TRANSPORT IN VIETNAM

## Strengthening the regulatory, institutional and funding frameworks

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## FOREWORD

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Vietnam has a long history of using its rivers and canals for transportation of goods and people. Today, Vietnam's waterways transport about 17 percent of all domestic goods tonnage loaded in Vietnam and perform nearly 19 percent of all traffic tasks, a measure which combines both tonnes loaded and distance carried. These are very high levels by international standards, and Vietnam's national freight task proportion is more than double that for China, the United States, and the European Union where inland waterways are also prevalent.

Right after its integration into the international economic community in the late 1980s, Vietnam listed the development of inland waterways transport as one of its priorities to boost economic growth. Overcoming financing constraints, the country has made enormous strides in developing its inland waterways transport by efficiently exploiting the natural conditions of its rivers and canals. This growth is highlighted by the 47 percent increase in the volume of traffic carried on the waterways between 2010 and 2016.

However, exploiting only the natural conditions of Vietnam's inland waterways could diminish the country's competitive advantage over time. In order to bring the waterways' great potential into reality, further investment is required in the institutional structure, in strengthening the legal and regulatory framework, and in improvement of the funding framework for the sector.

This report, prepared by a World Bank team, provides a comprehensive review and assessment of the challenges that the sector faces, along with a reform program recommended to the Government of Vietnam that could help improve the enabling environment for the inland waterways transport industry and further its growth and technical sophistication.

The report highlights the need for a range of reforms, focusing on institutional reforms such as separating infrastructure management from industry regulation; on improving the enabling environment by making current sector laws and regulations more user accessible by issuing handbooks; on rebalancing public sector funding from roads to inland waterways; and on developing a robust and transparent pathway for private sector participation in the provision of infrastructure as well as operation and maintenance services in the sector.

With proper foresight, funding and political will, the reform program will help the government overcome many of the obstacles that are holding back the full potential of inland waterways transport in Vietnam. Development will progress more smoothly and reliably in Vietnam if goods flow more safely and efficiently on its vast network of inland waterways. Increased investment and sound management of network infrastructure will also support the growing trend for containerization by new industries and further lower logistics costs where Vietnam needs to improve against more efficient competitors such as China, Malaysia and Thailand. Continuing to boost Vietnam's network infrastructure will also improve and enhance the environmental advantages of water transport, where greenhouse gas emissions per tonne-kilometer are two to three times lower than for road transport. The role of inland waterways transport in the country's development is more important than ever.

The World Bank is pleased to have assisted in the development of Vietnam's inland waterways transport sector in recent decades. The Bank remains committed to working in partnership with the Government of Vietnam to implement the recommended reform program and looks forward to inland waterways that are even more busy and productive, thereby supporting improved living standards for the Vietnamese people.

A handwritten signature in blue ink, appearing to read 'Ousmane', followed by a stylized circular mark containing a smiley face.

**Ousmane Dione**  
Vietnam Country Director

A handwritten signature in blue ink that reads 'Franz Drees-Gross'.

**Franz Drees-Gross**  
Director  
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**CURRENCY EQUIVALENTS**  
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## **GLOSSARY OF TERMS AND ACRONYMS**

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### **ACRONYMS**

AMS	Asset management system
CCNR	Central Commission for Rhine Navigation
DWT	Deadweight tonnes
EU	European Union
GoV	Government of Vietnam
IWT	Inland waterway transport
JDA	Joint development agreement
LAD	Least available depth
MARAD	U.S. Maritime Administration
MoLISA	Ministry of Labor, Invalids, and Social Affairs
MoF	Ministry of Finance
MoT	Ministry of Transport
ODA	Official development assistance
PBC	Performance-based contract
RIS	River information services
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
ViaDonau	An Austrian government company responsible for IWT management
VINAMARINE	Vietnam Maritime Administration
VIWA	Vietnam Inland Waterways Authority
VND	Vietnamese Dong
WSV	German Federal Waterways and Shipping Administration
VTMS	Vessel traffic management system

## **SUMMARY OF FINDINGS AND RECOMMENDATIONS**

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### **BACKGROUND**

1. Inland waterway transport (IWT) has vital strategic importance to Vietnam’s transport system. It carries nearly one in five tonnes of domestic goods transported and nearly 80 percent as much of the traffic task (as measured in tonne-kilometers) that road transport carries. The industry has grown and improved significantly in recent years. Apart from its transport value, the industry provides wide economic, environmental, and social benefits.
2. The success of the industry as supplier of transport services depends mainly on the skills, competence, and enterprise of transport service providers, their managers, and workers. But government creates the “enabling environment” for their success, through specific policies it adopts, management of the infrastructure network, and regulation of the industry.
3. Increased investment and sound management of network infrastructure is critical to IWT maintaining its competitive advantages. Investment in improving and maintaining IWT’s infrastructure network is a strategic transport imperative for Vietnam to better connect the hinterland to seaports for exports. It will also foster the growing trend for containerization by new industries and retain and enhance the environmental advantages of water transport, including lower greenhouse gas emissions per tonne of freight carried.
4. To justify their own major investments in modern vessels and ports, operators need to have confidence in a future of safe and reliable water channels, navigation aids, adequate bridge clearances, and terminals well connected to the interior.
5. Integration of IWT into Vietnam’s international logistics supply chains also requires actively encouraging the building of logistics centers and inland container terminals (ICDs) on inland waterways, with good connections with other types of transport, particularly the main road network.
6. The World Bank has been the main source of Vietnam’s IWT investment finance for more than a decade, but investment needs remain large and future sources of finance will need to be diversified.
7. This report, prepared by a World Bank team, examines the current regulatory framework, institutional structure, and funding framework for IWT. The report suggests measures to strengthen infrastructure, regulatory, management, and the funding framework. Taken together, these measures would improve the enabling environment for the IWT industry and contribute to its development.
8. The scope of the report does not include physical planning or specific project prioritization for infrastructure development. MoT’s own physical masterplan for the industry has been recently comprehensively updated and is now under consideration by the government.

### **CURRENT STATUS OF THE INDUSTRY**

9. Vietnam’s IWT system is doing many things well. It carries a higher share of goods than in any other country except the Netherlands, and its traffic is still increasing. This strong performance is underpinned by the fact that its main networks in the north and south serve the two most highly populated and economically productive regions of the country.
10. Inland waterways directly connect with Vietnam’s major seaports, another great source of the waterways’ importance. Indeed, IWT and coastal shipping taken together carry three-quarters of the total domestic traffic task.

11. The range of traffic types carried by Vietnam's IWT matches global norms in that bulk traffic dominates. A wide range of semi-bulk goods is also represented in the traffic profile. Many rural enterprises in Vietnam depend on IWT, including fisheries and producers of timber, livestock and meat, sugar, and industrial crops. Container traffic is also growing, and there is scope for private logistics companies to give IWT a greater role in transport of higher-value industrial and consumer goods, though this is likely to remain a small proportion of the total IWT transport task.
12. There are more than 170,000 vessels in the IWT fleet, most of them very small. But larger and more specialized vessels are growing in numbers. International experience shows that these vessels can deliver better services at lower costs. But they need high-standard waterways to justify the higher cost of the vessel and investment in port mechanization.
13. Just over 7,000 kilometers of national waterways, administered by the central government, carry the great majority of the traffic. But less than 30 percent of this network length can handle barges larger than 300 tonnes capacity, a very low proportion compared to most successful commercial waterways in the world. Vessel sizes in Vietnam are limited by shallow channel depth, restrictive fairway geometry, and low bridge clearances. Many ports have outdated handling facilities and low levels of mechanization, are poorly maintained, or have poor hinterland access. Virtually all the main waterways of China, the European Union, and the United States can handle vessels (or tows) of more than 1,000 tonnes, and usually ones with much bigger loads.
14. The remaining waterways, administered by provincial governments, make up a large and important transport resource, both locally and as feeders to the national network. They provide access to thousands of small ports and landing stages where smaller barge sizes are well matched to the smaller sizes of consignments and the lower standard of the waterways. Nevertheless, the strategic role and success of IWT in Vietnam requires that trunk routes of the national network be sustained and improved.
15. IWT safety has improved in recent years. There has been a welcome reduction in accidents per tonne-kilometer of about two-thirds since 2010.
16. The GoV's policies and current plans for the sector are positive and ambitious. Prime Ministerial Decision 47/2015 boosted maintenance funding for the sector in the 2016-2020 period. The challenge now is to ensure that the higher funding for operations and maintenance (O&M) is sustained beyond 2020, that these funds are effectively managed and deployed, and that the system receives adequate capital funding to upgrade its technical and market capabilities.

## **FINDINGS OF THE STUDY**

### **Assessment of the Regulatory Framework**

17. Vietnam's IWT laws and regulations are contained in a hierarchy of legal instruments (laws, decrees, circulars, and decisions). This hierarchy is grounded in Vietnam's political and legal system and is similar in other economic sectors.
18. The World Bank team assessed those components of the legal framework that bear most directly upon the regulation of IWT services: (1) regulatory aims; (2) scope of application; (3) technical regulatory structure (including safety and environment); and (4) economic regulatory structure. The Bank team's assessment is that:

- GoV has the right strategic aims for IWT: they reflect appropriate public interests in economic and social development, safety, and environment and acknowledge the need to build climate resilience into infrastructure management.
  - The scope of the framework is both very “wide” across the range of IWT industry participants and “deep” in encompassing the individual elements of each activity.
  - The technical regulatory structure seeks a reasonable balance between protecting public interests in safety and environment without excessive burden on the industry.
  - The economic regulatory structure supports industry competition and a market-based approach to the services provided by commercial transport operators.
  - Commercial IWT operators have freedom to set tariffs and their tariffs are not restricted by IWT legislation or Vietnam’s wider laws on pricing.
19. The report finds the IWT regulation structure to be broadly appropriate. The legal structure within which these regulations are embodied seems cumbersome, but re-writing legal structures is difficult and time-consuming, and unlikely to materially increase IWT traffic or modal share. The most practical response to legal complexity would be to make the key regulatory elements of the framework accessible to operators in more “user-friendly” forms.
20. The more pressing challenge is to ensure that existing laws and regulations are fully enforced, such as those on vessel registration, overloading, dangerous maneuvering, and poor location of landing stages. The significant level of non-compliance suggests that the priority for public administration should be to focus on implementation and enforcement of existing important safety and environmental regulations.
21. The involvement of several ministries in waterways management has been called a constraint on Vietnam’s IWT development, but this is a management challenge rather than a structural flaw. This situation reflects the many legitimate and sometimes competing public interests in waterways, including for navigation, water supply, drainage, irrigation, fishing and fish culture, recreation, and ecology. IWT infrastructure managers must actively manage inter-ministerial relationships to align interests where possible and resolve differences.

### **Assessment of Institutional Framework: Overall Structure**

22. The institutional arrangements for the sector are also embodied in the legal framework. The Bank team finds that the geographic division between national waterways and provincial waterways and the corresponding allocation of administrative roles between GoV and provincial governments in the management of waterways is rational and practical. However, provincial and city governments adjoining national waterways need to perform a more effective role in waterways development, by facilitating development of ports and terminals, providing connectivity to main roads, and by supporting industry development on sites well located for waterway transport.
23. In recent years, the public sector and private sector in IWT have achieved a better balance and complementary roles. The public sector retains responsibility for IWT policy, regulation, and management of network infrastructure. The private sector (owner-operators, co-operatives, and companies) provides commercial transport services to customers, both shipping and port services.
24. The Bank team considers this to be an appropriate and productive balance in line with successful experience in the European Union, United States, and (to an increasing extent) China. But while sub-national governments are heavily involved in IWT ports internationally

in such things as port sub-structure and terminal operations, in Vietnam these have been devolved to private companies. It may be productive to create a greater role for provincial and city governments in the development of larger inland ports.

25. A “landlord port” model at the larger inland ports might provide a more sustainable approach for port modernization. In this approach, provinces would invest in long-term sub-structure and connecting roads alongside private owners’ investment in operating assets such as cranes, warehouses and other logistics facilities. This would also give provinces a financial interest in ports that would incentivize supportive provincial industrial location policies.
26. MoT’s use of a specialist agency, VIWA, to administer and implement IWT policies is sound. In governance terminology, VIWA is a “departmental agency” or “executive agency” of MoT. Such bodies are increasingly common in transport sector governance internationally.
27. VIWA has spun off its former maintenance units as new companies and now contracts out the maintenance and repair of waterways by tender among competing suppliers. This is a positive reform, which can be further improved.
28. Dividing responsibility for regulatory compliance between VIWA and the River Police seems less than optimal. VIWA currently lacks a patrol mandate and resources which would enable it both to supervise and enforce navigation regulations and manage traffic. This separation of IWT infrastructure management from IWT “policing” is also found in the United States. But such functions are combined in countries like China, with its nationally managed waterways, and Germany, which has the largest IWT network in the European Union.
29. Apart from this question mark on waterway patrolling/policing, the overall structure of institutional responsibilities appears appropriate. Still, coordination between entities is sometimes problematic, particularly between the national government’s IWT development aims and port development actions of provincial governments.

### **Assessment of Institutional Framework: VIWA**

30. Within this overall structure, the most influential public institution for creating the enabling environment for the IWT industry is VIWA, the inland waterways agency of MoT.
31. Analysis of VIWA’s activities indicates it currently performs two distinct functions of public governance: it is both an infrastructure manager and an industry regulator. However, this distinction is not well reflected in the current VIWA organization structure. Clearer separation of functions within the organization and management structure could help focus management responsibilities, resources, and accountability.
32. It is noteworthy that the great majority of VIWA’s staff is employed in industry regulation activities. For each VIWA employee involved in managing and improving the waterway infrastructure network (on which the success of the industry depends), six are engaged in regulation, mainly in VIWA’s port authorities.
33. This allocation of resources seems unbalanced. It suggests a case for strengthening the infrastructure management activity in terms of skills and resources.
34. There is also a need to make VIWA’s regulatory functions more effective. VIWA is the main industry regulator but the general laxity of regulatory compliance and enforcement in the industry suggests that MoT and VIWA should take steps to make VIWA’s role in industry regulation more effective than just discharging the port authorities’ functions.
35. VIWA’s port authorities might be made less people-intensive through re-engineering processes and introducing modern information and payments technologies. This could help rebalance the mismatch of resources between regulation and infrastructure management.

36. Sector governance currently lacks any formal mechanism for tapping the knowledge and expertise of private operators. Given the much-expanded role of private operators in shipping and ports activities in recent years, this is a serious deficiency. The private sector is critical to the success of state policies for sector development, yet it has no formal or permanent channel to voice its views.
37. VIWA is striving to improve its use of modern technologies and has acquired some impressive data capture and display capabilities. But it still has a long way to go to match best practices. Modernization of VIWA's management and business systems could deliver big benefits both for the agency and the IWT industry. The Bank team considers a priority needs to be an asset management system (AMS) for the infrastructure management function and automation of some port authority functions.
38. Market analysis capability and market understanding is critical to efficient infrastructure management and effective industry regulation. VIWA is required to deliver a lot with a small budget and has always had to prioritize its activities and expenditures. However, it appears to be not much involved in market monitoring or analysis that could help this prioritization.
39. Departmental agencies such as VIWA perform best when their objectives are clear and measurable, and within their control. The legal framework defines objectives for the IWT sector as a whole. However, many of these are general policy objectives and those that are quantified (such as national modal share targets and fleet composition targets) depend on factors and stakeholders outside the control of VIWA alone. There is a case for adopting VIWA-specific performance indicators.
40. IWT trends have been positive over the last few years and VIWA itself has successfully implemented several reforms and programs, but this performance remains largely hidden. VIWA has a useful website but does not publish a comprehensive annual report of its activities and financial statements, a standard practice of counterpart transport agencies in many countries.

### **Intermodal Issues and Role of MoT**

41. Effectively implementing IWT policies requires the active engagement of the supervising ministry, MoT, which is the institution legally empowered to address the wider challenges of intermodal connectivity and logistics.
42. Connections between IWT and seaports are particularly important to IWT development. MoT should ensure that the plans of VIWA and the Vietnam Maritime Administration (VINAMARINE) are productively coordinated to make efficient transshipment possible and thereby enable IWT to participate more effectively in national logistics supply chains.
43. There is also a case for considering the transfer to VIWA of the supervisory responsibility for some of the more than 40 ports and port areas currently supervised by VINAMARINE. This transfer would be justified for those VINAMARINE ports that sea-going vessels rarely use, but which are important ports for the IWT industry. putting VIWA in charge of some of the more than 40 ports and port areas currently supervised by VINAMARINE. Transfer would be justified for ports that sea-going vessels rarely use but which are important for the IWT industry. Reallocation of responsibilities would also imply reallocation of administrative and financial resources to VIWA for the extra responsibilities.
44. Many inland ports remain poorly connected to the main road or rail networks. MoT should require its relevant agencies, the Roads Directorate and Railway Authority, to prioritize strategically important connections to major inland ports. The ministry could channel some of

its road funds into supporting provincial road connectors or persuade provincial governments to provide the necessary road connections.

### **Assessment of Funding Framework**

45. Decree No. 51 of 2005 provides that financial sources for developing and maintaining inland waterways are: (1) the state budget (central budget and sub-national government budgets); (2) user charges for waterways invested by non-state budget sources; (3) contributions of organizations and individuals; and (4) non-state investors in inland waterways. Funds may flow from other sources as well.
46. Decision 47/2015 significantly boosted state budget funding for the sector until 2020, requiring increases of at least 30 percent annually from 2016. It also prioritized access to preferential ODA loans and preferential capital for investment in IWT infrastructure for passenger and container transport. While the budget increase has materialized for maintenance, most funds for capital investments have yet to appear.
47. Decision 47/2015 also provides that provinces and major cities must help fund the sector. It requires them to prioritize and provide commercial incentives for ports and landing stage improvements. They are to consider the exemption or reduction of land rent or water surface rents for operators who invest in building or renovating ports, and to consider possible interest subsidies for infrastructure investment projects. Again, the policies are supportive, but the implementation by provincial governments is weak.
48. VIWA's own funding currently comes from three main sources: (1) the national budget; (2) charges and fees paid by IWT users; and (3) ODA.
49. VIWA's operations and maintenance expenditures on national waterways have relied almost exclusively on national budget allocations. Dredging and channel management and navigation (traffic control, fairway management, and signaling) have been the main areas of increased funding in recent years.
50. VIWA's port authorities collect fees and charges for use of inland waterway ports and wharves. These revenues are not legally dedicated as VIWA income, but VIWA's port authorities are permitted to retain enough of the cash collected to fund their own activities. The revenue seems just about enough to cover port authorities' activities that fall clearly within the regulatory sphere of VIWA.
51. There are no user fees to help fund VIWA's infrastructure management work, though such fees appear to be permitted under the legal framework.
52. For more than a decade, capital investment in IWT infrastructure has been almost totally funded through ODA (World Bank loans), with negligible direct GoV funding. No new ODA or GoV capital infrastructure projects are currently under implementation.
53. The GoV has responded to the importance of IWT through a range of strengthened policies, targets, institutional developments, restructuring initiatives, and—importantly—increases in funding of VIWA's infrastructure maintenance.
54. Operations and maintenance funding allocated through the state budget has progressively increased and by 2017 was nearly 88 percent higher than in 2013. This is a welcome recognition of IWT's needs and its importance in the overall transport strategy. But the boost expires in 2020, there remains a significant back-log, and O&M funding from the state budget is still falling short of the sector's needs. Even more concerning for the long term, capital funding of infrastructure is currently negligible.



55. Various ideas have been proposed to boost sector funding, including the creation of a waterway maintenance fund sourced not only from the annual budget but also from fees paid by waterway users and beneficiaries.

## **MEASURES RECOMMENDED FOR CONSIDERATION**

### **Institutional Strengthening Measures**

56. The priority is to make existing institutions more effective in implementing policies and regulations, particularly VIWA as the modal agency for IWT, and to ensure that it has the resources, skills, and funds it needs to meet its responsibilities.
57. Strengthening VIWA and its functional mandate and processes would do the most to improve the enabling environment for industry development. To that end, the Bank team recommends that MoT and VIWA consider the following measures.

#### ***Organization and Management Structure***

58. Modify VIWA's organization and management structure to more clearly separate its functions of infrastructure management and industry regulation. A possible new organization chart is provided in Section 6.
59. Appoint an inland waterways advisory board representing the many users and providers of waterway services as a standing consultative body to MoT and VIWA. It would provide: (1) real-world experience and practical industry knowledge; (2) independent but informed views on VIWA's reforms, projects, and programs; (3) heightened visibility of IWT in the freight transport and logistics industry; and (4) greater participation, transparency, and accountability for VIWA. Such a board would need a legitimate process of member selection and openness of proceedings.

#### ***Infrastructure Management***

60. Boost the number and technical skills of VIWA staff who work in infrastructure management, rebalancing staff positions from those engaged in regulatory functions.
61. Implement longer-term and performance-based contracts for waterways management and maintenance that will encourage contractors to invest in improved skills and equipment and contribute more value to the infrastructure management task. This will help leverage the impact of VIWA's own resources
62. Adopt performance indicators for VIWA's infrastructure management. A possible list of indicators is provided in Section 6. VIWA experts could augment this list to better reflect their work and performance metrics.
63. Develop an asset management system (AMS) to improve the effectiveness of the waterways maintenance task.
64. Undertake a risk analysis to prioritize network sections that most need action on climate resilience, targeted on sections where high climate risk and high traffic importance coincide. Incorporate climate resilience guidance in IWT infrastructure design and maintenance manuals and contracts.
65. Determine the optimum long-term development path for river information services (RIS) on completion of the RIS feasibility investigations that are supported by the Government of the Netherlands.

### ***Industry Regulation***

66. Prepare and publish an operator’s handbook for vessel owners/operators that will clearly set out the vessel, crew, and navigation regulations they need to know and offer best practice guidance regarding compliance and safe handling of vessels.
67. Undertake a scoping review for a possible electronic regulatory manual (ERM), a web-based IT tool that would combine regulatory information with interactive tools for users, and with online “transactional” features such as application forms for vessel registration and operator licenses. Vietnam has a strong systems development capability and local contractors who could bid to assist VIWA in this work.
68. Re-engineer the practices and processes of port authorities to simplify and automate them, including exploration of “trusted trader” schemes for accredited vessel and port operators so that they can take on the burden of responsibility for regulatory actions and reporting subject to periodic audits of their compliance.
69. In view of widespread compliance and enforcement problems, examine how VIWA might more effectively administer other key elements of industry regulation that port authorities do not currently oversee. Since VIWA has the overarching responsibility for managing and regulating waterways, it must take the lead in developing procedures to work effectively with others (such as the Vietnam Register, River Police, and provincial governments) to enforce regulations on waterway use and safety.
70. Adopt VIWA regulatory performance indicators. A list of possible indicators is provided in Section 6 based on existing legally defined functions. Simplifying these functions could lead to formulation of better indicators.
71. Augment current accident statistics to include a classification of the physical circumstances of accidents, such as is typically done internationally. This would be useful in both infrastructure management and regulatory design.
72. Assess the long-term advantages and disadvantages for IWT regulatory enforcement, vessel traffic management, and safety if MoT (VIWA) were to take over responsibility for patrolling and policing inland waterways. Consult with other relevant departments of government as necessary.

### ***Corporate Activities***

73. Strengthen VIWA’s capacity to monitor and appraise IWT market and industry trends as a foundation for longer-term proactivity in industry promotion and facilitation.
74. Publish each year a VIWA annual report describing market developments, VIWA activities and performance, and the agency’s financial statements.

### ***Sector Funding Measures***

75. Extend the funding policy intent of Decision 47/2015 after its expiry in 2020 to continue the waterways budget boost and ensure a consistent, ongoing strategy that delivers long-term, increased funding certainty.
76. Ensure VIWA’s funding is sufficient to meet its responsibilities in infrastructure management and industry regulation.
77. Ensure that IWT maintenance and development funding rises to a level better aligned with its contribution to Vietnam’s total traffic task. The average budget allocation for the road network is 15-20 times higher per tonne-kilometer carried than for the waterways network.

But waterways carry 80 percent of the scale of the road transport traffic task and have much lower adverse external costs of congestion, environmental harm, and accidents.

78. This funding imbalance also exists in other countries, often because IWT tends to be less “visible” than road transport and its infrastructure needs much less understood, and because road authorities are bigger and better resourced for winning and spending public funds. However, the disparity in Vietnam’s case is exceptionally high.
79. Establish a waterway maintenance fund (WMF) to be sourced mainly from the state budget and charges to waterway users. It would create a more diversified and stable source of maintenance funding for the national waterways.
80. For the WMF, consider including navigation charges for Class I vessel operators and fees for operational permits for ports and landing stages, while seeking support of the industry for these charges by the promise of better and more reliable infrastructure.
81. Consider including in the WMF a transfer from vehicle taxes and fuel duties as a bounty to partially offset the higher marginal social and environmental costs of road transport.
82. Consider a boost in domestic funding by MoT for IWT capital projects. Shifting even a small proportion of the construction funds for national roads could have a transformational effect for waterways while only marginally slowing the pace of road development.
83. Identify whether any navigation infrastructure projects (i.e. excluding ports) have realistic PPP potential. This would need to take account of the limited international use and success of private finance/PPP in investment in waterway navigation infrastructure. If there are promising candidate projects, concentrate on creating realistic conditions and support for success, and moving fewer but better prepared PPP opportunities forward.
84. Consider expanding some of VIWA’s current small and short-term (annual at most) service-based contracts for dredging into small-scale PPPs operating over several years. These might include performance-based availability payments, incorporating the development of key performance indicators. Given the considerable challenges, a developmental approach to any implementation of waterways PPPs seems sensible.
85. As part of its infrastructure management role, strengthen VIWA’s expertise to undertake proper planning, assessment, prioritization, preparation, and delivery of capital projects, whether funded by ODA, the state, or PPPs.
86. The Bank team does not think it prudent for MoT/VIWA to invest in ports, which would divert scarce capital funds away from much-needed investments in the waterways network. Investment in ports should mainly use private capital provided by their owners.
87. However, provincial and city level governments could play a more active role in ports development through adoption of a “landlord port” model, leading to joint development agreements (JDAs) between private port operators and provincial or city governments. These sub-national governments have a legal responsibility to pursue national goals in IWT development and would acquire a strong interest in the flow-through economic benefits that successful port activity can bring.
88. GoV could consider piloting this model at two or three of the main inland ports where investment is clearly needed and the local provincial governments are supportive. These governments would jointly agree to fund or partly fund investments in the port sub-structure (such as approach channels, quay walls, and berth depth) and road connectivity to main highways and make land available for expansion. This public investment would be subject to a firm commitment by the private terminal operator(s) to make matching investments in logistics assets such as cranes and warehouses.

## Implementation

89. Overall, it is better to view the measures identified here as a reform program rather than a list of individual initiatives. The program could then be shaped and implemented in an integrated way, while recognizing that individual elements may be modified or deleted and new measures added.
90. The reform program would require that the MoT endorse, adopt, and support it. The program leadership could then be appointed by the responsible vice-minister and the director general of VIWA.
91. A joint MoT/VIWA reform task force could be formed to assess the recommendations, prioritize actions, and begin planning the changes sought. The day-to-day direction of this task force might be vested in a nominated DDG reporting to joint meetings of the director general of the VIWA and the responsible vice-minister of MoT.
92. Four teams in the reform task force would each focus on a discrete objective: (1) reform of VIWA's organizational structure; (2) infrastructure management improvements; (3) industry regulation improvements; and (4) strengthening of the financial framework. The measures identified by the Bank team that could fall within the responsibility of each team are shown in Section 8.
93. Consultations would be necessary with the Ministry of Finance (for any measures affecting sector budget or borrowings); provincial and centrally-affiliated city governments (for regulatory measures or port development measures); the Vietnam Register (for vessel regulatory issues); the Ministry of Public Security (currently responsible for the River Police); the Ministry of Natural Resources and Environment (for environmental regulations); and others.
94. It would also be wise to seek the views of representatives of vessel and port operating entities regarding proposals to achieve the reform goals. If the industry advisory board could be established early in the process, it could have an important role in influencing priorities and implementation plans.
95. A reform program would be an excellent opportunity to revitalize the administration of IWT in Vietnam. MoT and VIWA should move boldly, taking advantage of the chance for reorganization to craft an agency and individual departments that are more focused and cost-effective. MoT and VIWA managers will be able to identify improvements in many areas.
96. The reform program would give VIWA a window to integrate measures in support of MoT's Gender Action Plan. Some specific supportive actions are identified in this report.
97. The task force should monitor the implementation progress and be ready to modify and adapt its proposals and plans as information and circumstances change.

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# 1. THE CASE FOR DEVELOPING INLAND WATERWAY TRANSPORT

## 1.1 A Strategic Industry, for Many Reasons

Vietnam's inland water transport (IWT) industry performs a key role in the country's goods transport system. Nearly a fifth of the total domestic goods traffic task (measured by tonne-kilometers<sup>1</sup>) moves on inland shipping. This proportion is very high by international standards. In the three global regions where the IWT industry is most prevalent, China, the United States, and the European Union, IWT carries only between 5-7 percent of total domestic goods transported.

**The importance of the IWT industry extends beyond its contribution to goods transport because of its wider economic, environmental, and social significance.** First, in addition to lower direct costs to users, IWT delivers each tonne of goods at lower community costs compared to road transport. This is possible because:

- Traffic carried by IWT means that less new road capacity is needed, which would be much costlier to build and maintain.
- The social costs of road traffic accidents and road congestion are lower than they would otherwise be.
- IWT saves greenhouse gas emissions—road transport emits two to three times the GHG emissions/tonne-kilometer of IWT.<sup>2</sup>

Second, many communities throughout Vietnam depend highly on ferries that use rivers and canals to carry residents to local markets, work places, health facilities, schools, and other social agencies. Third, the industry contains very large numbers of individual owner-operators, often families living on their own small barges. Sustaining their livelihoods is important to GoV policies promoting social equity.

**Vietnam's IWT industry is performing well, with healthy and encouraging signs of growth and innovation.** Section 2 lays out the evidence that the inland shipping fleet is expanding, is increasingly

### Findings of Section 1

- IWT carries nearly one in five tonnes of domestic goods transported in Vietnam.
- In recent years, the industry has grown and its structure has improved.
- The IWT industry provides wider economic, environmental, and social benefits.
- Its success depends mainly on the skills, competence, and enterprise of IWT operators, their managers, and workers.
- But government creates the “enabling environment” for success through its regulatory system and infrastructure management role.
- Investment and sound management of network infrastructure is critical to IWT maintaining its competitive advantages.
- The World Bank has been the main source of investment finance for this sector for more than a decade.
- This report examines IWT's current legal framework, institutional structure, and funding mechanisms.
- It maps out measures to strengthen the enabling environment and contribute to sustainable industry development.

<sup>1</sup> A tonne-kilometer is a measure of one tonne of freight carried for one kilometer. The term “transport task” takes account both of tonnes carried and distance carried.

<sup>2</sup> L. Blancas and M.B. El-Hifnawi. 2014. “Facilitating Trade through Competitive, Low-Carbon Transport: The Case for Vietnam's Inland and Coastal Waterways.” Washington, DC: World Bank.

operated by an entrepreneurial and competitive private sector and is carrying more goods each year. Larger vessels and more specialized ones are entering the fleet, contributing to improved shipping economics and lower transport costs for customers. This success has been fueled in recent years by Government of Vietnam (GoV) initiatives—major sector restructuring, increasing budget allocations to IWT maintenance and repair, and the securing of World Bank loans for investment.

**Looking to the longer term, IWT is vulnerable to limitations in the quality and capacity of the waterway network and ports infrastructure.** Of nearly 16,000 km of managed navigable waterways, only about 15 percent (about 2,600 km) can reliably handle barges of more than 300 deadweight tonnes (DWT<sup>3</sup>). Most waterways are relatively short transport routes with an average haul distance of 212 km. Many ports and landing stages are operated manually and have only rudimentary equipment. By comparison, the most important trunk waterways of the United States, Europe, and China can handle much larger vessels and carry traffic for far longer average distances, with mechanized loading and unloading.

**Improving and maintaining IWT’s infrastructure network is a strategic imperative for Vietnam to better connect exporters to seaports, assist the growing trend toward containerization by new industries, and enhance the environmental advantages of water transport including lower greenhouse gas emissions per tonne of freight carried.** Sustained investment and maintenance are crucial for high-quality inland waterway routes capable of maintaining competitive advantage against improving road systems and contributing more to trade competitiveness. Maintaining IWT’s strategic transport role in Vietnam means investing in infrastructure to handle larger capacity, specialized, and modern vessels, which need safe and reliable navigation channels, adequate bridge clearances, and mechanized ports and terminals. Integration into international logistics supply chains requires actively encouraging the location of logistics centers and inland container terminals (ICDs) on inland waterways, as well as giving them good connections with other transport modes, particularly the main road network. However, Vietnam’s waterways have suffered serious shortfalls in infrastructure investment compared to their needs and to investment in other modes. The World Bank is committed to supporting Vietnam in trying to overcome these problems.

## 1.2 The World Bank and IWT development

**Over the past 20 years, the World Bank, working through the International Development Association (IDA), has been the primary financing source for capital investment in Vietnam’s IWT sector.** World Bank loans have financed a cumulative investment of over US\$1 billion through several projects:

- The Inland Waterways and Ports Rehabilitation Project (IWPRP), completed in 2007, which improved the two main inland waterway routes of the Mekong Delta, totaling 546 km, to permit safe 24-hour, year-round, two-way navigation, and which financed improvements to Can Tho Port.
- The Mekong Delta Transport Infrastructure Development Project (MDTIDP), which financed improvements to the trunk waterways connecting the Northern and Coastal Delta areas to Can Tho and HCMC.

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<sup>3</sup> DWT is the normal measure of how much weight a vessel can carry and excludes the weight of the vessel itself.

- The Northern Delta Transport Development Project (NTDTP), which financed improvements to multi-modal corridors and stages for passenger ferry boats.

**The Bank is currently considering the Southern Region Waterways and Transport Logistics Corridor Project (SWLC).** This would finance improved logistics and multi-modal connectivity, including capacity improvements along the congested main corridor linking Can Tho with HCMC and ports at Cai Mep-Thi Vai; corridor navigation aids; a trial vessel traffic management system (VTMS); and institutional capacity development. In the last two decades, the World Bank has financed almost all of the country’s public investment in inland waterway transport infrastructure. Only some 1-2 percent of the government’s own transport capital budget has flowed to the IWT sector, despite its strategic transport role and importance. The measures proposed in this report are in part intended to help develop and expand financing sources for IWT so that it can more effectively support Vietnam’s continued economic growth.

### 1.3 IWT, Freight Logistics, and Economic Growth

**The transport industry has helped spur Vietnam’s remarkable economic growth and poverty reduction in the past two decades and will need to do even more for it in the future.** Since the late 1990s, political and economic reforms have transformed Vietnam from one of the poorest countries in the world to a lower middle-income country today. Much of this growth has been driven by increased exports fueled by low manufacturing costs. As Vietnam’s labor costs increase, and with the emergence of lower-cost manufacturing in other countries, export competitiveness will depend on more than low production costs. The evidence shows Vietnam’s overall trade logistics performance can improve.<sup>4</sup> With that in mind, the GoV wants to attain continuous improvement in transport and logistics capability.

**The IWT sector’s success in making national logistics more efficient will depend first and foremost on how it stacks up in efficiency against other transport services providers in Vietnam.** The sector’s efficiency is built on the skills, competence, and enterprise of IWT operators, managers, and workers. The industry has been increasingly dominated by private operators of shipping services and ports. The companies have been resourceful and adaptable in improving the vessel fleet and growing the IWT market. Maintaining these improvements requires continuing investments in operating assets. To justify these investments, the shipping and port enterprises (companies, cooperatives, or owner-operators) must have confidence in the network infrastructure that the government administers and in the market regulation to which they are subject.

**The government is therefore critically responsible for creating the positive “enabling environment” that will encourage and support the industry’s development.** The enabling environment will influence how successfully Vietnam’s IWT industry responds to national policy goals. Three of the key components of a positive enabling environment are: (1) a supportive legal and regulatory framework;

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<sup>4</sup> Vietnam’s latest (2016) international ranking in the World Bank’s Logistics Index is 64th, compared with competitors such as China (27th), Malaysia, (32nd), India (35th), and Thailand (45th).



(2) an effective institutional structure for implementing public policies; and (3) a funding framework that delivers and maintains the infrastructure assets needed.

**The time is right to consider boosting IWT development strategy.** Infrastructure needs have been estimated at around 6 percent of Vietnam’s GDP from 2016 to 2040,<sup>5</sup> at a time when government is reaching its public debt ceiling and public funds are constrained. As a lower middle-income country, Vietnam also faces limits on availability of ODA for financing growth. There is a need to consider how to most effectively allocate limited public investment funds between modes, how to optimize returns per unit of public investment in IWT, and how more private investment can be attracted into IWT infrastructure and services.

**Vietnam must match its policies to its circumstances but can find useful lessons in the experience of other regions.** In this report, the main regions for comparison are China, the United States, and the European Union. Each has a very substantial inland waterway transport industry. There are many differences in the way IWT is organized and operates in the three regions but some commonalities are useful in judging approaches that Vietnam might take. Figure 1.1 provides a brief round-up of key characteristics and emerging trends in these regions.

<b>Figure 1.1 International Round-up of Trends in IWT Freight</b>	
<b>Policy</b>	Motivated by cost and environmental advantages, all three regions have in recent years intensified policy aims of supporting development of IWT freight services and expanding the transport role and intermodal connectivity of IWT.
<b>Market volume</b>	In Europe and the United States, traffic volume carried by IWT has been generally stable, but in China it is increasing rapidly in most parts of the country, especially in long-distance freight in the Yangtze corridor.
<b>Market profile</b>	Bulk and semi-bulk traffic commodities continue to dominate in all regions, but intermodal traffic is growing in Europe and China, though containers remain a small portion of IWT’s overall contribution to freight transport in both regions.
<b>Vessels</b>	Average vessel load is increasing through larger barges, innovative designs, and multiple barge towing configurations. Use of specialized vessels and ones adapted to waterway constraints provide further advantages. In places, LNG is replacing diesel fuel. In the European Union, electric container barges are entering service.
<b>Routes</b>	Significant shortfalls of investment for navigation improvement, rehabilitation, and bottleneck removal are evident in all regions. River information services are increasingly available to optimize use of capacity.
<b>Ports</b>	Freight handling and transshipment improvements in inland ports are strengthening IWT logistics capability and integration. Efficient operational and economic interfaces of IWT with seaports are critical to the IWT sector and national freight logistics.
<b>Greening</b>	Regulation of vessel emissions, vessel wastes, and carriage of hazardous cargoes is becoming increasingly rigorous. There is growing attention to environmental sustainability principles in managing waterways infrastructure, such as “working with nature”).

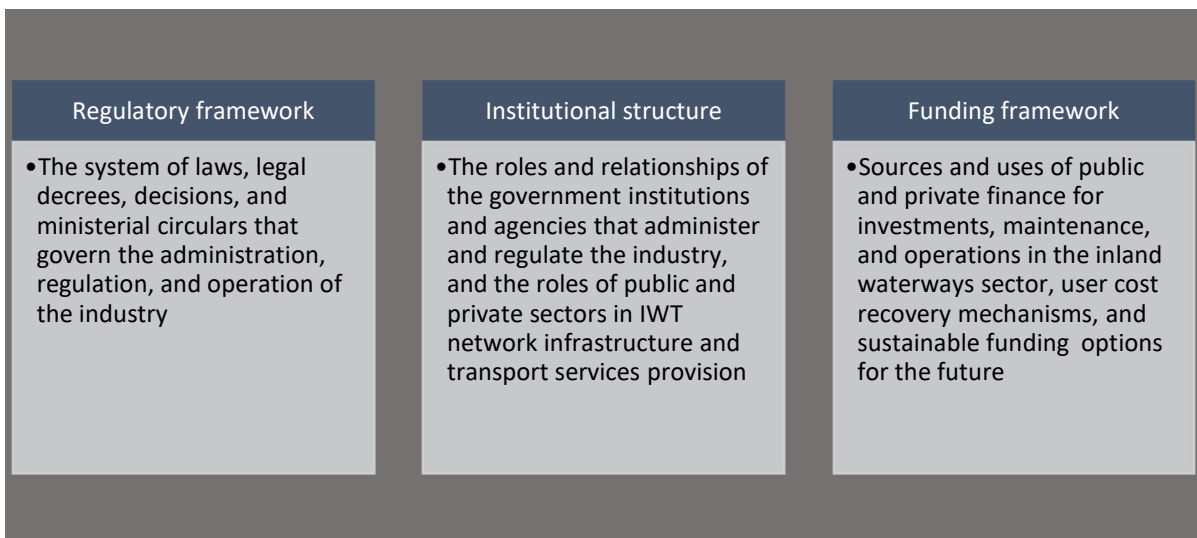
<sup>5</sup> Global Infrastructure Hub. 2017. Global Infrastructure Outlook, A G-20 Initiative.

<b>Funding</b>	Funding of most waterways' maintenance and capital works is public. Transport operations are typically commercial and self-funding, but waterway user charges are usually very low. Private investment in common-user inland navigation infrastructure is rare.
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## 1.4 Scope of the Report

This report focuses on the three main facets of IWT governance: the legal and regulatory framework, the institutional structure, and the funding framework. It analyses the current situation and recommends measures within each sphere that would strengthen the industry's enabling environment. The legal framework is the system of laws, decrees, decisions, and ministerial circulars that govern Vietnam's IWT industry. The institutional structure refers to the structure of public and private institutions participating in governance, regulation, and operations of the IWT industry. The funding framework, meanwhile, includes both the public and private financing of investments, maintenance, and operations (Figure 1.2).

**Figure 1.2** Scope of the Report



The report does not examine physical planning or suggest specific project prioritization for infrastructure development. That falls to MoT's own physical masterplan for the industry, required by law, which has been recently comprehensively updated, examined and approved by the Ministry of Natural Resources and Environment regarding land use and environmental protection, and is currently under consideration by the government. The focus of this report is the effectiveness of the regulatory framework, public institutions, and funding frameworks to deliver waterways development plans, independent of their specific content. The primary focus of the report is goods transport and the administration of the national waterway system by the central government. The role of provincial governments was specifically examined in relation to ports, port connectivity, and riparian land uses on national waterways. However, the wider benefits of the provincially managed feeder network is also recognized. This feeder network and its users would be a major beneficiary of improvements in the regulation, management, and standards of the trunk network. However, the technical details of the management of these provincial waterways has not been examined.



## 2. THE ROLE, ASSETS, AND PERFORMANCE OF IWT

### 2.1 The Role of IWT

#### 2.1.1 Contribution to Total Traffic Task

IWT carries about 17.1 percent of all domestic goods tonnes loaded in Vietnam and performs about 18.9 percent of the traffic task (which measures both tonnes loaded and distance carried). Table 2.1, based on official statistics, indicates that IWT handles about 212.5 million tonnes/year over an average distance of 212 km. Road transport carries the greatest volume by traffic loaded (957.5 million tonnes or 77.2 percent of total) but much of it is for relatively short distances, on average 59 km. Coastal shipping carries fewer tonnes (64.8 million tonnes or 5.2 percent of total) but for much longer distances, on average more than 2,000 km. Railways perform a relatively minor role in both tonnes loaded (0.4 percent) and traffic task (1.3 percent).

**Notably, coastal shipping and IWT taken together perform about three-quarters of the total domestic traffic task.** This is very high by international standards and advantageous from the point of view of transport costs and community costs. It should be noted that national “modal share” is a statistical aggregate and not a meaningful measure of “market share.” The market share concept can only sensibly be utilized when different modes compete for a given market—typically freight in a specific region or corridor. While the road system extends over all of Vietnam, the waterways network does not. IWT cannot compete for a share of market where it is not an option. So, while the national modal share of traffic task may be 18.9 percent, its market share in the regions it serves is necessarily much higher, and in the busiest waterway corridors IWT is the predominant transport mode. However, there are few corridor-specific statistics on which to provide precise estimates.

#### 2.1.2 Traffic Growth

**IWT has been carrying more traffic each year and is now performing a greater share of the total traffic task.** The volume of traffic carried by IWT increased by 47 percent from 2010 to 2016, from

#### Findings of Section 2

- Vietnam’s IWT carries a higher share of goods than in any other country except the Netherlands.
- IWT serves the two most highly populated and economically productive parts of Vietnam.
- Inland waterways directly connect with Vietnam’s major seaports.
- IWT and coastal shipping together carry three-quarters of the total domestic traffic task.
- The range of traffic types carried by IWT matches global norms, with bulk traffic dominating, but a range of semi-bulk goods also represented.
- Vietnam has more than 170,000 vessels, with a growing proportion that are larger and specialised.
- International experience shows such vessels can deliver better services at lower costs but need better-quality waterways and ports.
- National waterways of over 7,000 km carry about 90 percent of the traffic task but less than 30 percent of these routes can handle large barges of more than 300 tonnes.
- Many ports have outdated handling facilities and low levels of mechanization, are poorly maintained, and have poor hinterland access.
- IWT safety has improved with a reduction in accidents/tonne-km of about two-thirds since 2010.
- GoV’s policies and plans for the sector are positive and ambitious, and supported by this report.

144.2 million tonnes to 212.5 million tonnes.<sup>6</sup> The share of total traffic task performed by IWT has increased from 14.5 percent to 18.9 percent since 2010. The volume of road transport and its mode share is growing somewhat faster than IWT's figures.

**Table 2.1: Domestic Goods Traffic by Mode of Transport (2016)<sup>7</sup>**

Mode	Traffic loaded (millions)	Tonnes loaded (%)	Traffic task Tonne-km (billions)	Tonne-km performed (%)	Average distance (km)
Road transport	957.5	77.2	56.5	23.7	59
Railways	5.2	0.4	3.2	1.3	615
IWT	212.5	17.1	45.1	18.9	212
Coastal shipping	64.8	5.2	132.6	55.7	2046
Aviation	0.3	0.0	0.7	0.3	2333
<b>TOTAL</b>	<b>1240.3</b>	<b>100</b>	<b>238.1</b>	<b>100</b>	

Source: VIWA.

**Vietnam's waterways carry a much higher proportion of the national freight traffic task than in China, the United States, and European Union.** China's most important waterways are the Yangtze and Pearl River systems and the Grand Canal, but many provinces also have busy waterways of their own. In the United States, the main network is the Mississippi/Missouri river system and its tributaries (12,000 km), the Gulf Intracoastal Waterway (GIWW), and the Columbia/Snake Rivers on the Pacific Coast. The European Union's most important commercial waterways are the Rhine/Meuse-Main-Danube corridor, the lower reaches of the Rivers Scheldt, Mosel, Seine, Rhone-Saone, Weser, and Oder, and the busier canals, such as Germany's Keil and Mittelland Canals. Vietnam has about 8,000 km of commercially important waterways.<sup>8</sup> These contribute more than double the share of the goods transport task performed in any of the three comparator regions (Table 2.2). Taking EU countries individually, only the Netherlands' waterways carry a higher proportion of goods than those of Vietnam.

**Table 2.2: Waterways in Different Countries**

	Vietnam	China	US	EU
Navigable waterways (km approx.)	26,500	123,000	40,000	35,000
Commercially most significant (km approx.)	8,000	42,000	18,000	8,000
IWT share of domestic goods task (tonne-km)	19%	7-8%	5-7% <sup>9</sup>	6-8%

<sup>6</sup> Recently available 2017 statistics suggest a further increase to nearly 250 million tonnes in 2017.

<sup>7</sup> The accuracy of the national transport statistics is not known, and some sources suggest that IWT traffic may be higher than officially recorded. However, the absolute accuracy of traffic volume and mode share do not materially affect the findings of this report.

<sup>8</sup> National waterways plus provincial waterways in Classes I-III.

<sup>9</sup> U.S. mode share is in tons.

Source: Consultant estimates.

### 2.1.3 Commodities Carried

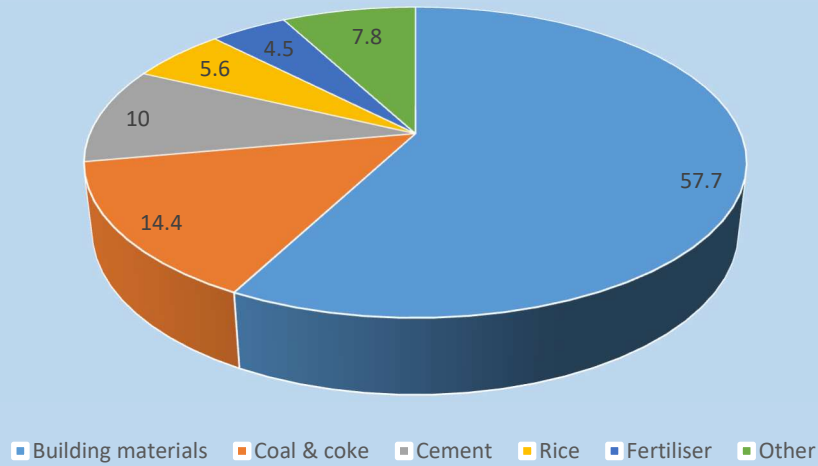
**International experience is that IWT has a competitive advantage over other modes only in specific commodity markets and circumstances.** In countries that have good waterway routes, IWT typically carries (1) goods that are bulky, or can be consolidated into consignment sizes that suit barge capacities, (2) consignments that originate or are destined for locations close to the waterway (often to or from sea-ports<sup>10</sup>), (3) products that are not highly perishable or time-sensitive, and (4) goods of relatively low value/tonne that particularly benefit from low transport costs that IWT can provide. Commodities fitting this profile and dominating IWT traffic internationally are bulk grains; stone, sand and gravel; coal and coke; raw timber; and bulk “wholesale” consignments of heavy process industries such as oil products, iron and steel, chemicals, and fertilizers. The inland distribution of concentrated container flows from sea port to an inland port or inland container depot (ICD) can in some cases fit the market profile. Distribution of international containers by IWT is big business for EU waterways and China’s main waterways but is negligible in the United States, where railway competition for container transport is very strong.

**The main types of traffic on Vietnam’s IWT system also fit the international pattern.** A mid-decade traffic survey showed that construction materials (mainly sand and gravel) dominated with nearly 60 percent of tonnes loaded, and that the five biggest traffics commodities of construction materials, coal and coke, cement, rice and fertilizer, together constituted over 90 percent of tonnes carried (Figure 2.1A). A breakdown of the remaining traffic (Figure 2.1B) shows the many other rural industries in Vietnam use IWT, including fisheries, timber, livestock and meat, sugar and industrial crops. In sum, the evidence suggests that IWT carries a market majority share of traffic tonnes for construction materials, coal, cement, fertilizer, and cane sugar and possibly more than a third of fisheries products, rice, timber, and industrial crop products. Although the source data is dated, the traffic profile appears to have remained similar, though with notable growth in container transport.

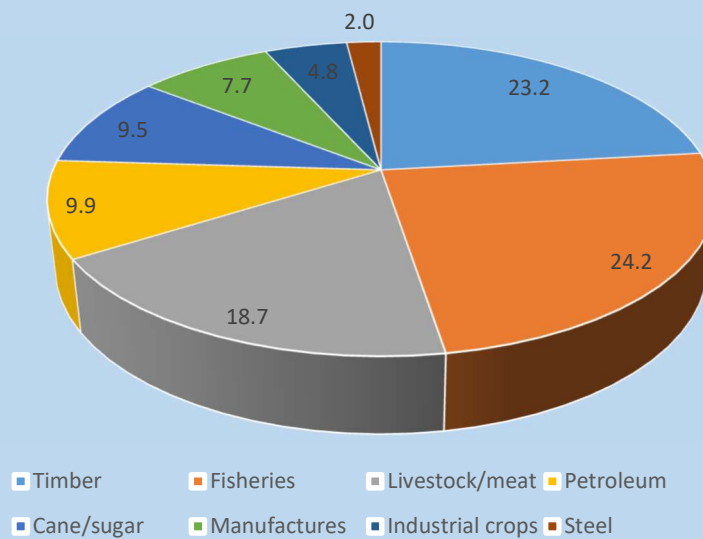
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<sup>10</sup> The busiest waterway routes in the world nearly all have links to international seaports, for example, Port of South Louisiana on the Mississippi River (United States), Port of Shanghai on the Yangtze River (China), and Port of Rotterdam on the Rhine River (Europe).

**Figure 2.1A: IWT Main Commodities Carried (% tons)**



**Figure 2.1B: IWT 'Other' commodities (% of 'other' tonnes)**



Source: L. Blancas and M.B. El-Hifnawi. 2014. "Facilitating Trade through Competitive, Low-Carbon Transport: The Case for Vietnam's Inland and Coastal Waterways." World Bank: Washington, DC.

#### 2.1.4 Passenger Transport by IWT

**IWT carries just over 4 percent of Vietnam's passenger trips.** This role is tiny compared to goods transport, but the passenger task is nevertheless large in absolute numbers and growing. In 2017 IWT moved about 172 million passengers, an increase of about 10 percent since 2010. Passenger services are dominated by cross-river ferries (foot-only ferries and ro-ro ferries), but also include tourist boats and contract services. The remainder of this report focuses mainly on freight transport, though the regulatory and institutional frameworks encompass both sub-sectors.

## 2.2 The Waterway Network

**IWT is busy with goods transport in Vietnam because the main waterway systems serve the two most highly populated and economically productive regions and connect directly to major seaports.**

Vietnam has approximately 26,500 km of navigable waterways managed by either GoV or provincial government.<sup>11</sup> The two main managed waterway systems are very favorably located from the viewpoint of production and distribution:<sup>12</sup>

- The northern region IWT system, carrying 57 percent of Vietnam’s total IWT traffic task, is in the Red River delta area. It centers on the metro Hanoi economic growth hub, and connects with Haiphong, the region’s most important seaport.
- The southern region system, carrying 37 percent of the total IWT traffic task, is centered on the Mekong Delta and is adjacent to the growth hub of Ho Chi Minh City (HCMC). It connects with the major seaports of HCMC and Cai Mep Thi Vai and the sea-river port of Can Tho.

The many individual rivers that make up the remaining central waterways region (collectively carrying about 6 percent of the total IWT traffic task) do not constitute a network per se. Still, many central waterways rivers can transship via coastal shipping links to the major ports.

**Most of the traffic task is performed on national waterways that are administered by institutions of the central government.** There are 66 national waterways constituting over 7,000 km of the busiest waterways and probably carrying more than 90 percent of the IWT traffic task. Provincial governments are responsible for more than 19,000 km of waterways, of which about half can handle only barges of 10 tonnes or less. Provincial governments actively manage about 8,800 km of these waterways. Waterways are classified according to several technical criteria, which in some cases differ between the north and south regions. However, a good general indication of navigation capability is the size of self-propelled vessels that can use a waterway for most of the year. Table 2.3 shows the distribution of network length by vessel size capability.

**Table 2.3: Inland Waterway Network by Infrastructure Classification**

Waterway class	Vessel size capability (DWT)	National waterways (km)	Local waterways (km)	National waterways (%)	Local waterways (%)
Special		451	71	6.4	0.4
Class I	601-1,000	702	228	9.9	1.2
Class II	301-600	880	276	12.4	1.4
Class III	101-300	3,677	509	52.0	2.6
Class IV	51-100	1,156	2,107	16.3	10.9
Class V	10-50	208	7,029	2.9	36.3
Class VI	Less than 10		6,072		31.3

<sup>11</sup> A further 26,500 km of waterways are navigable by small craft but are commercially insignificant and not actively managed.

<sup>12</sup> This is not coincidental: much of the early settlement and development of Vietnam was based on waterway access.



Class VII		139		0.7
No class		2,950		15.2
<b>TOTAL</b>	<b>7,074</b>	<b>19,381</b>	<b>100.0</b>	<b>100.0</b>

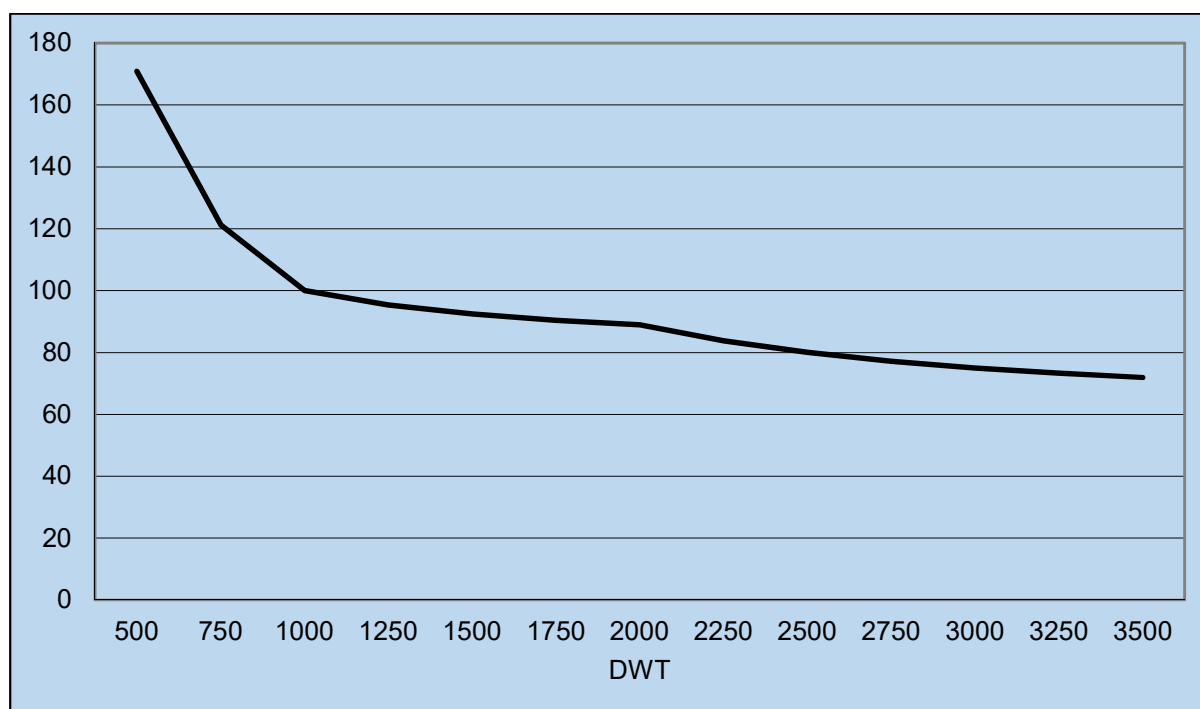
**Vessel size is important because it influences economies of scale, with significantly lower costs per traffic unit for larger vessels.** In the range of up to 1,000 tonnes, there is a very steep fall in the average costs/tonne-km of operating larger barges. Figure 2.2 illustrates this pattern. It is based on the results of a consultant regression analysis from published European data showing how total vessel operating costs, including both capital and working expenses, vary with vessel size for self-propelled dry cargo vessels used on the River Rhine. The principle of lower unit costs with increasing barge capacity also applies in Vietnam. Therefore, a useful benchmark in assessing Vietnam’s waterway network is its ability to handle at least a 300 DWT barge, as is possible on waterway Classes I and II and special routes. Only about 29 percent of national waterways (about 2,033 km) meet this standard.

**Vietnam’s major industries would enjoy a substantial reduction in shipping costs if investments were made to improve the busiest waterways.** This means, for example, investing in busy Class II national waterways to gradually bring them up to Class I and in the busiest Class III national waterways to bring them up to Class II (and so on), while ensuring that the target standards are reliably maintained over most of the year. The capital investments required depend on specific waterway conditions but could include increasing fairway water depth, improving fairway geometry, removing local bottlenecks, upgrading navigation aids and night navigation, and raising restrictive bridge clearances. Such improvements must proceed in an integrated way, based on analysis of market needs, traffic flows, and shipping movements on different parts of the network.

**New investment in waterways infrastructure would increase the competitiveness of waterway transport against road transport and raise its modal share.** Shipping companies can improve efficiency by deploying vessels that are purpose-built for specific cargoes, increase capacity without increasing draft, use new and lighter materials, or are more fuel-efficient. But to justify these investments, vessel operators need to feel confident in the utility and seasonal reliability of waterway routes. They need to be sure that the network’s ports will be able to handle sophisticated and high-value vessels safely, efficiently, and with fast turn-round times. They will want to know that the new vessels will be fully utilized in transport, rather than queuing for berths or waiting on slow handling methods.

**Maintaining the lower-standard waterways (both national and provincial) is also important.** One of the great strengths of Vietnam’s IWT industry is the large feeder network. It allows access to thousands of small ports and landing stages where smaller barge sizes are well matched to the smaller size of consignments and the lower standard of the waterways. This strength is discussed further below.

Figure 2.2: Indicative Index of Transport Cost/tonne-km Cargo, Dry Cargo (1,000 DWT Barge = 100)



### 2.3 The Inland Vessel Fleet

Vietnam has more than 170,000 inland vessels, with the proportion of larger and more specialized vessels increasing. Around 97 percent of vessels are dry cargo barges. Their average size is 90 DWT. For oil tankers it is 236 DWT and container vessels 1,171 DWT (Table 2.4). The averages mask a range of sizes, particularly for dry cargo vessels which include tens of thousands of very small barges in the 5-20 DWT range. Over the 2014-2017 period, the total fleet grew by 7 percent, but its total capacity increased by 43 percent because average size increased in all vessel classes. Government policies to encourage fleet improvements seem to be yielding positive results. The number of large (more than 1,500 DWT) vessels nearly doubled in three years, from 696 in 2014 to 1,287 in 2018. The proportion of total fleet capacity provided by these vessels increased from 11 percent to 15 percent for dry cargo vessels, from 19 percent to 22 percent for oil tankers, and from 43 percent to 53 percent for container vessels. The industry's operators are clearly responding to the commercial advantages of scale and specialization. If the length of higher-class waterways (Classes I and II) could be extended, this trend would accelerate.

Table 2.4: Inland Waterway Registered Fleet (2017)

Vessel type	Number of vessels	Vessel DWT total	Average DWT/vessel	Vessel power total (HP)	Average HP/vessel
Dry cargo	162,865	14,591,035	90	8,595,407	53
Oil tankers	2,363	558,158	236	415,102	176
Container vessels	1,038	1,215,096	1171	481,668	464
Other	1,134	78,082	69	134,288	118
<b>Total</b>	<b>167,400</b>	<b>16,442,371</b>	<b>98</b>	<b>9,626,465</b>	<b>58</b>

## 2.4 Inland Ports and Terminals

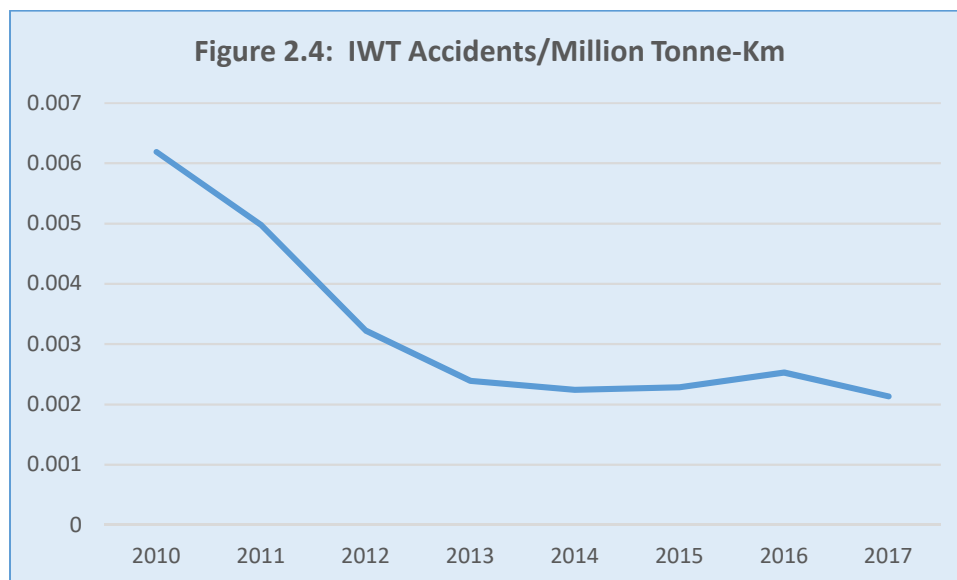
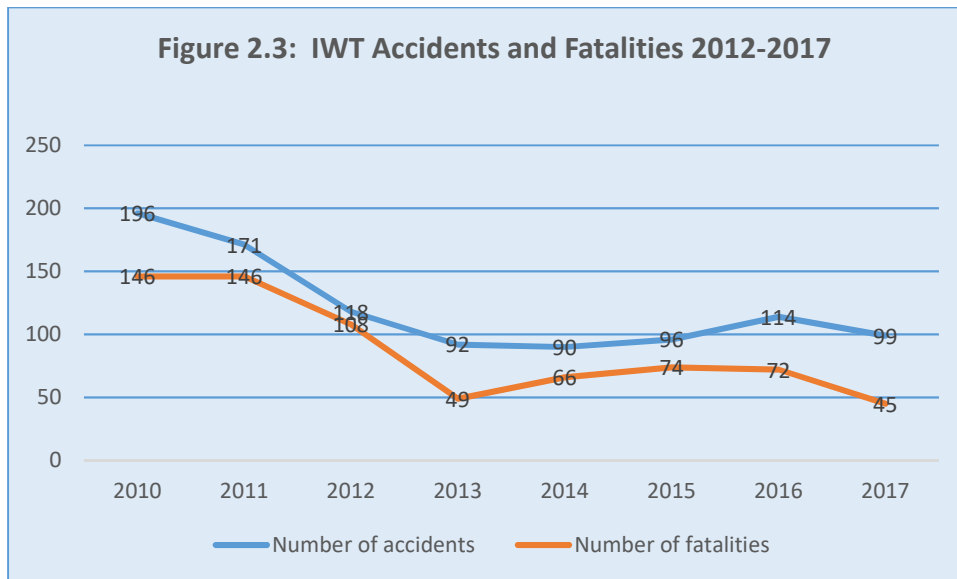
**Vietnam has more than enough ports and landing stages but the terminal infrastructure and equipment of most are rudimentary, and good road connections are often lacking.** At the beginning of 2017, Vietnam had about 7,257 ports and landing stages of which about 4,750 were on the national waterway network (and so under the jurisdiction of the central government). Of the national waterway ports and landing stages, 3,492 were licensed by VIWA and 1,217 were unlicensed. The total number of inland waterway ports is 306, consisting of 254 on the national waterways and 52 on local waterways.

**The throughput of most ports is less than the potential capacity were they to adopt modern handling methods.** Many ports have outdated handling facilities and low levels of mechanization, are badly maintained, or have poor hinterland access. In practice there are only 11 major cargo ports for IWT in the north region and about 18 in the south. Landing stages and piers span a range of different qualities. Most landing stages, licensed or unlicensed, are very basic, requiring manual loading and unloading to the river or canal bank. However, some landing stages are dedicated company facilities, used for a specific commodity and reasonably equipped and maintained.

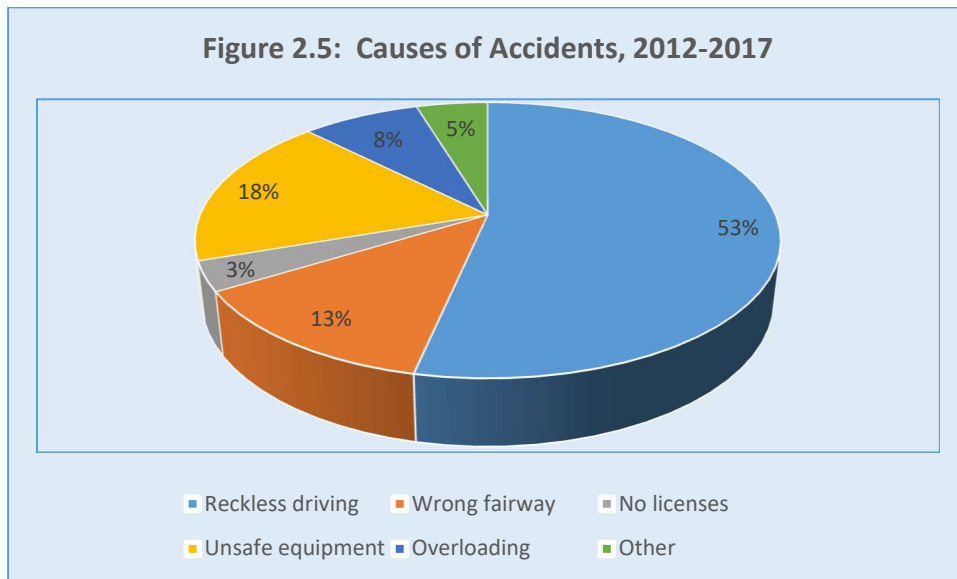
**The large number ports and landing stages helps make the IWT system very accessible but they need to be managed.** Not all consignors of goods want or need large barges. Many rural communities are well served by loading points at small rice-mills, timber yards, fertilizer depots, and so on, located directly on rivers and canals and with limited capacity for storage. Small barges, matched to the local consignment sizes, can access and clear these many terminals and bring goods either to consolidation points for larger barges or direct to destination. As more industries locate along riverbanks, improvised berths of simple design and low cost have proliferated. Landing stages can be very basic. In some cases, there is a ramp and a small mobile crane, and in others, workers load and unload by hand using gangplanks and barrows—spillage of material into the waterways is common. Many of the unlicensed landing stages are temporary, or attached to a farmer's own land, or only used for "own-account" loading and unloading. If poorly located, they can be a navigation hazard or cause congestion.

## 2.5 Waterway Safety

**The safety record of Vietnam's IWT has improved significantly.** Official statistics for 2017 show 99 recorded accidents resulting in 45 fatalities. The trend in both accidents and fatalities is downward (Figure 2.3), though the greatest improvements were in the 2010- 2014 period. Since then, there has been relatively little change in the number of accidents. However, taking into account the increase in traffic over the period, there has been a reduction in accidents/tonne-km of about two-thirds, a very creditable improvement (Figure 2.4). On average, about a fifth of accidents over the period were categorized as very and extremely serious, a proportion that fluctuates without clear trend.



**Two-thirds of accidents over the period were blamed in the official statistics on either reckless navigation (53 percent) or navigating on the wrong fairway (13 percent).** The other main reasons given were that the vessel or its equipment was unsafe (18 percent), the vessel was overloaded (8 percent), or the operation did not have the required licenses (3 percent). Figure 2.5 summarizes the recorded causes of accidents over the last six years. The statistics cover all of Vietnam’s waterways and are assembled by the River Police. However, they differ from the accident classifications used in other countries and are rather less useful for waterways design and management purposes. In Section 6.4.4, recommendations are made to improve accident statistic so they might yield better information for infrastructure design, traffic management, and regulatory effectiveness.



## 2.6 IWT Development Planning

**There is no lack of vision or forward thinking in the public governance of the sector.** Comprehensive centralized planning of IWT is legally mandated. MoT/VIWA must produce and regularly update detailed masterplans, medium plans and programs, and annual plans and budgets. There are some weaknesses in technical aspects of the planning, particularly related to market information and project prioritization indicators, as discussed in Section 7. For the last few years, planning has proceeded in the context of explicit government policies and objectives that seek to promote the sector (Section 3 looks at this issue in more detail).

**The GoV's policy to boost the role and performance of IWT is most fully articulated in the 2014 Ministry of Transport Decision on Industry Restructuring.** Decision 4910/14 sets out sector restructuring policy objectives, targets, directions, main policies, and implementation steps. Fuller details of the plan, incorporated in the legal framework, are reproduced in Annex A. The high-level policy aims are summarized in Figure 2.6. These recognize the need for coordinated actions and policies for infrastructure, fleet management, institutions, funding, and industry promotion.

**The restructuring plan mandated seven policy directions to match the policy aims:**

**Figure 2.6: GoV policy aims in the IWT sector**

- Achieve a breakthrough in the development of IWT infrastructure and improve its capacity and market share.
- Concentrate key works on economic and industrial need, transport intensity, and regional development aims.
- Develop IWT consistently with the development of other modes of transport.
- Attain synergies of combined IWT and coastal shipping development.
- Improve the capacity and effectiveness of IWT enterprises to increase market share and reduce burden on road transport.
- Combine short and long-term infrastructure plans to improve efficiency and effectiveness, ensure traffic safety, protect the environment, cope with climate change impacts, and conserve energy.
- Restructure and improve managerial capability of VIWA to achieve these aims.

*Source:* Synopsis of 2014 Ministry of Transport Decision on Industry Restructuring. (Decision 4910/14)

1. Modernize and develop a sustainable IWT system and promote its advantages to transport users and the community.
2. Develop IWT infrastructure in a more systematic way, specifying physical targets, improved management requirements, capacity upgrades, and cooperation with local governments.
3. Develop the IWT fleet in conformity with national standards but encouraging specialized vessels for specific route capabilities and cargoes, and more container ships, as well as multi-purpose vessels.
4. Manage the development of IWT infrastructure more rigorously, modernizing assets, and achieving a national database, with more effective compliance and safety measures.
5. Use resources to maintain inland waterways in an advanced, scientific, effective, and safe way with a need to increase and mobilize resources for maintenance and management and apply prompt remedial works.
6. Improve traffic safety through effective regulation, compliance of vessels and crews, and traffic management.
7. Re-organize VIWA and its divisions and geographic branches, corporatize maintenance organizations, give more autonomy to training institutions, and strengthen the capacity of the inland waterway management board affiliated with the VIWA.

**The policy aim and directions are robust and comprehensive and many restructuring targets set in the 2014 restructuring plan have already been achieved.** The state management functions have been defined and codified through the many decrees and circulars described further in Section 3. There is now a clearer separation of functions between the Ministry of Transport and VIWA, between VIWA and the new companies that manage and maintain infrastructure under contract to VIWA, and between the state administration and those of commercial enterprises. Various decrees and circulars have also reinforced the obligations of administrators to promote or incentivize sector development. Unfortunately, as discussed in Section 3, many of the additions made to the legal structure to reflect the restructuring have at the same time increased its complexity.

**The 2014 quantitative targets for industry traffic growth were unrealistically ambitious and have generally not yet been met.** A near doubling of modal share was targeted for 2020. National statistics show a creditable increase in traffic task from 14.5 percent to 18.9 percent since 2010 (Section 2.2.2). But the target of doubling seems infeasible. IWT already has the dominant modal share in the main transport corridors where IWT is an option. It seems mathematically impossible to double the average over the whole country when most regions have no feasible waterway transport option. If government wishes to use modal share targets, it would be wiser to set specific goals for IWT regions or corridors. In terms of fleet structure targets, there has been a welcome increase in the number and proportion of larger vessels, but these trends depend on investment by private shipping companies, not on government direction. Finally, the network infrastructure investment targets, which are directly under state control, have faced severe capital constraints.

**The 2018 updated draft masterplan for inland waterway infrastructure planning to 2020 has been completed and is awaiting approval.** The updated draft reinforces policy directions established in the 2014 restructuring plan and provides further detail for specific measures proposed. It also establishes traffic growth targets that are more realistic than those formulated in 2014. The GoV's plans for the IWT sector therefore remain positive and ambitious in terms both of system and policy development. The World Bank team endorses the GoV policies and this report is intended to support them.



### 3. THE LEGAL AND REGULATORY FRAMEWORK

#### 3.1 Introduction

**The governance of the IWT sector (regulation, institutional structure, and funding) is set out compressively in a hierarchical legal framework structured in accordance with Vietnam’s legal norms.** Laws are passed by the National Assembly and are the highest form of legal instrument (other than the constitution). Laws are supplemented by other legal instruments: decrees regarding implementation of parts of the law; decisions (issued by the prime minister) that mandate relevant policy matters, and ministerial circulars (issued by the responsible line minister) that provide more detailed guidance on how specific aspects of the applicable laws and decrees must be applied.

**The legal framework for IWT is currently subject to the Law on Inland Waterway Navigation (2004) as amended in 2014, plus eight GoV decrees, one prime ministerial decision, and about forty Ministry of Transport circulars.** Vietnam’s legal framework for IWT is therefore an integrated and hierarchical construct in which legal principles, administrative structures, policy directives, and regulatory obligations are closely intertwined. This hierarchy of legal instruments is referred to below collectively as the legal framework. However, the various legal instruments in the framework are often promulgated individually; they are not collectively codified into a single set of industry regulations. This section focuses on assessing the regulatory attributes of the legal framework in four broad categories: (1) the strategic aims of regulation, (2) the scope of regulation, (3) the technical (safety and environmental) regulatory structure, and (4) the economic regulatory structure. The administrative arrangements for implementation and the funding framework for the sector, which are also embodied in the law, are treated separately in Sections 4 and 5 of this report respectively.

#### Findings of Section 3

- Vietnam’s IWT laws and regulations are contained in a hierarchy of legal instruments (laws, decrees, circulars, and decisions), grounded in Vietnam’s political and legal system.
- Taken together, their scope is both “wide” across the range of IWT industry activities and participants, and “deep” in addressing the individual elements.
- The stated regulatory objectives reflect appropriate developmental, economic, social, safety, and environmental public interests, and the need for climate resilience.
- The technical regulations on safety and environment provide reasonable balance between protecting public interests without excessive burden on the industry.
- The law supports competition and a market-based approach to commercial transport services and tariffs.
- The Report finds that the regulatory content of the Legal Framework is therefore “fit for purpose.”
- The framework’s presentation is complex and fragmented, but the positive content means it supports and is not a substantial impediment to a successful industry.
- The Report does not recommend fundamental changes to a legal framework which would be very difficult and time-consuming to change.
- The new PPP Decree 63 clarifies some of the issues for PPP projects but risk allocation, project appraisals, and approvals are still to be dealt with.
- The most practical and effective way forward is to make the regulatory content accessible in more user-friendly ways, further elaborated in Section 6.



## 3.2 Policy Aims of IWT Regulation

The legal framework sets out its sector aims in the form of “principles:” **social and economic development, safety, environmental protection, defense and security, and multi-modal coordination.** Chapter 1, Article 4 of the 2004 Law specifies (in summary) that IWT activities must ensure safety for people, vessels and property; ensure environmental protection; serve socio-economic development needs; and contribute to security and national interests. The 2014 amendments add the aims of natural disaster prevention and control, responsiveness to climate change, and harmonization with other modes of transportation. The amendments also state that the IWT system should be modernized in conformity with transport development masterplans and with a goal of greater uniformity of standards in waterways and ports.

**To further these strategic aims, the legal framework also establishes a policy of prioritization of public investments in IWT infrastructure, in accordance with their transport and economic importance.** Chapter 1, Article 5 requires that the state should prioritize public investment in developing inland waterway infrastructure in (1) key inland waterway navigation routes, (2) key economic regions, and (3) deep-lying and remote areas where IWT has comparative advantages over other forms of transportation. The law also affirms a policy of sector “openness” to encourage both Vietnamese and foreign organizations and individuals to invest in IWT infrastructure, apply scientific and technological advances, train specialists, and participate in IWT operations.

**The legal framework also establishes that the commercial IWT industry should be developed in accordance with market principles, while inland waterway infrastructure remains a public-sector responsibility.** Decree No. 45/2018 on the management, use, and exploitation of inland waterway navigation infrastructure asserts that: “The exploitation of inland waterway navigation infrastructure assets shall comply with market mechanism and be efficient.”

## 3.3 Scope of Regulation

The legal framework covers a very wide scope, setting out the rights and obligations of all the activities and participants in the IWT sector including government institutions and operators of all kinds. The legal scope includes all people and vessels participating in the sector; the planning of the development, building, operation, and protection of IWT infrastructure; and public management of the sector. The commercial scope includes goods; passenger and river-crossing (ferry) transport services of all kinds; search, salvage, and rescue operations; and training institutes. Its infrastructure scope includes navigation infrastructure of all kinds (channels, navigation aids, locks, channel protection, works); inland waterway ports and landing stages including port land area (wharves, warehouses, yards, workshops, offices, equipment, etc.); and port water areas (for ship manoeuver, anchorage, transshipment, lighterage, and storm shelter).

## 3.4 Technical Regulatory Structure

The law contains detailed technical, safety, and environmental regulations applying to transport operators in the industry, their vessels, crews, navigation rules, and port regulations. The technical regulations are contained in Chapters 3-6 of the main law, divided into the above categories. The types of provision applying in each group are summarized in Table 3.1. For convenience these are referenced to the chapter numbers in the 2004 law, but the table descriptions incorporate elements of applicable decrees and circulars.

The minister of transport has the legal responsibility to administer regulations relating to the quality, technical safety, and environmental protection standards of vessels. The larger the vessel, the higher the standards it must meet. For example, Group 4 vessels (under 1 tonne or less than 5-passenger capacity) do not need to be registered (though most other safety regulations and navigation rules still apply), whereas vessels in Groups 1 and 2 must not only be registered but can be operated only after technical and environmental safety inspection. The vessel groups specified in the law are shown in Table 3.2. Vessel classes also affect crewing requirements (Chapter 4 of the law).

**Table 3.1: Structure of Technical Regulation of IWT Operations**

Chapter and operative scope	Range of technical, safety, and environmental regulations
<b>Chapter 3: Vessels</b>	<i>Regulates requirements of vessel registration; vessel inspections; vehicle manufacturing and repairing facilities; and rules for imported vessels. The regulations depend on vessel classification, which is in four groups according to vessel size (see below). These govern the quality, technical safety, and environmental protection standards of vessels. Circulars No. 75/2014 and 48/2015 provide more detailed regulatory guidance and the legal grounds for cancelling a vessel's registration.</i>
<b>Chapter 4: Vessel Crews</b>	<i>Relates to qualifications of crewmen and steersman (crewmen apply for Group 1 vessels and steersmen for Group 2 vessels). The regulations encompass crew titles and standards; training, licensing, and professional certification; and conditions for crewmen and steersmen. Circulars No. 56/2014 and 02/2017 elaborate and update the regulations. Circulars No. 47/2015 and 04/2017 set out and update minimum safe manning levels and competencies for vessel classes.</i>
<b>Chapter 5: Navigation rules</b>	<i>Mandates safe navigation, setting out navigation rules and vessel signaling, warning and distress protocols for various vessel types and circumstances; navigation under restricted visibility and at cross-channels or channel bends; priority rights of vessels on special duty; collision avoidance rules; overtaking rules; and mooring and anchoring. Circulars No. 40/2010 and 30/2017 relate to traffic control in special circumstances.</i>
<b>Chapter 6: Ports and landing stages</b>	<i>Regulates the technical activities of inland water ports, inland waterway landing stages; port authorities;<sup>13</sup> inland waterway pilots; and the responsibilities of shipmasters, pilots, and vessel owners in the event of losses. Circular No. 50/2014 provides more detailed procedures for approval and implementation of port plans and projects.</i>

**Table 3.2: Legal and Regulatory Framework: Vessel Classification System**

Vessel Class	Vessel characteristics
<b>Group 1</b>	Non-motorized vessels with a gross tonnage of over 15 tonnes, motorized vessels with total main engine capacity of over 15 horsepower, or vessels with a capacity of over 12 passengers

<sup>13</sup> Inland waterway port authorities are agencies performing the function of specialized state management over navigation and transport at inland ports and landing stages. They are described in more detail in Section 4.

<b>Group 2</b>	Non-motorized vessels with a gross tonnage of between 5 and 15 tonnes, motorized vessels with total main engine capacity of between 5 and 15 horsepower or with a capacity of between 5 and 12 passengers
<b>Group 3</b>	Non-motorized vessels with a gross tonnage of between 1 tonne and under 5 tonnes or a capacity of between 5 and 12 passengers, and motorized vessels with total main engine capacity of under 5 horsepower or a capacity of under 5 passengers
<b>Group 4</b>	Rudimentary vessels with a gross tonnage of under 1 tonne or a capacity of under 5 passengers

**Technical regulations for waterway management and maintenance activities are elaborated in Ministry of Transport circulars.** For example, Circular 15/2016 regulates inland waterways management and Circular 25/2016 updates, amends, and supplements the economic and technical norms for itemized tasks and activities in the management and maintenance of inland waterways. It sets out prescribed procedures for applying the norms. One notable regulatory omission is that while the environmental regulations prohibit discharges such as coal dust and sand blow-off into waterways (Article 8 of the Law on Inland Waterways Navigation, 2004), there are no specific standards for vessel engine efficiency and emission. The EU gives considerable attention to such regulations for all modes of transport and has programs to support the upgrade of engines in the inland vessel fleet.<sup>14</sup>

### 3.5 Economic Regulatory Structure

**The economic regulations concentrate on customer protections rather than regulating markets, which is consistent with the aim of applying market principles in the “exploitation of inland waterway navigation infrastructure assets.”** Chapter 7 of the law (and associated decrees and circulars) distinguishes between goods and passenger services, and between business and non-business transport services. But if transport is “non-business” (for the operator’s own benefit), certain provisions do not apply.

- Goods transport economic regulations relate to cargo transport contracts, consignment notes, and bills of lading (delivery and receipt documents); the rights and obligations of cargo transport operators, consignors, and consignees; compensation for lost or damaged goods; transportation of dangerous goods and super-sized and super-weight cargo. Most of the regulations pertain to promoting fair trading between operators and consignors of goods.
- **Passenger transport regulations** cover fixed-route passenger services, contract-based services (such as tourist boats), and river-crossing services. The regulations specify rights and obligations of passengers and operators. For example, passengers must receive tickets and ticket receipts, a safe transport service, minimum standards of accommodation in case of disruption, and compensation if service cannot be provided. Pricing for passengers, baggage, and vehicles must be transparent. Overcharging is forbidden. The passenger, in turn, has an obligation to pay the

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<sup>14</sup> The EU’s Innovation and Networks Executive Agency’s PROMINENT Project “aims to further decrease the energy consumption and carbon footprint of inland waterway transport (IWT), an area where IWT has already a strong advantage compared to road transport. Besides the traditional research activities, the project will focus on the key items to support uptake of the developed technologies and concepts by the industry.” The project is described at <https://ec.europa.eu/inea/en/horizon-2020/projects/H2020-Transport/Waterborne/Prominent>

correct charge. Circulars No. 80/2014, 59/2015, and 66/2014 (relating to high-speed craft) update, amend, and supplement the passenger transport regulations.

### 3.6 Allocation of Responsibilities to Ministries

**The legal framework sets out the responsibilities of various organs of state in managing and maintaining different parts of the IWT network.** Chapter 2 of the law classifies national waterways, local waterways, and special waterways. Circular 15/2016 defines the classification criteria as follows:

- National waterways connect to economic and cultural centers, nodal transport infrastructure serving economic development or national defense and security, or to cross-border transport.
- Local waterways are those serving local socio-economic development of a province or centrally affiliated city.
- Specialized waterways connect to ports, dedicated wharves, national inland waterways, or local inland waterways for transport purposes.

MoT is responsible for the management and maintenance of national waterways. People's committees at the provincial level are responsible for the management and maintenance of local waterways. All classes of waterway are subject to the IWT Law. While administrative responsibility differs, safety and environmental provisions apply to them all.

**For all the managed waterways, the law sets out the responsibilities of the various ministries and levels of government that have a stake in IWT activities.** Chapter 8 of the law defines the roles of GoV, ministries, provincial people's committees, and the Transport Inspectorate. In discharging their defined responsibilities with respect to inland waterway navigation, all ministries and ministerial-level agencies are required to coordinate with the Transport Ministry. These roles are summarized in Table 3.3. Circular 16/2013 regulates the management of waterway transport routes that extend from the mainland to Vietnam's islands and allocates regulatory responsibility for these routes to the Vietnam Maritime Administration (VINAMARINE).

**The existence of multiple jurisdictions with regard to waterways has been called a constraint on Vietnam's IWT development, but this is a management challenge rather than a structural flaw.** This constraint reflects the multiple and legitimate public interests in waterways, including inland and maritime shipping, water supply, drainage, irrigation, fishing and fish culture, recreation, and ecology. These multiple interests make it inevitable that multiple specialist public institutions will have a say in regulating and managing river uses. It is therefore critical for IWT infrastructure managers to pay close attention to inter-entity relationships, to align interests where possible, and seek mutually acceptable solutions when interests diverge.

**Table 3.3: Legally-Defined Responsibilities of State Management Entities in the IWT Sector**

State management entity	Legally defined roles and responsibilities
<b>Government of Vietnam</b>	<ul style="list-style-type: none"> <li>• Oversees programs to ensure uniform state management of IWT.</li> </ul>
<b>Ministry of Transport</b>	<ul style="list-style-type: none"> <li>• Has responsibility to the GoV for performing the state management functions for IWT.</li> </ul>

<b>Ministry of Public Security</b>	<ul style="list-style-type: none"> <li>• <i>Has prime responsibility for protecting IWT order and safety.</i></li> <li>• <i>Organizes the waterway navigation police force (River Police) to patrol waterways and enforce navigation and other laws.</i></li> <li>• <i>Collects statistics and supplies data on inland waterway navigation accidents.</i></li> </ul>
<b>Ministry of Agriculture and Rural Development</b>	<ul style="list-style-type: none"> <li>• <i>Holds prime responsibility for planning the network of fishing ports and wharves as well as fisheries areas on inland waterways.</i></li> <li>• <i>Directs the implementation of measures to ensure navigation safety for fishing vessels operating on inland waterways.</i></li> <li>• <i>Has prime responsibility for planning dikes, irrigation works, and flood and storm prevention/ combat measures related to inland waterway navigation.</i></li> <li>• <i>Installs and maintains inland waterway signs for irrigation works and clears disused irrigation works that affect channels and channel protection corridors.</i></li> </ul>
<b>Ministry of Natural Resources and Environment</b>	<ul style="list-style-type: none"> <li>• <i>Has prime responsibility for planning the development of river basins, managing and exploiting natural resources related to channels and channel protection corridors, ensuring navigation safety, and protecting the environment on inland waterways.</i></li> </ul>
<b>Provincial Peoples' Committees</b>	<ul style="list-style-type: none"> <li>• <i>Organize and implement measures to protect inland waterway navigation infrastructure, fight encroachment and occupation of channel protection corridors, ensure inland waterway navigation order and safety in their localities.</i></li> <li>• <i>Organize salvage and settle consequences of accidents on inland waterways in their localities.</i></li> <li>• <i>Formulate and implement local plans for development of IWT.</i></li> <li>• <i>Organize the dissemination and popularization of, and education about, legislation on IWT, handle violations of legislation within their competence, establish inland waterway navigation order and safety in local waterways.</i></li> </ul>
<b>Inland Waterway Navigation Inspectorate</b>	<ul style="list-style-type: none"> <li>• <i>Monitors and supervises the observance of legal provisions on technical standards and management of inland waterway navigation infrastructure, inland waterway transport, vessels, crews, and steersmen.</i></li> </ul>

**The state establishes penalties and sanctions for legal violations.** Decree No. 132/2015 defines administrative violation and sets out the range of penalties (warning, fine, additional penalty) and measures to overcome adverse consequences for each kind of violation. The entities with power to administer violations include: (1) chairpersons of people's committees of all levels; (2) public security force (including River Police); (3) transport inspectors; (4) VIWA, (5) VIWA's port authorities; (6) the maritime port authority; (7) border guards; and (8) coastal guards.

**The 2014 legal amendments extended the application of legislation to the operation of vessels beyond the managed national and local waterways.** Many small vessels currently operate outside the confines of the announced inland channels or in waters not yet claimed by management authorities. Since 2014, these vessels have been required to comply with the law's provisions on vessels, crewmen, steersmen, navigation rules, vessel signals, commercial transport regulations, navigation accidents, search and rescue, salvage, and other issues. Provincial-level people's committees are responsible for organizing vessel warning signs outside managed and navigable channels.

## 3.7 Legal Provisions on the Financing Framework

The 2004 law (as amended in 2014) specifies the financial sources for inland waterway management. Decree No.51/2005, Prime Ministerial Decision 47/2015, and several Ministry of Finance circulars (Nos. 18/2016, 102/2016, 198/2016, and 248/2016), and Decree No. 45/2018 have further developed the sector funding framework. This is described in more detail in Section 5 below.

### 3.7.1 PPP Arrangements

**New PPP provisions have been introduced but their impact remains to be seen.** In 2015, GoV introduced Decrees 15 and 30 that provided a single legal framework for private investment in public infrastructure sectors. However, to date no projects have been procured under these decrees in any sector, including IWT.

GoV has now issued Decree 63/2018 as a replacement for the earlier Decree 15 and several other regulations and circulars. Decree 63 includes a number of changes,<sup>15</sup> including:

- Recognition that there could be various hybrid contractual arrangements in some combination of the PPP models detailed in the previous Decree 15, namely:
  - Build-Operate-Transfer (BOT)
  - Build-Transfer-Operate (BTO)
  - Build-Transfer (BT)
  - Build-Own-Operate (BOO)
  - Build-Transfer-Lease (BTL)
  - Build-Lease-Transfer (BLT)
  - Operation and Management (O&M)
- Simplification of procedures to implement PPP projects.
- Provision of more flexibility for GoV to finance PPP projects through such means as the right to operate construction works or provide services.
- An increase in the minimum equity requirement for private investors in PPP projects, intended to improve confidence in the financial standing of the private investors and the viability of these PPP projects.
- Stricter management of BT projects.
- New restrictions on private investors' ability to assign their rights and obligations in a PPP project contract to their lenders or other investors. Private investors are only allowed to transfer a PPP project once construction work is completed or at the commencement of operations.
- Requirements to publish more of the key details of PPP contracts.

Decree 63 addresses some of the issues that GoV and potential investors currently face in PPP projects. However, a number of significant issues affecting private investors remain unclear and unaddressed, such as the current complicated and lengthy procedures for appraisal and approval for PPP projects, and risk allocation between GoV and private investors.

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<sup>15</sup> KPMG Legal Update: New Decree 63/2018/ND-CP on Public Private Partnership (PPP). June 2018.

### 3.8 Assessment of Regulatory Framework

**Vietnam’s IWT legal framework is comprehensive, and its substantive regulatory provisions are generally appropriate for encouraging the safe and environmentally sound development of the industry.** The strategic aims of the framework recognize the range of public interests in the sector and are appropriately multi-faceted. These aims are clearly stated and reflect a broad policy agenda of developmental, economic, social, and environmental public interests.

The scope of the framework is very “wide” across both the range of IWT industry participants, and “deep” in describing the individual elements of each activity. While it sets out the responsibilities of the different institutions, it does not provide specific targets for individual institutions. This is sensible because specific performance targets should be determined as a matter of policy and circumstance, which can change year to year.

The regulations covering the technical, safety, and environmental standards of vessels, crews, navigation rules, and ports and landing stages are similar in scope and structure to those in most countries with developed IWT systems. The differences reasonably reflect Vietnam’s circumstances, concerning such issues as fleet size, industry structure, vessel classes, and waterway standards. The detailed content of technical regulations is not within the scope of this report, but the overall regulatory structure seems a reasonable balance between protecting public interests (in technical quality, safety, and environment) and allowing the IWT industry to operate and innovate. Consultations with industry stakeholders regarding the impact of technical regulations on business decisions about investment, vessel selection, crew sizes, and other issues did not reveal any perception of excessively onerous technical regulation. However, compliance and enforcement of existing regulations is inadequate, a point discussed later.

When applied in the transport industry, an economic regulatory framework typically has three major features: regulation of market entry; regulation of the volume or standard of services provided; and regulation of the prices that operators charge. In terms of this framework:

- Vietnam’s market entry regulation does not appear to create unwarranted or onerous restrictions on the number of operators. Entry regulations reasonably require legitimacy, competency, and safety. But any operator meeting the requirements may enter and compete in the industry which, as a result, has a large number and wide range of individual, corporate, and co-operative operators.
- The service regulation of IWT operations is based on regulating fair conduct in the market transactions between service providers and service users. It does not unduly prescribe or limit the specific services that operators provide.
- IWT Law and the law on pricing do not regulate fares and freight rates but allow operators to set these in accordance with their own costs, and competitive and market conditions. Tariffs for both goods and passenger services are therefore largely market-based.

In summary, industry participation, services, and prices are primarily regulated by competition in the market rather than by law or regulation. The evidence of growth and innovation suggest this approach has served Vietnam well.

**The report therefore finds that in regard to its regulatory purposes, the existing legal framework for the IWT is “fit for purpose.”** However, the hierarchical structure means the framework is complex and fragmented. The interconnected hierarchy of laws, decrees, circulars, and decisions inevitably creates voluminous material, overlaps, and repetitions. The “presentation” is therefore not “user-friendly” to

industry operators and potential investors. But the positive content of laws means it supports and is not a substantive impediment to a successful industry. The framework itself is implicit in Vietnam's system of government, not confined to the IWT sector. It is therefore not realistic to expect to alter the legal structures of a comprehensive socialist system in this one sub-sector, transport. The challenges and time involved in changing laws in Vietnam are well understood.

**The most practical way to meet the problem of complexity is to make the key elements of industry regulation accessible in more user-friendly ways.** At present, a particular stake-holder or investor would have to read all elements of the law to find the parts that apply specifically to it (for example, a barge operator or port operator) and understand how to comply with the law. For many small owner-operators, the framework is probably incomprehensible. To improve the enabling environment, the laws and regulations need interpretation into handbooks that industry members and investors could more easily comprehend. Indeed, one of the Minister of Transport's policy aims (Decision 4910/15) is to update and promulgate in more comprehensible form the published legal and regulatory documents. Section 6.2 of this report presents the Bank's suggestions in this regard.

**While the legal and regulatory framework may be comprehensive, there is a general lack of confidence in the level of regulatory compliance and enforcement.** From illegal sand mining to unauthorized landing stages, from unregistered vessels to illegal overloading, disposal of vessel waste, and reckless navigation, people in the IWT industry agree there is major non-compliance and a general laxity in enforcement. The report returns to this important issue in its later discussion on the division of regulatory compliance functions between VIWA (the port authorities) and the Ministry of Public Security (the River Police).





## 4.0 THE INSTITUTIONAL STRUCTURE

### 4.1 Overview of Structure

**Who does what in Vietnam’s IWT sector is generally clear and appropriate.** Roles and responsibilities are legally specified. The Bank team finds that most features of this overall structure are appropriate and in line with established international practices. Table 4 summarizes the institutional structure. Its main features are analyzed in the sections below, comparing them where relevant with arrangements in the three comparator regions, and drawing attention to places where the Bank team thinks that modifications should be considered. Most of these relate to the strengthening of VIWA itself.

### 4.2 Allocation of Roles between National and Provincial Governments

**The GoV determines transport policy and technical regulations for all of Vietnam’s waterways.** This umbrella responsibility is necessary for effective policy and regulation. Although most traffic moves on national waterways, many of the local waterways are important feeder routes, with vessels and traffic flowing freely between the national and local networks. Consistent policies and regulations ensure a “seamless” regulatory system, though not a seamless infrastructure system because technical standards differ between national and local waterways, as shown in Table 2.3.

**Putting only the most important waterways under management of the central government is a rational separation and common international practice.** In China, the most important waterways, the Yangtze and the Pearl Rivers, are overseen by special administrations of the central government’s Ministry of Transport, the remainder by provincial governments. In the United States, the federal government has prime responsibility for the 18,000 km of commercially active waterways,

#### Findings of Section 4

- The allocation of administrative roles between GoV and provincial governments is rational and practical.
- In recent years, positive and complementary roles have emerged between the public sector (sector governance and infrastructure provision) and the private sector (transport service enterprises).
- A provincial landlord port model might offer a more realistic basis for long-term development of some of the larger and more important IWT ports.
- MoT’s use of a specialist departmental agency (VIWA) to administer and implement policies is sound and supported by international experience.
- VIWA now contracts out the maintenance and repair of waterways by tender, a positive reform that can be further improved.
- The division of regulatory compliance roles between VIWA and the River Police may be suboptimal.
- VIWA has two very different roles: one as waterways infrastructure manager and one as the waterways industry regulator.
- Most of VIWA’s staff (nearly 80 percent of non-vocational college staff) is employed in regulatory activities. There is a case for strengthening infrastructure management resources.
- There is a need to make VIWA’s regulatory functions more effective, given the general laxity of regulatory enforcement in the industry.
- The VIWA organization could be streamlined to better reflect its main “deliverables”—infrastructure management and industry regulation.
- VIWA should consider strengthening its market monitoring and analysis capability as preparation for a more proactive role in industry promotion.
- Given the much-expanded role of private operators in the industry, MoT should consider creating an independent and expert inland waterways users advisory board to advise the minister and VIWA.
- Modernization of VIWA’s management and business systems lags international practices but could deliver big benefits both for VIWA and for the IWT industry.
- VIWA has successfully implemented several reforms, but its performance is not very transparent.
- Strengthening VIWA and its functional mandate and processes would improve the enabling environment for industry development.

exercised through the U.S. Army Corps of Engineers (USACE), part of the Department of Defense. Other sub-national river commissions and entities manage other local rivers, typically those used mainly for tourism and recreation.

**Table 4.1: Main Functional Responsibilities for National Waterways in Vietnam**

<b>RESPONSIBILITIES</b>	<b>INSTITUTIONS</b>
Overall national transport strategies policies and legislation	<i>Ministry of Transport (MoT)</i>
Administration of waterways	<i>National waterways administered by GoV, local waterways by provincial and centrally-affiliated city governments</i>
IWT sector development planning and investment of national waterways	<i>MoT exercising formal decision power based on submissions by VIWA</i>
Management of the national waterway Infrastructure network	<i>VIWA, which also handles oversight of and liaison with provincial governments and cities on local waterways</i>
Management of the provincial waterway infrastructure network	<i>Provincial governments, according to standards set by VIWA</i>
Maintenance and repair of the national waterway infrastructure network	<i>Private companies, under contracts tendered by VIWA</i>
Regulation of inland ports and navigation of inland waterways	<i>VIWA, according to regulatory policies established by MoT</i>
Vessel technical survey	<i>The Vietnam Register, a separate executive agency of MoT whose scope includes vessels, vehicles, and railway rolling stock, with vessel registration carried out by VIWA and provincial transport departments</i>
Traffic management and regulatory compliance on waterways	<i>The River Police, part of the Traffic Police General Department (Ministry of Public Security)</i>
Regulatory compliance at inland ports	<i>VIWA, through four regional port authorities which are administrative divisions of VIWA</i>
Cargo vessel operations for commercial “hire and reward”	<i>Private barging companies, co-operatives, and individual owner-operators</i>
Cargo transport operations by “own-account” industrial companies	<i>Mixture of state-owned enterprises and private companies operating “own-account” barges</i>
Passenger ferries and other passenger services, such as tourist boats	<i>Private shipping companies, co-operatives, and individual owner-operators</i>
IWT ports infrastructure and terminal operations	<i>Private port companies, typically for both handling operations and land and infrastructure management under long-term right-of-use</i>

IWT landing stages	<i>Private vessel and landing-stage operators, including many small barge operators and farmers</i>
Major IWT-connected seaports	<i>Typical state-owned port operating companies with a mix of state-owned and private terminal companies</i>

In the European Union, the division of responsibilities is more complex.<sup>16</sup> The European Commission establishes EU-wide policy directives and regulations. Navigation on major international rivers such as the Rhine and Danube is regulated by international river commissions established by long-standing treaties.<sup>17</sup> National governments are responsible for the physical management and operation of the main IWT infrastructure within their territories. The European Committee for drawing up Standards in the field of Inland Navigation (CESNI) was set up in 2015 to harmonize European legislation on this type of navigation.<sup>18</sup>

**Vietnam’s local waterways are overseen by provincial governments,<sup>19</sup> which can affect IWT development in other ways.** Provincial governments make decisions on resources extraction such as issuing dredging licenses for sand and gravel. They influence land availability for port development and provide (or decline to provide) “last-mile” connecting roads to ports and landing-stages. IWT laws require central and provincial governments to cooperate in pursuit of national policy goals, though in practice coordination is not perfect. This has led to inadequate compliance with and enforcement of navigation policies and regulations. A recent evaluation of sector policies set out in Decision 47 found that some local authorities had not addressed the mandated national IWT objectives.

**Governments of provinces and cities located along national waterways could do more to help in ports development.** Local governments tend to fall short in exemption and reduction of land rent and water surface rent for construction of inland ports, among other matters. Having little direct economic interest in ports, provincial governments don’t always give sufficient support in making port investments, constructing connecting roads, or providing land with good access to waterways. Although a division of responsibilities between national and provincial waterways is appropriate, policy conflicts and implementation failings arise.

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<sup>16</sup> The EU itself describes its current institutional framework for IWT as having a “patchwork of resources and efforts, overlapping regulatory activities, frictions, and duplication of work, insufficient strategic management, [and] low political impact.” P. Amos et al., 2009. “Sustainable Development of Inland Waterway Transport in China.” Washington, DC: World Bank.

<sup>17</sup> The two most important are the 1868 Mannheim Convention on the Rhine River and its tributaries, and the 1948 Belgrade Convention on the Danube River and its tributaries.

<sup>18</sup> The United Nations Economic Commission for Europe (UNECE) has a number of programs and technical committees supporting safe, clean, and competitive IWT. See [www.unece.org/trans/main/sc3/sc3.html](http://www.unece.org/trans/main/sc3/sc3.html)

<sup>19</sup> Also included are central government-affiliated city governments in Hanoi, HCMC, Can Tho, Da Nang, and Haiphong.

### 4.3 Roles of Public and Private Sectors

**Over recent years, Vietnam's IWT sector has evolved towards a more effective division of roles between the public and private sectors.** Figure 4.1 summarizes the current roles. The public sector role has consolidated into three main areas: (1) the public governance responsibilities of the legal framework, public policy, regulation, and enforcement, (2) provision of IWT network infrastructure, and (3) technical training and accreditation. Of these, the public governance functions can only be exercised by the public sector. Internationally, network infrastructure provision and maintenance is also typically a state responsibility. Virtually all river routes and most canals of the world are publicly owned and managed. Private ownership or grant of concession rights over river shipping channels does happen but it is extremely rare, because of the natural risks, the practical difficulties of recovering costs, the difficulty of managing competing uses of river resources such as drinking water, irrigation, and hydropower, and because of a common public viewpoint that rivers are a community asset, part of the public domain.<sup>20</sup> Technical training and captain/crew accreditation, meanwhile, is in some countries undertaken by companies and private educational institutions.

**In a great change from 5-10 years ago, nearly all of Vietnam's IWT shipping and IWT-linked logistics services are now operated by private companies in a competitive market.** This change is positive and consistent with international approaches. In the United States and European Union, the private sector owns and operates virtually all commercial IWT goods services.<sup>21</sup> In China, the private sector has a strong showing in IWT, operating a majority of the vessels, though large provincial and state-owned shipping companies with bigger vessels still operate on the major waterways. As in Vietnam, the private freight barging sector of the EU and China is heavily populated by independent vessel owner-operators, often families, though larger corporate operators take part in transport of containers, liquid chemicals, petroleum and oil products, and push convoys carrying coal and iron ore. In Vietnam, many small operators are part of organized groups such as co-operatives.

By contrast, the United States' commercial fleet is dominated by bigger companies that have the resources and capability to organize and operate multiple-vessel "tows" in which typically 12-24 barges are lashed together and pushed by a tug. While some of Vietnam's state-owned industries still use their own barges, they have a choice of alternative suppliers and many are choosing to contract out their shipping requirements, either to supplement or replace their own vessels.

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<sup>20</sup> By contrast, private participation in new canal building and capital plants such as combined hydropower plants/ship locks is more prevalent.

<sup>21</sup> In the European Union, many passenger ferries are operated by publicly-owned enterprises, which are sometimes part of larger public transport companies.

**Figure 4.1: Current Roles of the Public and Private Sectors in Vietnam’s IWT Industry.**

Public sector	Private sector
<ul style="list-style-type: none"> <li>• Sector strategy policies</li> <li>• Safety, environmental, and economic regulation, including vessel registration</li> <li>• Enforcement and compliance</li> <li>• Waterway network ownership and management                             <ul style="list-style-type: none"> <li>• Technical training and certification</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Shipbuilding</li> <li>• Commercial goods shipping and logistics operations                             <ul style="list-style-type: none"> <li>• Commercial passenger transport</li> </ul> </li> <li>• Inland port and landing stages, infrastructure and operations</li> <li>• Logistics and storage services</li> <li>• Waterway construction and maintenance contracts</li> </ul>

**Almost all of Vietnam’s inland ports are now privately-owned and operated, including for infrastructure management and terminal services such as loading and unloading, and warehousing—but concerns remain.** Many of the new private port operators have not invested sufficiently in mechanization and modernization of assets. Some analysts believe this is a problem mainly among smaller common-user ports, which serve a range of operators and do not have facilities dedicated to one company’s use. In contrast, dedicated ports, which handle their own business, are more willing to pay for the necessary improvements. Participation of the private sector at inland ports is a positive. But international experience suggests that local governments still have an important role to play in development of basic port infrastructure and “last-mile” connectivity to encourage and complement private investment in these facilities.

**Internationally, local governments play a greater role in the administration of common-user ports than they seem to do in Vietnam.** The European Union has more than 300 registered ports.<sup>22</sup> The main common-user ports are run by companies that are typically owned either by national, regional, city, or local governments, or a combination of them. For example, Europe’s busiest inland port, Duisburg, is owned jointly by the German Federal Government, the state government of North Rhine Westphalia, and the City of Duisburg. The Port of Duesseldorf is jointly owned by two municipalities. Most of the larger ports are “landlord ports” in which the public port company owns and develops the port sub-structure and common-user areas, while cargo-handling areas and operations are leased to private enterprises.<sup>23</sup> (In smaller ports, the port company itself usually carries out a wider range of the cargo-handling functions.) The United States’ inland waterways have more than 100 regular ports, many owned by city or county port companies, port authorities, or port commissions which act as landlords and lease out areas for private terminal operations. China’s port reforms since the 1980s have brought about a major decentralization and commercialization of inland ports, which now number more than 1,300 (about 760 of them on the Yangtze River). There remains a high degree of provincial and city ownership of common user ports but many of China’s larger inland ports have

<sup>22</sup> About 150 of the ports, nearly half the total, are located on the Rhine River and its tributaries.

<sup>23</sup> The Port of Duisburg also provides logistical services, partly to support new clients who do not yet have the capacity to set up their own facilities.

leased areas to private operators. However, many of China's inland ports are, like Vietnam's, very small and have limited mechanization.

**The landlord port model might be the best option for long-term development of some of Vietnam's larger and more important IWT ports.** As observed in Section 4.2, because the entirety (both sub-structure and terminals) of Vietnam's inland ports has been equitized, provincial governments currently have little ownership interest in ports, and don't always support port development. A model in which provinces owned and invested in long-term sub-structure and connecting roads alongside a private owner's investment in operating assets such as cranes and warehouses might result in more sustainable funding for port modernization. By giving provinces a financial interest in ports, it might also encourage them to make available better locations for industrial development. This model is discussed further in Section 7.

#### 4.4 The Roles of MoT and VIWA

**Vietnam has adopted an appropriate separation of two crucial responsibilities of MoT: the setting of IWT policy and its day-to-day implementation by VIWA.** VIWA's statutory role is "to advise and assist the Minister of Transport in performing the State management and implementation of Inland Waterway Transport Law nationwide."<sup>24</sup> In governance terminology, VIWA is therefore a "departmental agency" or "executive agency" of MoT. Internationally, such agencies are increasingly evident in transport sector governance. They are a separately "branded" arm of a government ministry, formally accountable to the minister, but often operating day-to-day at arm's length from the supervising ministry.

**Other countries maintain "separated" structures in the IWT sector, partly because of the specialized nature of the policy implementation involved.** For example, in China, the Ministry of Transport determines IWT strategy and policy, but devolves management of these waterways to its Yangtze and Pearl River administrations. In the United States, the Department of Transportation's Office of Transportation Policy is responsible for formulating overall surface transportation policy. The U.S. Army Corps of Engineers manages the main commercial network as a separate agency<sup>25</sup> while the U.S. Coast Guard (a part of the Department of Homeland Security) implements policies regarding waterway safety, security, and search and rescue.<sup>26</sup> In the European Union, the European Commission sets umbrella IWT policy through directives and regulations, but specialist waterway agencies manage the infrastructure within individual countries. For example, in Germany, the federal government devises the country's IWT policy (in accordance with EU directives and regulations) but its executive agency is

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<sup>24</sup> Decision No. 39/2018 of the Minister of Transport sets out VIWA's functions, responsibilities, powers, and organization structure in detail. This section focuses on the salient features as they relate to the purposes of the World Bank's report.

<sup>25</sup> The Corps of Engineers is not an executive agency of the U.S. Department of Transportation but it manages U.S. waterways. This is due to historical reasons. The U.S. Army began overseeing the country's waterways in 1824, when there was no other institution available to do it, and has continued the job

<sup>26</sup> The U.S. Coast Guard covers both maritime and inland shipping and has 11 formal missions: port and waterway security; drug interdiction; aids to navigation; search and rescue; living marine resources; marine safety; defense readiness; migrant interdiction; marine environmental protection; ice operations; and law enforcement.



the Waterways and Shipping Administration (WSV), which manages traffic and facilities on federal waterways and ensures safety and environmental compliance through WSV's shipping police. However, there are many differences among EU countries. In major seaports that have IWT connections, some of these functions are typically carried out by the port entity.

**The world has many examples of government transport agencies becoming public corporatized entities, constituted according to company law.** However, most are in transport sub-sectors that have some of their own commercial funding sources. One interesting example is ViaDonau in Austria which, like VIWA, is an IWT infrastructure manager but is more active as an industry promoter.<sup>27</sup> This kind of corporatization of government agencies seeks the more focused business management that is typically found in companies, together with greater flexibility in staffing and budget and resource management. However, corporatization of government's infrastructure management functions in IWT is exceptional, even in Europe and is not found at all in China and the United States. While the Bank team supports VIWA taking on a greater role in promoting the industry (see Section 6), it does not see corporatization of VIWA as either necessary or practical.

#### **4.5 Contracting out of Maintenance Work**

**Following the reforms of 2014, VIWA now contracts out the maintenance and repair of waterways by tender among competing suppliers.** This approach is sound but could be further improved. Under the 2014 restructuring plan (Ministry of Transport Decision 4910/14), VIWA's maintenance units were separated from VIWA and equitized. This was to improve the maintenance of waterways by introducing competition between maintenance companies, create incentives for greater efficiency, encourage more rigorous specification of maintenance needs and budgeting, and introduce more rigor in the supervision of works. Routine maintenance contracts of channels and navigation aids are administered by VIWA-North and VIWA-South, two regional divisions of VIWA. Larger dredging, repair, and reconstruction contracts are administered by VIWA's Infrastructure Department. Two main contract types are used: lump-sum contracts for smaller jobs and fixed-rate contracts for larger ones.

**There is scope for improving the waterway maintenance contracting system.** There is now considerable competition for smaller contracts but the bidders for larger contracts are typically the former VIWA section companies. While there are inherent short-term advantages in using the "legacy" entities (such qualities as skills and established depots), encouraging the evolution of a more diverse base of qualified contractors would be beneficial. The fixed-rate contracts that VIWA uses in larger jobs compensate contractors for the volume of work performed, which creates an incentive to expand that volume and not to perform it most efficiently. VIWA is working towards piloting a new form of performance-based maintenance contract (PBC) in 2019, a very positive step to rectify the limitations of input-based contracts.

**Vietnam's current budgeting framework makes it hard for VIWA to sign maintenance contracts that run for more than one year.** This is likely to discourage diversification of suppliers and complicate the

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<sup>27</sup> For a detailed description of the company's task, see [www.viadonau.org/en/home/](http://www.viadonau.org/en/home/).



migration from fixed-rate contracts to PBCs. The Bank team strongly supports the move towards multi-year PBCs and addresses issues and potential solutions in Section 5.

#### 4.6 Allocation of Technical Regulation Functions<sup>28</sup>

**The responsibilities for formulating, administering, and enforcing technical regulations is spread among three main institutions—the Vietnam Register, VIWA, and the River Police.** Figure 4.2 summarizes the main divisions of responsibility. The Vietnam Register, an agency of MoT, has the lead responsibility for regulating vessel standards. Established in 1964, it is a multi-modal body handling statutory verification and certification of the safety, quality, and environment protection of IWT vessels, sea-going vessels, road and railway vehicles, and offshore installations. In the IWT sector it performs its functions through a national network of 26 vessel survey, registration, and certification branch offices. VIWA, meanwhile, is responsible for regulating the standards of IWT infrastructure (waterways and ports), for vessel captain and crew competence, and for promulgating the navigation rules that govern vessel operations. VIWA checks vessel and crew paperwork and looks for legal violations only when a vessel enters a port through its four (soon to be five) regional port authorities.<sup>29</sup> The River Police is part of the Traffic Police Department of the Ministry of Public Security. Under Circular No. 62/2011/TT-BCA of 2011, it is responsible for patrolling and controlling waterways, ensuring traffic order and safety, checking vessel and crew compliance, handling violations of navigation regulations, investigating waterways traffic accidents, and co-operating with other police units in preventing and fighting other crimes committed on inland waterways.

**The division of regulatory responsibilities between the Vietnam Register and VIWA has a logical basis.** The Vietnam Register is a multi-modal agency which is likely to yield administrative economies. It is responsible for both inland and sea-going vessel regulation and is a repository of specialist skills in naval architecture and marine engineering which are common to both kinds of vessels. In addition, many of Vietnam’s waterways are busy rivers where there is a mixture of river vessels, sea-going vessels, and sea-river vessels. The regulations for each need to be consistent. Clearly, there are regulatory issues on which VIWA and the Vietnam Register need to consult and co-ordinate, but both entities are agencies of MoT, so the ministry is in a position to ensure the necessary cooperation.

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<sup>28</sup> Technical regulation refers primarily to standards and regulations relating to safety and environment.

<sup>29</sup> In Vietnam, the term “port authorities” does not denote entities that manage ports, but instead ones that administer and enforce regulations regarding entry and exit of vessels and compliance with relevant safety and environmental regulations with respect to loading and unloading.

**Figure 4.2: Technical Regulatory Functions: Allocation of Responsibilities**

Vietnam Register (an agency of MoT)	VIWA (an agency of MoT)	Vietnam River Police (a division of the Traffic Police of the Ministry of Public Security)
<ul style="list-style-type: none"> <li>• IWT vessels (passenger and freight) classification and standards, safety, and environmental regulations</li> <li>• Vessel survey and certification</li> <li>• Verification of design during new construction, repair, and conversion of vessels</li> <li>• No direct role in enforcement and compliance once properly registered vessels are in operation but participation in investigation of vessel accidents and recommending of preventative measures</li> </ul>	<ul style="list-style-type: none"> <li>• IWT waterways and ports infrastructure classification, standards, safety, and environmental regulations</li> <li>• Inspection of infrastructure and maintenance works</li> <li>• Vessel registration</li> <li>• Crew regulations and accreditation</li> <li>• Navigation rules and regulations</li> <li>• Enforcement and compliance of vessel, crew, and port regulations by VIWA's port authority administrations, (enforcement only at ports, not on waterways)</li> <li>• Waterways traffic management</li> <li>• Emergency response in vicinity of ports</li> </ul>	<ul style="list-style-type: none"> <li>• Enforcement of vessel, crew, and navigation regulations (enforcement only on waterways, not in ports)</li> <li>• Emergency response on waterways (in conjunction with provincial police)</li> <li>• Lead role in investigation of inland waterway accidents</li> <li>• General law enforcement functions</li> </ul>

**Dividing compliance and enforcement responsibilities between VIWA and the River Police is less persuasive.** VIWA enforces vessel, crew, and port regulations through its port authorities, which control entry and exit of vessels at ports and inspection of loading and unloading operations. But VIWA does not patrol its waterway network other than to inspect infrastructure. It has no mandate to manage traffic movement or check operators' compliance with navigation safety rules and other legal requirements when vessels are using the waterways.

**Waterways policing arrangements vary internationally, but Vietnam's division of IWT policing responsibilities differs from some arrangements in comparator regions.** In China, the main river administrations (Yangtze and Pearl River) are responsible on their waterways for policing the navigation regulations established by the Maritime Safety Administration. The European Union has many different arrangements but in Germany (which has by far the greatest length of European commercial waterways) the Waterways and Shipping Administration (WSV) is responsible for both waterway policing and traffic management. WSV's 30 regional traffic control centers function as bases for shipping police who patrol waterways, enforce waterway regulations, and intervene in case of accidents and environmental pollution. In the United States, the U.S. Coast Guard (part of the Department of Homeland Security) is responsible for policing vessel, crew, and waterway safety regulations, while the Department of Defense's Army Corps of Engineers is the infrastructure manager of the main commercial waterways. This separation of waterways policing from waterways management also exists in Vietnam.

**Section 6 suggests that the GoV consider unifying in MoT the responsibilities for traffic management and policing of national waterways, with administration by VIWA.** Since this would involve major changes in law, it could be only a long-term option. In the short term, the problems of regulatory compliance suggest a need for better cooperation between the Vietnam Register, VIWA, and River Police on these matters.

## **4.7 VIWA's Role and Structure**

**The role and effectiveness of VIWA is crucial to the future development of the IWT industry.** While MoT itself holds the formal approval powers, VIWA is the key planning and implementing entity with whom stakeholders need to deal. This section analyses several features of VIWA's role and organization. It identifies areas where changes might improve VIWA's effectiveness.

### **4.7.1 VIWA's Organization and Management Structure**

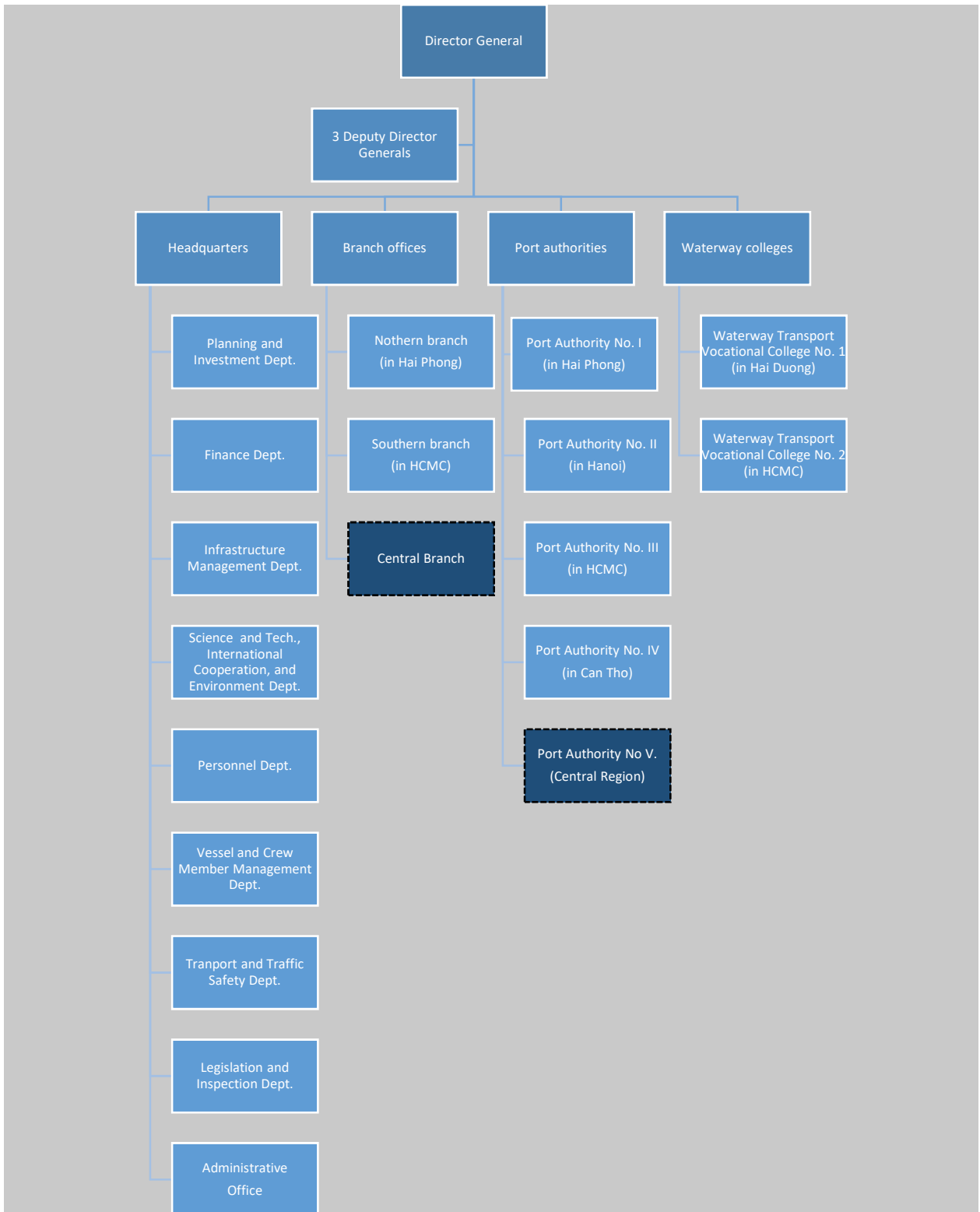
**VIWA currently employs 975 people within an organization structure based partly on function and partly on location.** Figure 4.3 summarizes the current structure. The dotted lines indicate planned additions to the structure: there is to be a third regional office and a fifth port authority, both serving the Central Region of Vietnam, and giving more representation and recognition to that region. Table 4.1 shows the number of employees in each section: 80 at headquarters, 104 in branch offices, 559 in port authorities, and 232 in the agency's two colleges.

**Figure 4.3: The Three Main Groups of Activities of VIWA<sup>30</sup>**

Infrastructure manager activities	Industry regulator activities	Joint and corporate activities (which support the other two)
<ul style="list-style-type: none"> <li>•Classification, administration, and maintenance of IWT infrastructure</li> <li>•Setting of technical standards and norms</li> <li>•Formulation of sector masterplans, development plans, and projects</li> <li>•Implementation of approved development plans</li> <li>•Implementation of approved waterway safety measures</li> <li>•Implementation of approved environmental plans and regulations and environmental impact assessments of projects</li> <li>•Supervision of activities of authorized investors in IWT construction projects</li> <li>•Coordination with local authorities and other agencies and guidance to local agencies on management and maintenance of local waterways</li> <li>•Notifications of waterway and port closures and re-openings</li> <li>•Prevention measures and response to floods and storms</li> <li>•Assembly of national waterway and port status statistics, market research</li> <li>•Encouragement of the development of goods and passenger traffic by IWT</li> <li>•Dissemination of and education on IWT infrastructure development plans, navigation rules</li> </ul>	<ul style="list-style-type: none"> <li>•Drafting of legal and regulatory documents on IWT and issuing of approved documents</li> <li>•Formulation of safety and environmental regulations including those related to energy efficiency and climate change</li> <li>•Inspection of infrastructure and maintenance work</li> <li>•Issuance of operating licenses to ports and landing stages</li> <li>•Regulation of registration and management of inland waterway vessels</li> <li>•Regulation of minimum crew sizes, professional conditions and standards, and training and certification requirements for IWT operating staff (captains, helmsmen, crew)</li> <li>•Drafting of vessel navigation rules and regulations</li> <li>•Regulation of customer protection for passenger and freight customers (waybills, ticketing )</li> <li>•Supervision of access to and from ports and enforcement of vessel, crew, and port regulations and loading/unloading activities at ports</li> <li>•Investigation of work-related accidents</li> <li>•Contribution to vessel accidents investigations led by River Police</li> <li>•Dissemination of and education on IWT legislation and regulations</li> </ul>	<ul style="list-style-type: none"> <li>•Administration of international cooperation programs and treaties</li> <li>•Research and development in IWT management and IT technologies and use of applications</li> <li>•Operation of database of information for state management and for individuals participating in IWT</li> <li>•Encouragement of associations and non-governmental organizations to participate in IWT</li> <li>•Planning and implementation of administrative reform programs</li> <li>•Inspection of facilities, settlement of complaints, and combat of corruption and waste in IWT administration</li> <li>•Management of VIWA's human resources</li> <li>•Management of VIWA's finance , accounting, and budget</li> <li>•Liaison with other government agencies as required</li> <li>•Oversight with other ministries and local government provision of two IWT vocational training and accreditation colleges</li> <li>•</li> </ul>

<sup>30</sup> Condensed from Decision No. 39/2018 of the Minister of Transport.

**Figure 4.4. VIWA Organization Chart (August 2018)**



**This organization structure reflects both the work content of individual departments and the location (or regional scope) of their activities.**

- The headquarters departments perform functions that are generally self-explanatory from their titles: Planning and Investment; Finance and Accounting; Infrastructure; Science Technology, International Cooperation, and Environment; Personnel; Vessel and Crew Member Management; Transport and Traffic Safety; Legal and Inspection; and Administrative Office of the Director General.
- The two (soon to be three) branch offices exercise VIWA’s powers and responsibilities in their regions on a day-to-day basis. They plan and administer tenders for routine maintenance and submit these to VIWA headquarters for approval; manage contracts; and pay contractors by authorization of VIWA headquarters. Internal branch management structures are microcosms of the headquarters structure itself. For example, each branch office has sections titled Organization, Administration and Training; Finance and Accounting; Legal; Infrastructure Management; Planning; and Inspection and safety teams.
- The four (soon to be five) port authorities manage the state functions at inland waterway ports and landing stages on national and special waterways in accordance with relevant legal provisions on safety and environment. They also collect port usage charges, as described further in Section 5.
- The two inland waterway colleges are located within the VIWA structure but are different from the other branches in that MoT shares responsibility for their oversight with other agencies. Each college organizes technical training of personnel working in the industry. Waterway Technical College 1 is managed by MoT, the Ministry of Labor, Invalids, and Social Affairs (MoLISA), and the People’s Committee of Ho Chi Minh City. Waterway Technical College 2 is managed by MOT, MoLISA, and the People’s Committee of Hai Duong Province.

**Table 4.1: Distribution of Employment in VIWA**

Unit	No. of staff	(%)	Unit	No. of staff	(%)
<b>Headquarters</b>					
Director general (DG) and 3 deputy DGs	4		<b>Port Authorities</b>		
Administrative Office	23		Port Authority No. I	118	
Finance Department	6		Port Authority No. II	158	
Planning-Investment Department	9		Port Authority No. III	132	
Personnel Department	3		Port Authority No. IV	151	
Infrastructure Management Department	11		Sub-total port authorities	559	57%
Legislation and Inspection Department	9		<b>Colleges</b>		
Science-Technology, International Cooperation, and Environment Department	6		Waterway Technical College 1	117	
Transport and Traffic Safety Department	5		Waterway Technical College 2	115	
Vessel and Crew Member Management Department	4		Sub-total colleges	232	24%
Sub-total HQ	80	8%			

<i>Branch offices</i>			<b>Agency total</b>	<b>975</b>	<b>100%</b>
VIWA-N	62				
VIWA-S	42				
<b>Sub-total branch Offices</b>	<b>104</b>	<b>11%</b>			

Source: VIWA.

#### 4.7.2 VIWA's Main Sector Governance Functions

**VIWA has two distinct public governance functions: it is an infrastructure manager and it is an industry regulator.** Figure 4.3 classifies the legally mandated activities of VIWA into these two core functions, plus a third set of joint and corporate activities which support or complement the two core functions. This tripartite grouping is not an official classification (MOT Decision 39/2018, which defines VIWA responsibilities, does not use it). However, it is a useful division to analyze ways of strengthening VIWA and improving its effectiveness.

**It is striking that the great majority of VIWA's staff work in the regulatory stream of activities while relatively few take part in management of waterways infrastructure.** It is not possible to allocate every employee to either infrastructure management or industry regulation, but some simplifying assumptions can reasonably be made.<sup>31</sup> The staffing pattern suggests that nearly 600 people (80 percent of non-college staff) work in the regulatory stream of activities. Just over 100 people (about 14 percent of non-college staff) work in waterway infrastructure management, and about 42 people (6 percent of the non-college staff) work in joint and corporate administration.

**This allocation of resources seems unbalanced and suggests a case for strengthening the infrastructure management activity.** For each VIWA employee involved in managing and improving the waterway infrastructure network, there are six regulating at ports. Only slightly more than 100 people are managing a national waterway network of more 7,000 km. Whether in terms of network length or traffic levels, this is a very small fraction of the number who are likely to be involved in planning, delivery, and management of Vietnam's road or rail networks.

**There is also a need to make VIWA's regulatory functions more effective.** The general laxity of regulatory compliance and enforcement in the industry that was mentioned earlier suggests that MoT and VIWA should take a close look at ways they might broaden and make more effective VIWA's role in industry regulation. As noted, nearly all of VIWA's regulatory personnel are allocated to port authorities, where they are confined to checking shipping documents and monitoring port-side activity. Introduction of modern information and payments technology could make the regulatory function of VIWA's port authorities less people-intensive. At the same time VIWA should explore ways to attack regulatory compliance issues that fall outside current port authority functions. This proposal is discussed further in Section 6.

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<sup>31</sup> Headquarters staff: 20 attributable to infrastructure management; 19 to industry regulation; and 43 shared overheads. Branch offices: 80 percent attributable to infrastructure management and 20 percent to industry regulation. Port Authorities: 100 percent attributable to industry regulation. Colleges: separately run and jointly supervised by other organizations, people at these institutions are not allocated directly to either of the two core functions.

**There is a strong case for moving towards a VIWA organization structure that sharpens its division between infrastructure management and regulatory functions.** This might better focus responsibility and accountability of specific VIWA managers and officials in the two major functions. It would also help remove a potential internal conflict of interest in infrastructure regulation: at present, VIWA in effect regulates its own infrastructure management. A clearer internal division between infrastructure management and regulation would help ensure that VIWA's infrastructure managers would receive the same level of regulatory oversight as any other participant in the industry. The concept of a more streamlined organizational structure is developed further in Section 6.

#### **4.7.3 An Institutional Voice for Private Operators**

**While the structure of the industry has changed, the greatly expanded private sector still has little formal role in its governance.** The basic structure of governance was created by the 2004 Inland Waterways Law at a time when state-owned entities were much more heavily involved in the sector's shipping and ports. Today, the private sector dominates both shipping and port operations. The private sector is therefore critical to whether state policies for sector development succeed. But though vessel and port operators have formed associations to represent their members, there is no formal mechanism for giving operators a voice in governance of the sector.

**Gaining outside expertise in shipping and port operations, goods handling and logistics, and multi-modal supply chains would help VIWA do its job better.** The agency is unlikely ever to attract and retain this range of expertise on a permanent basis. It is mainly the commercial industry that can provide it. MoT could therefore help overcome deficits in both sector governance and expertise by creating an independent and expert inland waterways users advisory board to advise the minister and VIWA on emerging issues, strategic directions, and sector plans in waterways development. Such a mechanism would need to be designed specifically for Vietnam's legal structure and circumstances. But, as an example, the United States has an Inland Waters User Board that gives operators a formal voice in decisions.<sup>32</sup> This proposal is developed in more detail in Section 6.

#### **4.7.4 Technology and Business Systems**

**Modernization of VIWA's management and business systems lags international practices but could deliver big benefits both for VIWA and the IWT industry.** VIWA is striving to improve its use of modern technologies and practices in waterway management and has some impressive capabilities in data capture and display. But it still has a long way to go to match international best practices, having neither an asset management system (AMS) nor river information services (RIS). Chapter 6 provides recommendations for technology and business systems upgrades that would support infrastructure management and regulatory functions.

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<sup>32</sup> The United States' Inland Waterways Users Board is an industry advisory committee established by federal law. The 11-member body has shipper and carrier members from companies of different sizes and specializing in transport of different commodities. The board makes recommendations to Congress on priorities and spending from the Inland Waterways Trust Fund for construction and rehabilitation projects. Its meetings are open to all stakeholders and the public.



#### 4.7.5 Industry Promotional Role

**Although VIWA's two main functions are as infrastructure manager and industry regulator, there is a strong case for it to develop a third role as industry promoter.** The IWT industry is geographically dispersed, industrially fragmented, and does not have high public visibility. VIWA is the only public institution in a position to act as a "champion" of the sector. The minister of transport's Decision No. 39/QD-BGTVT of January 2018 provides the legal and administrative basis for VIWA to take on this role. Article 4 requires VIWA to "communicate, propagate, popularize, and educate about legal documents of inland waterway transport." Article 9(f) requires VIWA to "create statistics, [and] research and forecast inland waterway market, development of goods flow, passenger volume and inland waterway routes nationwide." At present, VIWA lacks the resources to perform this role.

**Market analysis capability and market understanding are not only central to promoting the industry but to efficient infrastructure management and effective industry regulation.** VIWA is required to deliver a lot on a small budget and has always had to prioritize its activities and expenditures. The legal framework provides, in the Inland Waterways Law as amended in 2014, high-level policy guidance on development priorities: (1) key inland waterway navigation routes, (2) key economic regions, and (3) deep-lying and remote areas where IWT has comparative advantages over other forms of transport. But applying this guidance requires not only engineering data but relevant market information. Market analysis and forecasting are currently carried out only periodically during masterplan updating (typically by VIWA's consultants). But that is no substitute for VIWA having close day-to-day links to customers, knowledge of markets, and competence in analyzing them. In the same way, market understanding is crucial to assessing the impact of VIWA's existing and planned regulatory activities on waterway users and the public.

**Companies that do not yet use waterways for transport should be captured in market appraisal activities.** In due course VIWA could anticipate moving from market analysis to a more proactive market development and advisory role. Industries and shipping companies thinking of investing in modern ports and vessels need confidence that waterway channels capable of handling large modern vessels safely will not only be created but properly maintained. They need to be sure there will be close to year-round reliability of water levels and that local authorities will build good road connections between industrial zones and loading points. Section 6 recommends strengthening VIWA's market promotional and IWT facilitation capabilities, but in a gradual way that acknowledges that resources are already constrained as it fulfils its core function of infrastructure management.

#### 4.7.6 VIWA Performance Measures

**Departmental agencies such as VIWA perform most effectively when their objectives are clear, measurable, and within their control.** The IWT sector has no shortage of objectives, which are laid out in many different parts of the legal framework. However, most are not specific targets but general policy objectives. Those that are quantified (such as national modal share targets and fleet composition targets) depend on many factors and stakeholders outside the control of VIWA alone, so are not suitable as VIWA-specific performance indicators. Section 6 suggests the adoption of more-focused VIWA-specific performance indicators both for its infrastructure management and regulatory activities.

#### 4.7.7 VIWA Transparency of Performance

**IWT trends have moved in a positive direction over the last few years and VIWA has successfully implemented several reforms and programs, but this success remains obscure to the outside world.**

VIWA has a useful website which makes available many key laws and planning documents and publicizes events and developments. However, the agency does not issue an annual report and financial statement, other than a short summary on its notice boards. Greater public transparency of the activities of the IWT sector could raise the profile of the sector as part of efforts to draw more traffic to waterways. It would enable VIWA to showcase its activities and targets and be held accountable for its performance. MoT could consider directing VIWA to produce and promulgate an annual report and accounts. This proposal is elaborated in Section 6.

#### **4.8 Intermodal Connectivity and the Role of MoT**

**Implementing IWT policies effectively depends not only on VIWA's own actions but the active engagement of MoT.** VIWA is a specialist single-mode agency. Yet some of the challenges to industry development occur outside its mandate. In these areas, MoT is the legally empowered institution to address the wider challenges of intermodal connectivity and logistics. It must take the lead.

**Intermodal connectivity is the most important of the development issues that transcend VIWA's authority and require more effective interventions by MoT.** Some seaports lack capacity to efficiently handle transshipment to and from inland waterway vessels. The development and master planning of nearly all seaports is the responsibility of the Vietnam Maritime Administration (VINAMARINE) which, like VIWA, is an agency of MoT. Legal responsibility for the development of intermodal and multi-modal transport lies (correctly) with MoT as the umbrella ministry for all transport modes. MoT therefore has the power and obligation to ensure that plans of VIWA and VINAMARINE are productively coordinated to make efficient transshipment possible and enable a bigger role for IWT in supply chains. There is also a case to consider putting VIWA in charge of supervision and regulation at some of the more than 40 port areas currently supervised by VINAMARINE. This would make sense for those that sea-going vessels rarely use, but which are important for the IWT industry.

**Many inland ports are poorly connected to the main road or rail networks.** Again, MoT should require its relevant agencies, the Roads Directorate or Railway Authority, to prioritize strategically important connections to major inland ports if feasible. In places where responsibility for connecting roads falls to a provincial government, MoT retains overall responsibility for transport policy and can channel some road funds into supporting the provincial connector or influence the provincial government to provide the necessary link.

#### **4.9 Assessment of the Institutional Framework**

**The Bank team finds that most features of the institutional structure are appropriate and accord with established international practices.** There is no persuasive case for radically altering the allocation of roles between GoV and provincial governments and between the public and private sectors; the ministry-agency relationship between MoT and VIWA; and the recent shift to put IWT infrastructure management out to commercial contractors. The key to improving the enabling environment for transport operators and investors is not to restructure the industry but to make existing public institutions work better, particularly VIWA. It will remain the key implementing institution, mandated under MoT's supervision to both manage infrastructure and regulate the industry. Therefore, most of the areas where improvement may be sought (as set out in Section 6) relate to the strengthening of VIWA.



## 5. SECTOR FUNDING FRAMEWORK

### 5.1 Legal Provisions on Funding IWT

The 2004 transport law (as amended in 2014) defines the financial sources for inland waterway management and maintenance simply as the state budget and other sources prescribed by law. Decree No.51/2005 provides a more detailed definition of management and maintenance to include public management and services, and both routine and periodic maintenance. Decree 51/2005 further specifies that:

- Financial sources must be adequate and stable for the management, maintenance, and protection of inland waterway navigation infrastructure.
- For National Inland Waterways financial sources shall be from the central budget and other legal sources; for local waterways shall be from local budgets and other legal sources; and for special-use inland waterways or inland waterways invested with non-state budget sources shall be by organizations or individuals managing or using them.
- Financial sources will include: (1) the state budget (central budget and local budgets); (2) user charges for waterways invested by non-state budget sources; (3) contributions of organizations and individuals; and (4) investors in inland waterways invested with non-state budget sources and other sources.

**Prime Ministerial Decision 47/2015 introduced a clear policy intent to boost funding for the sector in the 2016-2020 period.** Decision 47 addresses the management and mechanisms of capital investment and maintenance of inland waterway transportation infrastructure. It includes prioritizing allocation of funds from the state budget (which has since occurred); access to preferential loans (which is not yet implemented); ODA loans and preferential capital for investment in IWT infrastructure for passenger and container transport; and income of businesses generated from the implementation of new investment in inland waterway transportation infrastructure.

### Findings of Section 5

#### Capital Investment in Waterways Infrastructure

- For more than a decade, capital investment in IWT infrastructure has been almost totally funded through ODA.
- ODA alone is unlikely to provide a sufficient long-term funding source. Going forward, it will inevitably decline.
- No new capital infrastructure projects for waterways are currently under construction.
- Several new projects are proposed, but they are not technically prepared, and funding sources not yet secured.
- Irrespective of the funding source, proper planning, prioritization, and preparation of projects are the vital initial steps to be taken by public bodies, in this case VIWA.

#### Operations and Maintenance of Waterways

- VIWA's expenditures on operations and waterways maintenance have relied fully on national budget allocations.
- Prime Ministerial Decision 47 in 2015 introduced a clear policy intent to boost funding for the sector in the 2016-2020 period.
- The O&M budget funding has increased by nearly 80 percent in 2017 compared to 2013, but there remains a significant O&M back-log.
- No navigation fees are collected from users of waterway channels and infrastructure.
- Port authority income from IWT port fees and charges seem roughly sufficient to cover the ports' own administration costs.
- There is merit in previous proposals to create a waterway maintenance fund (WMF).
- A WMF could be sourced from annual budgetary support, from fees paid by waterway users and other IWT beneficiaries such as industrial users and waterfront property owners, and from wider transport fuel levies.

#### Inland Ports

- Following port equitization in recent years, all capital and O&M costs of ports have devolved to the private owners.

**Decision 47 recognizes the poor state of many IWT ports and landing stages and requires and empowers provinces and major cities to prioritize and provide commercial incentives for their improvement.** People's committees of provinces and major cities are required to (1) prioritize the allocation of funds for investment in passenger ferry landing stages in locations that lack proper stages or land-side connections with other transport modes, (2) consider the exemption or reduction in land rent or water surface rents for operators that invest in building or renovating ports, and (3) consider interest subsidies for infrastructure investment projects. The Ministry of Finance authorized a 10 percent preferential corporate income tax rate for investment in new river ports.

**The decision sets out measures to increase funding for waterway maintenance and to use a range of procurement methods to get the work done.** It provides for: (1) budget prioritization during the 2016-2020 period for maintenance of inland waterways with an annual minimum increase of 30 percent each year; (2) encouragement of use of socialized implementation of dredging projects of inland waterway routes without using the state budget (this provision was subsequently suspended due to serious compliance and implementation problems); (3) pilot application of competitive bidding for contracts to manage and maintain inland waterways on certain routes; (4) direct "order placement," plan preparation, and production of working drawings for dredging projects on certain routes and works aimed at preventing collisions at bridges and coordinating movements at dangerous spots; and (5) certain methods of bidding for management and maintenance contracts on other routes. Decree No. 45/2018 further authorized performance-based dredging/maintenance, maintenance according to volume of material actually dredged, and maintenance combined with exploitation of dredged products such as sand and gravel to reduce net cost.

**Decision 47 also sets out measures to encourage improvements to the IWT vessel fleet.** These include exemption from registration fees for certain inland waterway vessels such as high-speed craft and container vessels. The decision also empowers the people's committees of provinces and major cities to use local resources to support investment in larger vessels including tug-barge combinations with a load of 1,500 tonnes and engine capacity of 250 horsepower or more; self-propelled and special-use goods vessels with load of 800 tonnes or more; and ferries for disadvantaged areas lacking other means of transport. Implementation of these policies so far has been limited. Finally, the people's committees are permitted to use local resources to provide fare subsidies or to support the operating costs of public passenger transport.

**Finally, the implementation of Decision 47 sets out the framework for involvement and cooperation of several state entities.** They include the Ministry of Finance, the Ministry of Planning and Investment, the Ministry of Natural Resources and Environment, the State Bank of Vietnam, and provincial people's committees.

## **5.2 VIWA Funding Framework**

**Based on legal provisions, the funding for VIWA to undertake its infrastructure management and industry regulation responsibilities comes from three main sources.** These are the national budget, official development assistance (ODA), and charges and fees paid by IWT users.

### **5.2.1 Government and ODA Sources**

**For more than a decade, capital investment in IWT infrastructure has been almost totally funded through ODA.** Less than 1 percent of capital investment in infrastructure has been provided by GoV, mainly for use in drafting IWT master plans and in project investment preparation (Table 5.1).

**Table 5.1 VIWA Capital Expenditure (2010-2019)**

IWT Infrastructure Construction		Expenditure (VND billion)									
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<b>1</b>	<b><i>IWT infrastructure projects</i></b>										
1	Northern Delta Transport Development Project (WB6)	525.00	525.00	525.00	525.00	525.00	525.00	-	-	-	-
1	Mekong Delta Transport Infrastructure Development Project (WB5)	586.00	586.00	586.00	586.00	586.00	586.00	-	-	-	-
1	Update of Cho Gao Canal: Phase 1				390.00	390.00		-	-	-	-
<b>2</b>	<b><i>IWT Master Plans</i></b>			<b>3.80</b>	<b>3.04</b>	<b>1.67</b>	<b>3.38</b>	-	-	-	-
<b>3</b>	<b><i>IWT project investment preparation</i></b>	<b>3.86</b>	<b>1.81</b>	<b>2.40</b>	<b>1.00</b>	<b>2.00</b>	<b>6.38</b>	-	-	-	-
<b>Total Infrastructure Construction</b>		<b>1,114.86</b>	<b>1,112.81</b>	<b>1,117.20</b>	<b>1,505.04</b>	<b>1,504.67</b>	<b>1,120.76</b>	-	-	-	-

Source: VIWA.

**Currently no new capital infrastructure projects are under construction.** The World Bank's Northern Delta Transport Development Project and the Mekong Delta Transport Infrastructure Development Project were completed in 2015. Future World Bank-funded projects are being planned, notably the Southern Region Waterways and Transport Logistics Corridor Project (SWLC) described in Section 1.2. No significant capital investments in waterway infrastructure are being prepared for GoV funding. However, there are significant proposed (but not prepared) projects for the immediate period to 2020 and for the following decade, 2021-30.

**Table 5.2 Proposed IWT Projects to 2030**

Project		Est. Investment, All Sources (VND billion)	
<i>Up to 2020</i>			
1	Upgrade of Inland waterway route on Sai Gon River (section from Binh Loi Railway Bridge to Ben Suc Bridge)	1,000	
2	Upgrade of Cho Gao Canal: Phase 2	1,500	
3	Upgrade, improvement of Duong Bridge	800	
<b>Total Proposed Investment to 2020</b>		<b>3,300</b>	
<i>2021-2030</i>			
4	Upgrade of inland waterway route from Quang Ninh-Ninh Binh (through Luoc River)	2,000	
5	Upgrade of Inland waterway route from Viet Tri-Lao Cai: Phase 1 (Viet Tri-Yen Bai)	900	
6	Upgrade of Inland waterway route on Gianh River: Phase 2	200	
7	Infrastructure investment in developing waterway corridor and logistics in the South (including Mang Thit Bridge, Phu Long Bridge)	5,200	
8	IWT port and landing stages	15,000	

<b>Total Proposed Investment 2021-30</b>	<b>23,300</b>
<b>Total Proposed Investment to 2030</b>	<b>26,600</b>

Source: VIWA.

**Funding of capital expenditure for national waterways is a fundamental challenge for GoV.** As Table 5.1 shows, the average annual capital expenditure from all sources over 2010-2015 (the period when the three ODA-funded projects were under implementation) has been VND 1,246 billion. To reinforce two previous points: virtually all of this funding has been from ODA sources, with only a minimal amount from the GoV budget. And there has been no capital expenditure in 2016-2019. It should also be noted that no proposed PPP or FDI projects have materialized. Table 5.2 shows that the average proposed annual capital expenditure from all sources over 2019-2030 is VND 2,217 billion, that is, almost 80 percent higher than the annual average for 2010-2015. Of the proposed investment to 2030, over half (VND 15,000 billion) lies in port and landing stage projects that are being funded by private enterprises.

**VIWA's operations and maintenance expenditures on national waterways have relied fully on allocations from the national budget.** Dredging and channel management/navigation (traffic control, fairway management, and signaling) have been the main areas of increased funding in recent years (see Table 5.3).

**Table 5.3: VIWA Operations and Maintenance Expenditures (2010-2019)**

IWT Operations & Maintenance		Expenditure (VND billion)									
		2010	2011	2012*	2013*	2014*	2015	2016	2017	2018	2019
<b>1</b>	<b>Routine operations &amp; maintenance</b>										
1.1	Management and routine maintenance for IWT	185.60	225.95				266.43	256.49	278.80	355.8	399.30
1.2	Dredging	34.90	38.30				84.4	110.4	156.24	31.80	83.20
1.3	Traffic control and organization	10.50	19.20				30.88	52.12	70.70	83.10	91.40
1.4	Management and operation of Rach Chanh ship-lock						-	-	7.30	10.58	9.40
1.5	Surveys for management and announcement of fairways	0.98	1.70				16.68	26.92	40.40	30.6	27.30
	<b>Sub-total routine operations &amp; maintenance</b>	<b>231.98</b>	<b>285.15</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>398.39</b>	<b>445.93</b>	<b>553.44</b>	<b>511.88</b>	<b>610.60</b>
<b>2</b>	<b>Non-recurrent expenditures</b>										
2.1	Repair and movement of signals	4.70	4.57				5.79	4.26	10.80	12.50	6.40
2.2	Production, supply and replacement of signals	7.50	14.20				10.65	19.97	67.80	178.00	125.10
2.3	Supply and replacement of solar lighting signals & accessories	3.90	0.20				18.65	23.56	28.40	31.16	23.90
2.4	Repair of large embankments	3.60	3.50				19.68	15.16	11.98	37.80	67.50
2.5	Removal of obstacles	3.70	4.00				9.78	59.47	46.20	8.15	34.90
2.6	Repair of IWT management stations	2.97	5.50				3.90	1.60	2.51	18.90	7.88
2.7	Repair and improvement of water level measurement devices							5.87	11.45	11.90	14.50
2.8	Overcoming floods and storms	0.50	0.40				14.32	0.00	14.20	3.04	5.50
2.9	Construction of buoys and anchors to avoid storms						15.22	25.97	10.37	11.05	
2.10	Prevention of drifting bridges in flood season	7.20	12.00				13.02	20.39	24.44	30.00	

Source: VIWA.

Notes:

1. For 2012-2014, only total operations and maintenance expenditures are available.
2. Amounts for 2010-2017 are actual budget expenditures. Amounts for 2018 and 2019 are planned expenditures, with the 2018 figures from the adjusted budget approved in November 2018.

## 5.2.2 Other Funding Sources

### Capital

GoV has published a list of eight proposed projects that it aims to fund through foreign investment (Annex B). The funding would come through a mixture of PPPs, foreign direct investment, and ODA. However, the feasibility and financing structure of these projects is unclear, and as yet none has progressed.

### Recurrent

VIWA's port authorities are responsible for collection of a number of fees and charges applied to inland waterway ports and wharves. These fees and charges are set by Ministry of Finance circulars that are issued from time-to-time (Table 5.4).

Table 5.4: VIWA Port Authority Fees and Charges

Fees and Charges	Unit	1/2017 to present
		Circular 248/2016/TT-BTC dated Nov 11, 2016 of Ministry of Finance
<b>Tonnage fees</b>		
<i>In (including loading or unloading)</i>	<i>VND/tonne</i>	<i>165</i>
<i>Out (including loading or unloading)</i>	<i>VND/tonne</i>	<i>165</i>
<b>Port In/Out charges</b>		
<i>Cargo vessel of 10 to 50 tonnes</i>	<i>VND/trip</i>	<i>5,000</i>
<i>Cargo vessel of more than 50 to 200 tonnes</i>	<i>VND/trip</i>	<i>10,000</i>
<i>Cargo vessel of more than 200 to 500 tonnes</i>	<i>VND/trip</i>	<i>20,000</i>
<i>Cargo vessel of more than 500 to 1000 tonnes</i>	<i>VND/trip</i>	<i>30,000</i>
<i>Cargo vessel of more than 1000 to 1500 tonnes</i>	<i>VND/trip</i>	<i>40,000</i>
<i>Cargo vessel of more than 1500 tonnes</i>	<i>VND/trip</i>	<i>50,000</i>
<b>Inland Waterway Reporting Fees</b>		
<i>Maritime vessel, seaplane</i>	<i>VND/trip</i>	<i>100,000 VND/trip</i>
<i>Foreign IWT and maritime vessels</i>	<i>VND/trip</i>	<i>50,000 VND/trip</i>
<b>Maritime vessels coming in/out of inland waterway ports/wharves</b>		Must follow MoF's regulations on maritime fees and charges
<b>IWT vessels coming in/out of inland waterway ports/wharves without cargo loading/unloading</b>		Must pay 70% of tonnage fees stipulated above



Revenue of fees and charges retained by port authorities		
Fees	%	90
Charges	%	0

Source: VIWA.

In accordance with regulations, VIWA retains 90 percent of revenue from fees only, not charges (see Table 5.5).

**Table 5.5: Revenue from VIWA's Port Authorities' Fees and Charges (2017-2019)**

	VND million		
	2017	2018	2019 (Est)
<b>Fee collection</b>	48,303.62	42,943.00	50,710.16
<i>Tonnage fee as percentage of total fee collection</i>	94%	94%	94%
<b>Charge collection</b>	7,642.74	6,578.00	7,171.80
<i>Port In/Out charges as percentage of total charge collection</i>	79%	100%	100%
<b>Total collection of fees, charges and other sources</b>	55,946.36	49,521.00	57,881.96
<b>Fee collection submitted to State Budget</b>	4,830.36	4,294.30	5,071.02
<b>Charge collection submitted to State Budget</b>	7,642.74	6,578.00	7,171.80
<b>Total collections submitted to State Budget</b>	12,473.11	10,872.30	12,242.82
Fee collection retained at Port Authorities	43,473.26	38,648.70	45,639.14
Charge collection retained at Port Authorities	0.00	0.00	0.00
<b>Total collections retained at Port Authorities</b>	<b>43,473.26</b>	<b>38,648.70</b>	<b>45,639.14</b>

Source: VIWA.

**Though VIWA retains revenues collected by port authorities, these funds are not legally dedicated as VIWA income for IWT uses.** They are formally national budget income, but port authorities are nonetheless permitted to retain cash collected to fund their own activities. Of these fees and charges, the tonnage fees make up 94 percent of the total fees collected. Port in/out charges are the only charges collected, because since 2016 operation certificates for inland waterway ports or landing stages have been issued without charge. (However, some irregular additional charges were collected in 2017 for administrative sanctions.) Overall, tonnage fees make up more than 80 percent of all fees and charges collected.

**Basically, the revenue from these fees and charges are roughly sufficient to cover the authorities' own costs.** The authorities' activities fall clearly within the regulatory sphere of VIWA activities. Concerning VIWA's infrastructure management activity, there is no user fee income that contributes

to funding it, though creation of such fees would appear to be permitted under the law on fees and charges.

### 5.3 Funding Implications for VIWA

**The GoV has responded to the importance of IWT through a range of strengthened policies, targets, institutional developments, restructuring initiatives, and—importantly—increases in funding of VIWA’s infrastructure maintenance.** For instance, Table 5.3 shows that VIWA Operations & Maintenance (O&M) funding allocated through the state budget rose nearly 88 percent between 2013 and 2017 in terms of actual budget expenditures. The increased funding is a welcome recognition of IWT’s needs and its importance in the overall transport strategy. But there is a significant back-log, and O&M funding from the state budget appears still to fall well short of the sector’s needs. Ensuring adequate funding for waterway maintenance has proven challenging.<sup>33</sup> Several sustainable revenue options have been proposed. These include the creation of a waterway maintenance fund that would source funds not only from the annual budget but fees paid by waterway users (primarily shipping carriers, but also industrial users and waterfront real estate owners). The 2014 World Bank report<sup>34</sup> proposed consideration of additional sources such as a channel usage fee, registration fee, fuel levy, and frontage fee.

**Within VIWA’s existing fees and charges regime, there would be some justification for re-imposing a form of annual charge on operation certificates for inland waterway ports and landing stages.** These payments would recognize that VIWA’s management of the inland waterways brings ongoing commercial benefits to the operators of these ports and landing stages. For this to have direct value to VIWA, MoF would need to revise its current revenue submission and retention arrangements so that VIWA could keep some percentage of the revenues from such a charge.

**On the capital investment side, Table 5.1 highlights the thread-bare nature of the VIWA budget.** The agency effectively has no capital funding beyond that provided through ODA. A more widely focused approach by VIWA to the development, funding, and implementation of capital investments will likely be necessary. This could only be possible, however, by increasing the level of capital funding from the state budget.

**In the longer term, ODA is unlikely to provide a sufficient source of funding for capital investment.** Vietnam will need to find ways to maintain momentum in economic development in an environment where ODA funding—while still significant—will be on the decline.

**Regardless of where the investment funding comes from, proper planning, prioritization, and preparation are vital initial steps for government.** These steps hold true whether the source is ODA or the national budget, or especially the private sector through PPP, BOT, BT, or other public-private arrangements. These steps should be part of the GoV’s processes for all large, new investment projects such as dredging, port, and terminal projects identified in the project list at Annex B.

**Better project outcomes will always be closely aligned with better processes.** Current masterplans foresee very substantial capital investment programs without assurance or even likelihood that the

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<sup>33</sup> L. Blancas and M.B. El-Hifnawi. 2014. “Facilitating Trade through Competitive, Low-Carbon Transport: The Case for Vietnam’s Inland and Coastal Waterways.” Washington, DC: World Bank.

<sup>34</sup> Ibid. pp 91-92.

funding will be available (see Table 5.2). GoV must first determine its priorities and the feasibility of a proposed capital project in meeting those priorities before advancing to the procurement or implementation stages.

**Whoever finances future IWT infrastructure capital projects, VIWA will have the key coordinating role as infrastructure manager.** VIWA should continue to take the initiative to engage with international organizations, domestic and international enterprises, and domestic stakeholders to explain its plans, programs, and projects for the development of the IWT sector. Further development of partnerships and twinning arrangements with countries that have relevant strengths in inland waterways would help.

## 6. INSTITUTIONAL MEASURES

### 6.1 Introduction

Based on the diagnoses of the conditions described above, Section 6 sets out the Bank team's suggested institutional measures. As mentioned in Section 4, the team finds that most of the broad structural features of the institutional framework are appropriate and accord with established international practices. There is no persuasive case for radically altering the allocation of roles between national and provincial governments; between public and private sectors; the ministry-agency relationship between MoT and VIWA; and the recent separation of VIWA infrastructure management from contractor provision of maintenance services.

The aim should therefore be to make existing institutions more effective, particularly VIWA, because it is the key institution that manages infrastructure and regulates the industry. Therefore, most of the measures for potential improvement relate to strengthening VIWA or widening its mandate. Because VIWA is an agency of MoT, nearly all the measures suggested would require MoT support and endorsement, meaning they would have to be considered by both bodies. Many of the final decisions, however, would be for MoT to make.

The measures would affect four broad areas:

- VIWA's organization and management structure
- Infrastructure management functions
- Industry regulatory functions
- Central corporate functions

Some of the measures would have budgetary consequences. Steps for strengthening the financial framework for waterways, including boosting VIWA funding, are addressed in Section 7.

### 6.2 VIWA Organization and Management Structure

MoT should consider modifying VIWA's organization and management structure to create a clearer split between infrastructure management and industry regulation. Figure 6.1 presents a possible

#### Measures Suggested in Section 6

- Modify VIWA's organization and management structure to separate infrastructure management and industry regulation functions.
- Appoint an inland waterways advisory board.

#### Infrastructure management

- Boost the number and technical skills of VIWA staff employed in infrastructure management.
- Implement e-procurement and longer-term and performance-based contracts for waterways management and maintenance.
- Introduce performance indicators for VIWA infrastructure management.
- Develop an asset management system (AMS).
- Incorporate climate resilience in IWT infrastructure design and maintenance.
- Define a long-term development path for river information services (RIS) following results of feasibility work undertaken with the Government of the Netherlands.

#### Industry regulation

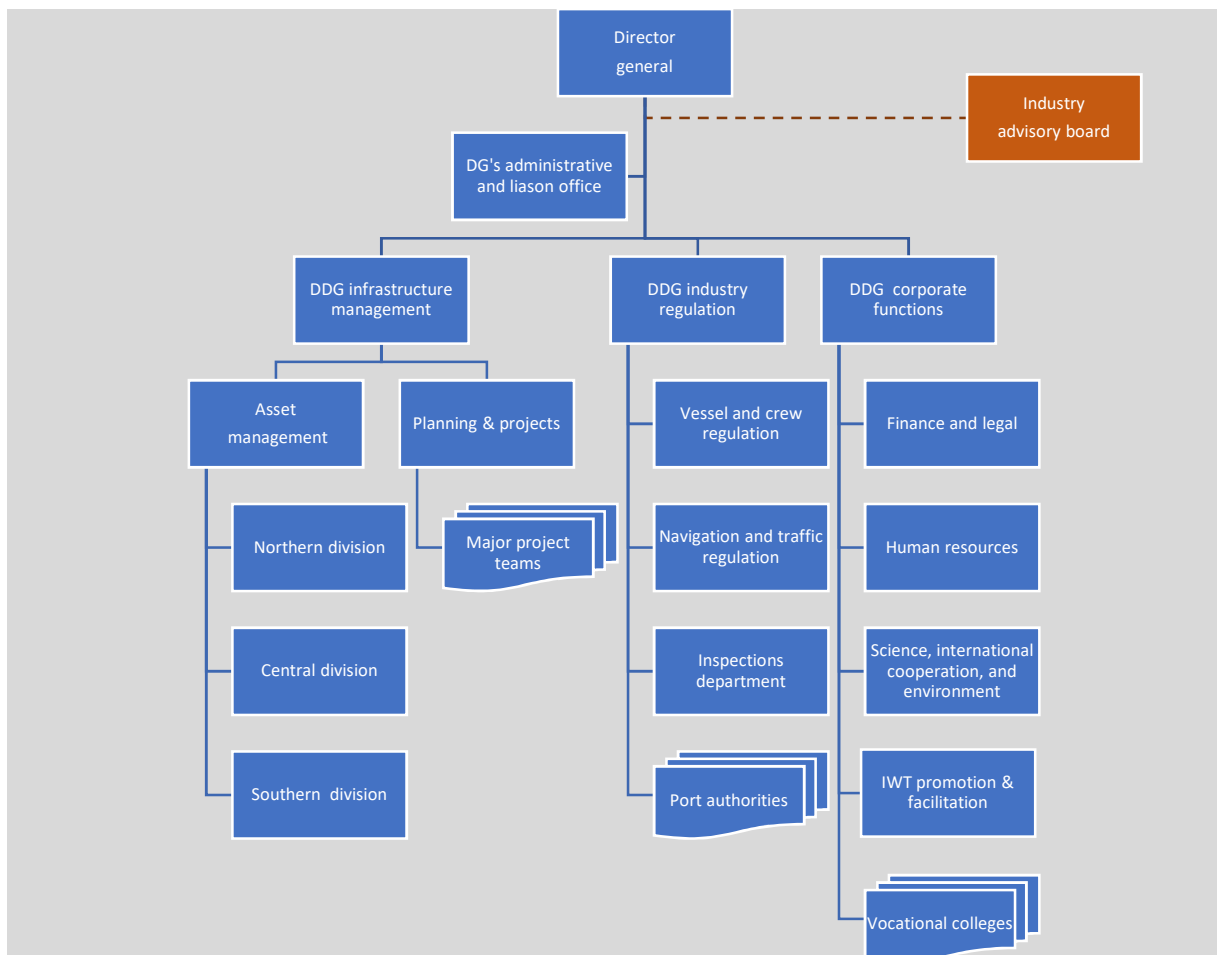
- Prepare and publish a "regulation and best practices" handbook for operators.
- Design and implement an electronic regulatory manual (ERM).
- Re-engineer the practices and processes of port authorities to simplify and automate.
- Examine how VIWA might more effectively administer other key elements of industry regulation compliance that are not handled by port authorities.
- Adopt VIWA regulatory performance indicators.
- Consider long-term benefits of MoT (VIWA) taking over responsibility for River Police.

#### Corporate activities

- Boost VIWA's role as an industry promoter, including market monitoring and promotion.
- Require VIWA to publish annual reports describing market developments and VIWA activities, including financial statements.

organization and management structure to accomplish this. It shows VIWA split into three main directorates: an infrastructure management directorate, an industry regulation directorate, and a corporate directorate. This structure would better group VIWA’s activities, focusing responsibility and accountability in each directorate. It would also help manage conflicts of interest because the regulatory directorate would, among other duties, be tasked with ensuring regulatory compliance (such as safety of infrastructure and environmental compliance of dredging) by the infrastructure directorate.

**Figure 6.1: A Possible New Functional Organization and Management Structure for VIWA.**



**Each deputy director general (DDG) would be responsible for specific functions of the VIWA, and accountable to the director general.** The DDG for infrastructure management would oversee existing assets through three regional divisions. To plan and implement new projects that are too big for the regional divisions, it would use special project teams. The DDG for industry regulation would handle all of VIWA’s regulation activities as well as oversight of the five port authorities. The DDG for corporate administration would direct the various central departments as well as represent VIWA in matters concerning the two vocational colleges. A new IWT promotion and facilitation department is suggested for the corporate directorate to handle functions identified in Section 4.7.5 and discussed further in Section 6.5.1.

**The organization structure laid out in Figure 3.1 is intended only as a starting point for discussions.** MoT and VIWA have a fuller understanding of all the departments and activities of VIWA and where they would best fit within a tripartite functional structure. However, the team believes that

MoT/VIWA should assess the merits and feasibility of a structure of this general shape. In the remainder of Section 6.3, the report groups its proposals into infrastructure management, regulatory, and corporate measures. These would not require reorganization of VIWA. They could be implemented within the existing structure, but responsibility and accountability for implementation would be more dispersed.

### 6.2.1 An Industry Advisory Board for VIWA

**MOT should also consider the merits of appointing an inland waterways advisory board.** This is shown in Figure 6.1 as a consultative structure to the VIWA director. As noted in Section 4, Vietnam’s institutional structures were established at a time of much lower private sector participation in vessel and port operations. After the strong growth of the private sector, to a level where it dominates the operating industry, creation of a formal framework for its participation could bring important advantages. An advisory board could be a cost-effective way to:

- Tap real world experience and practical industry knowledge.
- Obtain independent but informed views on VIWA reforms, projects, and programs.
- Raise the visibility of IWT in the freight transport and logistics industry.
- Make VIWA more “participatory, transparent and accountable.”<sup>35</sup>

**Members of the board would be appointed by MoT based on qualifications of knowledge and achievement in transport operations.** Members could include users of inland shipping services, suppliers of services, logistics service providers, and specialist academics and consultants. The MoT would seek to ensure representation of a broad range of industry and region interests. The board would need a code of conduct and transparent proceedings to avoid conflicts of interest or competitive advantage by board members. To be effective, the number of members should not be too large (perhaps a maximum of 13) with a chairperson selected by the members. VIWA would provide administrative and secretarial support. Quarterly consultative meetings of MoT, VIWA, and the board could rotate between regions and be chaired by the minister of transport or director general of VIWA.

**The advisory board would be a consultative body only, without power to make or change VIWA decisions.** It would not have oversight responsibilities such as those held by a company board of directors. The minister of transport has legal authority for MoT’s various specialist authorities, including VIWA. This responsibility would not be diluted.

## 6.3 Infrastructure Management Measures

**The infrastructure management function could be strengthened by several measures.** These include increasing the number and skills of VIWA staff assigned to infrastructure management and continuing devolution of technical functions to regional offices; developing e-procurement systems for maintenance and other contracts; introduction of infrastructure performance indicators and targets; rapid creation of a formal asset management system (AMS); and long-term development of river information services (RIS).

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<sup>35</sup> This wording is from “OECD Guidance on Regulatory Agencies.”

### 6.3.1 Skills, Resources, and Regionalization

**The number of people employed by VIWA in infrastructure management should be increased and their technical skills enhanced.** As was estimated in Section 4, only slightly more than 100 people are dedicated to infrastructure management activities on the national waterways, which have a length of more than 7,000 km. This translates to an average of one person per 70 km of waterway. The number of staff with specialist technical and engineering qualifications is even lower. Even if contractors now carry out most dredging and maintenance, these numbers seem inadequate and are only a small fraction of the numbers of VIWA employees engaged in regulation.

**More staff resources, particularly qualified engineers, will be necessary if waterways maintenance funding continues to rise and capital investments in infrastructure upgrading materialize.** The Bank team supports the policy of devolving day-to-day management activities to regional offices where staff can be close to and familiar with the infrastructure and its use. However, major capital project management may be better handled as a central function, though with appropriate local site supervision. Until now, MoT has provided the project implementation units (PIUs) for capital works financed by the World Bank. But in principle, an implementing agency such as VIWA is a more appropriate location for a PIU than a policy ministry. VIWA should have the capability and resources to undertake capital projects and provide and manage PIU activities for future loans from international financial institutions.

**GoV wishes to reduce the overall number of officials in government administration and may be reluctant to increase the overall number of VIWA staff.** If so, it becomes doubly important to make regulatory activities more efficient (Section 6.4), so as to allow a shift in the balance of VIWA resources in favor of infrastructure management

### 6.3.2 Strengthening, Lengthening, and E-Procurement of Maintenance Contracts

**E-procurement would improve efficiency and transparency of procurement.** Given the relatively small number of VIWA staff in infrastructure management, it is vitally important to ensure the most effective contribution from contracting out waterways management and maintenance tasks to external companies. These companies include (but should not be limited to) the companies that were established from the previous 15 regional units of VIWA. Each region now has numerous contracts, typically with durations of just one year. Implementation of an electronic procurement (e-procurement) system would help ensure fair and transparent tendering for such contracts, encourage a wider range of bidders, increase procurement efficiency, and reduce opportunity for corruption.

**However, outside contractors can make their best contribution to infrastructure management only if contracts are longer-term and performance-based.** International experience shows that short-term contracts are a disincentive for companies to invest in specialist skills and equipment that would help them improve and innovate. Short-term contracts also make it impossible to give the contractor longer-term performance targets to aim for. Longer-term contracts could be an important tool to help VIWA overcome limitations on human and material resources. They would allow VIWA to specify, and contractors to fulfil, meaningful long-term target standards for the sections of waterway under contract. This is further discussed in Section 7.

### 6.3.3 Infrastructure Management Performance Indicators

**VIWA's infrastructure maintenance function should be subject to year-to-year operational targets using a schedule of performance indicators.** VIWA performance indicators would differ from the "big-picture" aims set out in MoT masterplans for five-year periods, which are useful for overall sector

monitoring but less so for performance monitoring of individual government agencies. Around the world, government agencies are increasingly using performance indicators as tools of operational planning and performance monitoring. They can help set targets, assess performance, and guide decisions on use of resources.

**Performance indicators would be useful at the regional, central office, and MoT levels.** They would allow VIWA infrastructure staff in regional offices to measure the effectiveness of their work inputs and outputs, help VIWA central management monitor the performance of its regional management offices, and help MoT monitor VIWA’s overall performance in meeting targets. Table 6.1 summarizes possible performance indicators for infrastructure management. The input indicators are about VIWA efficiency. The output indicators are about functional effectiveness. Typical periods for monitoring the indicators would be monthly and/or yearly. The indicators should be monitored for (1) sections of waterways, (2) for each of the three waterway regions as a whole, and (3) for the total national waterways that VIWA manages. Waterway sections would be based on logical geographical sections, which could be matched to sections used in individual performance-based maintenance contracts. Knowledgeable VIWA managers could adapt and improve this list.

**Table 6.1: Indicative Performance Indicators for VIWA Infrastructure Management**

Indicator type	Indicator	Unit
<b>Inputs</b>	Volume of dredging achieved	Cubic m/period
	Bank stabilization work completed	Meters/period
	Navigation aids repaired/replaced	Number/period
	Cost of dredging	VND/per cubic meter
	Total maintenance cost	VND per km
<b>Outputs</b>	Proportion of fairway length meeting classification	% of section km/period
	Navigable days below section classification standard	Days/year
	Proportion of navigation aids in working order	% of nav aids/period
	Interruption of navigation due to infrastructure damage/failures	Stoppages/period
	Total downtime due to infrastructure damage/failures	No. and % of days/period
	Total downtime due to floods/high water	No. and % of days/period
	Total downtime due to drought/low water	No. and % of days/period

#### 6.3.4 Development of an Asset Management System

**An asset management system (AMS) would improve VIWA’s infrastructure management capability and enable it to utilize maintenance and capital budgets more effectively.** Asset management systems bring together many concepts and modules, but key common elements are:

- A comprehensive asset inventory
- Regular monitoring of the condition, use, and performance of the waterway network



- Systematic prioritization and management of maintenance tasks
- Systematic capital renewal/upgrading planning

**Asset inventory information is captured, classified, and updated in electronic databases.** GIS can locate and map assets within the waterways network and can exploit satellite imagery and other representations (in some systems real-time video monitoring). Asset inventory databases would enable VIWA to systematically record asset characteristics, technical description, condition, maintenance history, utilization, and performance. Knowing and regularly updating the condition of assets would allow staff to better target maintenance.

**This analysis can also reveal maintenance backlogs and measure success in clearing them.** In addition, it can strengthen predictive capability to adopt preventative maintenance routines and more accurately assess the budget needed for future maintenance. Asset utilization data can be gathered through automatic measurement, or by surveys, depending on the assets involved. Automatic river/canal condition monitoring systems can provide real-time data on waterway depth and channel conditions. The inventory/condition data in AMS would also be a key input to RIS, which reinforces the importance of moving soon to develop AMS.

### 6.3.5 Climate Resilience

**Bolstering the IWT system’s resilience to climate change is an explicit GoV policy aim.** The minister of transport’s Decision 4910/15, “Approving Plan on Restructuring Inland Waterways by 2020,” specifies that both short- and long-term infrastructure plans must cope with climate change impacts. This is sound policy because waterway transport is inherently vulnerable to climatic influence on depth of water and hence navigability of vessels. When channel water levels are very high, it may become impossible for vessels to pass under bridges. When levels are very low, vessels may need to reduce loads, face the risk of grounding, or be unable to operate at all. Similarly, extreme difference in high and low water at jetports and landing stages can create problems for mooring and safe and efficient loading and unloading.

**For new construction projects, climate resilience can be built into engineering approaches and design standards.** Since Vietnam currently has so few major new capital projects, it should have little problem meeting the climate policy guidance. However, for waterways maintenance the challenge is more complex. With more than 7,000 km of national waterways, it is neither possible nor cost-efficient to try to adapt all parts of the network to extreme climate scenarios. VIWA therefore needs to prioritize its response to this policy. It could consider undertaking a risk analysis of which parts of the national network are at greatest risk from the most likely climatic changes, not the worst. Those sections could then be further prioritized according to their volume of traffic. In this way, VIWA could systematically build climate resistant design and performance standards into maintenance contracts, starting with the high priority sections, those that combine “most-at-risk” with “most-traffic.”

### 6.3.6 River Information Services

**Using river information services in active traffic management could help VIWA make congested areas safer and more efficiently used.** The term river information services (RIS) can encompass a range of elements. Conceptually RIS are services designed to enhance safety and efficiency of IWT by sharing information which allows infrastructure managers and vessel operators to optimize their operations. In the European Union it has the additional connotation of harmonizing system

architecture and protocols across different countries through which the main waterways flow.<sup>36</sup> RIS typically contain an electronic inventory and representation of waterway assets, combine on-board vessel automatic identification systems (AIS) with global positioning, transmit and receive data such as vessel identification, type, position, speed, and course, and receive this information from other such devices. Fast “on-demand” electronic data transfer between vessels and shore through real-time exchange of information, combined with voice communications, can facilitate active traffic management through navigational advice or instructions for vessels. Traffic management can be beneficial especially on heavily used stretches of waterway, near busy ports, or in locks.

**The Bank team considers that the “systems” priority in the infrastructure management function should be building an asset management system, with RIS as a longer-term goal.** On most parts of Vietnam’s waterways, particularly those that are lightly used and provincially managed, fully-functioned RIS<sup>37</sup> would be a luxury rather than a necessity. Where there are no locks and little need or demand for active traffic management, RIS seems unlikely to yield substantial benefit in terms of capacity management, though it would facilitate safer navigation. However, on some of the busiest sections, the traffic management/capacity gains could be significant. The longer-term costs and benefits should be explored as a pilot project on a specific busy trunk route, one where it is realistic to seek high levels of participation by larger vessels equipped with the necessary technology. The Bank team understands that a feasibility/pilot study of RIS is to be undertaken by MoT/VIWA in co-operation with the Government of the Netherlands. This should identify the most appropriate development path for RIS.

## 6.4 Industry Regulation Measures

**The industry regulation function could be strengthened by both short-term and long-term actions.** These include publishing a regulatory handbook; developing an interactive electronic regulatory manual; re-designing port authority processes and automating some of them; adopting regulatory performance indicators; and assessing the feasibility of a unified system of IWT regulatory enforcement with river policing becoming a VIWA responsibility.

### 6.4.1 Publication of Regulatory Handbook

**VIWA should consider publishing a handbook (or books) for vessel and port operators.** VIWA’s website contains a list of applicable laws in their source form which, as already noted, is complex and fragmented. A handbook would help operators understand those parts of the law that apply to them. This would be particularly useful for smaller who may have limited education. These handbooks would not be legal documents. They would reference the law but not replace it. They might summarize regulatory requirements and illustrate them with engaging graphics. They would advise vessel and port operators about good practices such as safe mooring, overtaking manoeuvres, and what to do in emergencies. They could also contain checklists for operators on compliance issues. Staff at VIWA’s two waterway transport colleges, working with a professional communications consultant, could draft the handbook. No doubt the colleges already have much of this content as training material.

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<sup>36</sup> A fuller description and an account of RIS development in Europe are available at [www.ris.eu](http://www.ris.eu).

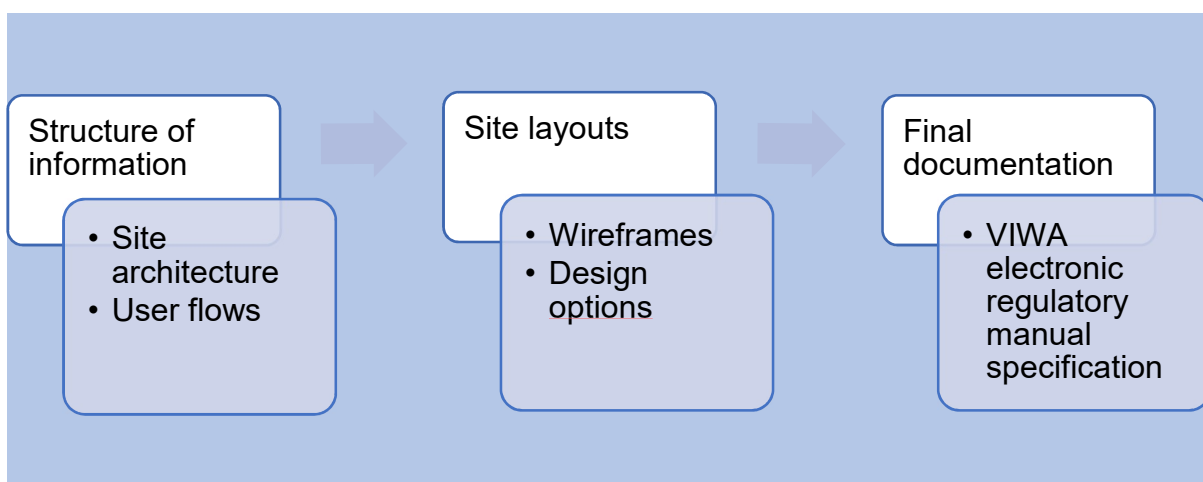
<sup>37</sup> These could include fairway information services, traffic information services, traffic management, emergency management, transport logistics information, and generation of statistics.

## 6.4.2 Electronic Regulatory Manual

**Many companies in the industry and potential entrants could benefit from interactive web-based tools for reference purposes.** While many small barge operators who lack good Internet access would require a hard-copy manual, medium and large companies and cooperatives could benefit from a modern web-based IT tool to access regulatory information. For example, a shipping company might use this “electronic regulatory manual” (ERM) to obtain information about requirements for operating a barge tanker service with a vessel of a particular capacity. At the website, a company employee would enter the relevant information about the proposed operation to access and download the specific regulatory requirements. The employee could “burrow down” to a deeper level in the system to access the specific legal provisions that apply. Or, a port operator might interrogate the system to find the infrastructure standards and operating regulations that would apply. An international investor could find the special conditions or restrictions on international participation in a particular type of project.

**Creation of such an online tool would require resources, commitment, and preparation.** By combining web-based content, interactive tools, and transactional features such as online application forms for vessel registration or operator licenses, VIWA could create a fully-featured ERM useful to many stakeholder groups. Elements of these tools could also be output to smartphone or tablet application for offline use when out of range of connectivity. The same regulatory tools could be used as learning modules for trainees at VIWA’s two vocational colleges. Figure 6.2 indicates the main stages in creation of an ERM. VIWA would need to work closely with a commercial website developer to create the tool. This would need to start with identification and specification of industry information needs and subsequent scoping of the tool, the organization and classification of all content in legal and regulatory instruments into coherent subject blocks, an assessment of the best technical options for developing the tool (hardware and software), building the site, intermediate and final testing with industry volunteers, and the launch of the tool with appropriate government leadership and publicity. Vietnam has a strong systems development capability and local contractors who could bid to assist in this work. But VIWA should only embark on this course if it is committed to producing a high-quality product and prepared to support and maintain the tool.

**Figure 6.2: VIWA Electronic Regulatory Manual (ERM): Design Blueprint**



#### Notes for Figure 6.2:

- Site architecture includes structure; navigation page hierarchy; categorization of the site content into logical groups determined by IWT industry stakeholder needs; and organization of the order of the site pages to create logical interactive paths for users.
- User flow analysis would determine the flow-through of the journey of the user (vessel operator, port operator, vessel captain, international investor etc.) through the website and logical outcomes of the user's decisions/choices.
- Wire frames would define technically
  - ERM organizational structure: how the overall product should be structured, where navigation is located, headlines, body copy, images, buttons, and footer.
  - Navigation: how the navigation outlined in site architecture will appear in the product.
- Design options would translate the wireframes into the visual and other information and prompts seen on the screen. The intention would be to make things as intuitive as possible, so that people in the IWT industry could access what they need without any specialist computing skills.
- Final specification would bring together the results of development modules described above and incorporate required software and hardware, servers and hosting solutions, code bases, and any third-party integrations (such as with other MoT sites or with specific port websites).

**The draft updated IWT masterplan (2018) recognizes the role of a communications strategy reaching out to the industry and the public.** An industry handbook, a best practice guide, and an interactive ERM could make important contributions to this strategy. However, MoT support is also vital. In this regard, MoT's other specialist agencies could also benefit from such a tool and VIWA might provide a useful pilot that could help other parts of the transport administration.

#### 6.4.3 Increasing Regulatory Effectiveness and Enforcement

**VIWA should undertake a detailed examination of the practices and processes of its port authorities to identify opportunities for simplification and automation.** As indicated in Section 4, about 600 people, or 80 percent of VIWA's non-college staff, are involved in the regulatory side of VIWA, and of these over 90 percent work in port authorities. Some processes are clearly sub-optimal: for example, a vessel that stops at multiple ports during a journey may currently need to provide the same paperwork to several port authority units and make separate payments for each port entry. For situations like this, the management technique known as process re-engineering (also called process innovation or core process redesign) holds great promise. It would pose fundamental questions about what port authorities do and how they do it. What were the reasons why current procedures were set up and are they still valid? What do activities cost and what regulatory value do they have? Are current arrangements delivering best value in the best way? Are all the functions and activities really necessary?

**One new approach that could be assessed is "trusted trader" programs.** Inland shipping operators with a history of compliant conduct could be subject to fewer inspections and allowed to self-submit paperwork and make bulk payment of port authority fees. Similarly, larger inland port companies could be delegated some vessel-checking functions normally carried out by port authority staff and be responsible for submitting necessary records and fees to VIWA. If large companies and cooperatives could enter a trusted trader program, with all paperwork and payments electronically handled, resources could then be concentrated on seeking compliance from higher-risk operators.

**Process re-engineering can offer a blueprint for achieving VIWA's regulatory objectives as if starting from a blank sheet of paper.** The potential benefits include higher staff productivity within the regulatory function, higher-quality regulatory service to the IWT industry, reduction in unnecessary

regulatory burdens, and less opportunity for corruption. Achieving this will depend in part on smart use of technology. The productivity and consistency of routine functions of port authorities could rise through electronic automation of port requests and authorizations, checking of vessel and crew papers, recording of consignment information, and payment of port charges. The savings could help rebalance VIWA’s resources, which are now skewed disproportionately to regulatory activities, in favor of infrastructure management functions. This would assist the development of the waterways network and the waterways transport industry.

**MoT and VIWA should also examine more efficient ways to administer other key elements of industry regulation that are not directly overseen by port authorities.** There are many examples of non-compliance with these types of rules: non-registered vessels, unlicensed jetties, illegal sand-mining, vessel overloading, and navigation violations. In many cases, getting compliance depends on close cooperation with other institutions such as Vietnam Register, the River Police, and provincial governments. Since VIWA has the overarching responsibility for managing and regulating waterways, it must take the lead in developing procedures and processes effectively to work with others to enforce regulations.

#### 6.4.4 Regulatory Performance Indicators

**Regulatory performance of VIWA should be monitored in the same way as infrastructure management performance but with different indicators.** VIWA’s regulatory functions should be subject to year-to-year operational targets for regulatory activities and results. Such indicators would allow VIWA to better monitor the work of its port authorities and for MoT to monitor VIWA’s year-to-year performance in meeting targets. Table 6.2 illustrates regulatory performance indicators based on the existing legally defined functions of port authorities. However, it would be better to first undertake the comprehensive study to re-design port authority functions as this may result in port authorities improving the current performance indicators.

**Table 6.2: Indicative Performance Indicators for VIWA Port Authority Activities**

Indicator	Unit
Ports subject to full safety inspection	No./period
Official notifications of port safety problems	No. and % per period
Port safety notifications re-inspected and rectified	No. and % per period
Landing stages subject to full safety inspection	No./period
Official notifications of landing stage safety problems	No. and % per period
Landing stage notifications re-inspected and rectified	No. and % per period
Permits issued for vessels to enter and leave ports and landing stages	No./period
Permits refused for vessels to enter and leave ports and landing stages	No. and % per period
Breakdown of reasons for refusal of permit to enter or leave	% by reason/period

No. of vessel loading/unloading operations directly supervised	No./period
No. of vessel loading/unloading operations suspended for more than one hour for violations of safety requirements	No. and % per period
Breakdown of reasons for suspension of loading/unloading operations	% by reason/period
Number of search and rescue operations organized	No./period
Number of vessels/persons rescued	No. vessels and persons/period
Number of official accident investigations initiated	No./period
Number of official accident investigations concluded	No./period
Number of port charges transactions	No. of vessels charged /period
Amount of port charges collections	VND collected/period
Amount of port charges collections in cash	VND and % per period

#### 6.4.5 Unification of Waterway Management and Policing

**The GoV may in the longer term wish to consider the feasibility and potential benefits of transferring responsibility for river policing to MoT (VIWA).** As noted in Section 4, the division of compliance and enforcement responsibilities between VIWA (at inland ports) and the River Police (in the waterways) is not optimal. The 2015 IWT restructuring plan (summarized in Annex A) requires the state bodies to “strengthen the inspection, testing, and handling of violations” and for VIWA to collaborate with the River Police and the Vietnam Register in promoting the safety of IWT. It draws attention to problems of poor-quality vessels, overloaded vessel, and violations of crew accreditation requirements. MoT’s draft updated masterplan (2018) continues to recognize problems of non-compliance. It mentions passenger service safety, extraction of sand and gravel (much of it unlicensed), and unregistered vessels. Unlicensed jetties and unsafe mooring are also enduring problems. The updated masterplan calls for VIWA to intensify its efforts and contribute to joint inspection teams with the River Police. However, if the planned joint measures don’t work, the GoV should consider whether unifying regulatory compliance under MoT (VIWA) responsibility could be more effective.

**Under VIWA supervision, river policing should also include a range of general traffic management and control functions.** VIWA does not currently have the mandate, equipment, or resources to patrol waterways, enforce navigation rules, manage traffic, or respond to emergencies. Yet as the designated infrastructure manager for the national waterways, it might be expected to have the most direct concern that these activities proceed smoothly. The aim should be to make VIWA both a stronger regulatory body (including patrolling/policing) and a more effective infrastructure manager (including traffic control and management). It could also help to save resources by reducing the overlap between port authority activities and River Police checking activities. To do so, VIWA would need to be visible and active on the waterways themselves, not just at ports. Transferring river patrolling/policing to VIWA would be a radical legal change, but one supported by some international experiences.

**There is also a case for improving industry safety and accident statistics that are currently kept by the River Police.** Although the River Police assemble accident statistics, it is VIWA that needs them to be as useful as possible, to fulfil both its infrastructure management and regulatory duties. The current accident statistics tend to blame accidents on human error or negligence (such as reckless driving, being in the wrong lane, operating unsafe equipment, overloading the boat, not having the right licenses). The inference is that the vessel captain or helmsman erred. However, the official statistics are silent about actual circumstances of accidents, which would be useful to the infrastructure management function. Deficient infrastructure or lack of proper traffic management aids may contribute to human error, for example, contributing to a vessel hitting an unlicensed jetty extending into the channel, swerving out of a fairway because of a sudden obstruction, colliding at very sharp corners, or hitting a bridge where navigation aids are missing.

**While none of these situations justifies reckless navigation, it is a fact that poor infrastructure can contribute to navigation errors or undisciplined behavior.** In terms of comparator countries, CCNR in Europe uses a high-level classification of IWT accidents that helps officials understand what happened, such as stranding on shallows, vessel congestion, collision between boats, collision with bridges, and wave action. Similarly, U.S. Coast Guard statistics record the “first event” in medium and severe accidents, the main ones being allision (striking a fixed object), collision (striking another vessel), material failure, grounding, vessel maneuverability; flooding, sinking, fire, set adrift, and capsized.<sup>38</sup> While the “blame” finding is useful for the regulatory functions of VIWA, the physical circumstances information would help infrastructure managers pinpoint infrastructure problems and fix them. For that reason, both kinds of accident statistics should be collected and published.

## **6.5 Corporate Measures**

**The main measures recommended at the corporate level of VIWA concern the 2018 masterplan aim to reach out to the industry and the public.** Apart from its technical roles as infrastructure manager and industry regulator, VIWA should boost its presence as an industry promoter, interacting with domestic and international stakeholders to encourage private sector investment and promote IWT development.

**However, any communications strategy needs to be a two-way process.** It is not just a matter of VIWA telling the industry what VIWA does, but also about ensuring that VIWA knows what the industry is doing. It is not only about providing information to the public but demonstrating accountability to the public for the quality and effectiveness of its work. The two main measures suggested are to adopt a market monitoring function and to implement a public accountability program.

### **6.5.1 Industry Promotion and Facilitation**

**VIWA has the incentive and mandate to monitor trends in the IWT industry and in final demand for waterway transport.** The IWT industry is diverse, fragmented, and geographically dispersed, so it is not in a position to provide an industry overview. Under current laws, VIWA has the legal mandate to promote waterways traffic growth. To fulfil its role as infrastructure manager, VIWA needs good knowledge of the operators (shipping and port operators) who use that infrastructure. And as a

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<sup>38</sup> The U.S. statistics also set out the specific causes of deaths and serious injuries that occur, such as drowning, burns, fall, and crushing. This information is also useful in designing and equipping vessels.

regulatory agency it needs to understand the interests of the freight consigning industries and passengers, in whose interests most regulations are made.

**In the short term, VIWA should consider strengthening its capacity to monitor and appraise market and industry trends for IWT, as a foundation for longer-term proactivity in industry promotion and facilitation.** A shift to greater market focus requires more attention and resources for market appraisals and not just ad hoc market studies carried out by consultants when masterplans are updated. The organization and management chart in Figure 6.1 assumes that an embryo IWT promotion and facilitation department in the central corporate directorate would perform this role, at first concentrating on maintaining a comprehensive database on markets, operators, and customers. As an international example of this function, the Central Commission for Navigation on the Rhine (CCNR) carries out regular observation and analysis of inland waterway transport on behalf of the European Commission and in collaboration with European inland navigation organizations. CCNR's "market observatory" provides regular analytical reports in four areas: demand for inland waterway transport; services provided by the inland waterway market; navigation conditions on Europe's inland waterways; and microeconomic conditions in the sector.<sup>39</sup>

**The IWT sector lends itself to targeted promotion to new users because it is a niche mode.** IWT is most suited to well-defined markets and circumstances. The commodities of primary interest are coal and coke; stone, sand, and gravel; grains; raw timber; bulk wholesale consignments of heavy process industries such as oil and petroleum products; iron and steel; chemicals; fertilizers; and concentrated flows of international containers such as between ports and inland container depots (ICDs). The companies of primary interest are those dispatching or receiving from plants close to waterways. The routes of greatest interest are those with a sea port or major distribution hub at one end. Good market research would identify the significant companies that fit this profile. The intention would be to methodically populate the "envelope" of industrial companies of interest, produce a short list of the most promising opportunities, engage them in outreach programs, and try to facilitate their use of IWT by bringing customer, shipping operator, and infrastructure manager together to provide a long-term IWT service option.

### **6.5.2 Public Accountability**

**VIWA should also consider taking a much more proactive stance in regard to public accountability and industry promotion.** The draft updated masterplan (2018) recognizes the importance of a communications strategy in reaching out to the industry and public. Internationally, one way that agencies do this is to publish annual reports setting out their objectives, performance for the year, future plans and programs, and financial statements. An annual report might also be a good place to include a market developments report (see 6.5.1). In Vietnam, an annual waterways report would need to be approved by MoT and would have three main parts: an overview of total waterway system trends and developments over the year; activities and performance of VIWA in managing infrastructure and regulating the industry; and the year's financial statement.

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<sup>39</sup> Recent European IWT market observatory reports are available at [www.inland-navigation-market.org](http://www.inland-navigation-market.org).





## 7. FUNDING MEASURES

### 7.1 Introduction

**VIWA lacks a sufficient funding base to effectively undertake its responsibilities in infrastructure management and industry regulation.** Drawing on the earlier assessment of the funding framework, Section 7 sets out the Bank team's suggested measures to overcome this deficiency. Given IWT's contribution to the overall output of Vietnam's transport sector, strengthening IWT would help to more efficiently and effectively meet the country's overall transport task while reducing its reliance on road transport, now the predominant mode. As concluded in Section 5, the Bank team finds that the current volume of funding from a combination of the national budget, ODA, and charges and fees paid by IWT users meets neither the capital investment nor the O&M needs of the sector.

**The best solution is to increase VIWA's funding base through higher state budget allocations, while expanding the agency's own-source funding base.** Because VIWA is an agency of MoT, any suggested financial measures would require support and endorsement from the ministry. The suggested measures described below would have budgetary consequences, both in terms of allocation of state budget funding between ministries and agencies and allocation of that funding to VIWA's capital investment and O&M needs. These are in addition to the funding needs identified in Section 6 relating to VIWA's organizational and management structure, improved infrastructure management and industry regulation, and its central corporate functions. Table 7.1 summarizes the proposed financial framework for national IWT infrastructure, divided into waterways operations and maintenance, waterways capital investment, and ports capital investments. Essentially, the framework recognizes that public funding is central to waterway channels and navigation (both in maintenance and capital), and private funding holds that place in ports and terminal infrastructure, with possible support from provincial governments and centrally affiliated city governments.

#### Measures Suggested in Section 7

- Extend the policy intent of Decision 47/2015 after its expiry in 2020 to continue the boost in waterways budget, to ensure a consistent, ongoing strategy that delivers long-term, increased funding certainty.
- Ensure VIWA's funding is enough to meet both its responsibilities in both infrastructure management and industry regulation.
- Ensure that IWT maintenance and development funding is in line with its contribution to the total domestic goods traffic task.
- Rebalance maintenance and capital budget funding from road network towards waterways network to support the greater social cost-efficiency of IWT.
- Establish a waterway maintenance fund (WMF) from the contributions from the state budget and fees from waterway users.
- Consider funding the WMF also from Class I vessel operators and fees for operational permits for ports and landing stages.
- Consider including in the WMF a transfer from vehicle taxes/fuel duties.
- Consider that MoT should boost funding for IWT capital projects to help move away from almost exclusive reliance on ODA.
- Identify whether any navigation infrastructure projects (excluding ports) have realistic PPP potential and the necessary conditions for success.
- Consider having VIWA develop and strengthen its expertise to undertake proper planning, assessment, prioritization, preparation and delivery of state budget-funded capital projects and those involving the private sector.

**Table 7.1: Overall Funding Framework Assessed for IWT Infrastructure Financing**

Potential financing sources for navigation infrastructure	Description/comments	
<b>VIWA infrastructure operating and maintenance costs</b>		
Waterways maintenance fund	State budget	Increase through reallocation from roads budget
	Navigation charges	On Class 1 vessel users
	Port operation permit fees	Annual, for ports and landing stages
	Use of road charges	Share of vehicle taxes/fuel charges
<b>VIWA infrastructure capital investment costs</b>		
VIWA capital raising	Not feasible in current conditions	
Development loans	ODA	Remains an attractive source of finance
Vietnam state budget	Increased proportion of capital funding of waterways relative to roads	
PPPs	Private investors possibly contributing to financing	Government capital subsidies, guarantees and/or some level of availability payments to PPP investor probably necessary in most cases
<b>Inland port investments</b>		
Private owners/investors	Private terminal operators having main responsibility for their port investments particularly in terminal services, cargo handling equipment, storage, and warehousing	
Joint development agreements	JDAs committing to complementary investments by provincial/city governments and private port companies based on allocation of responsibilities as in a “landlord port” model	

## 7.2 Waterway Maintenance Fund

MoT/VIWA could usefully explore the creation of a waterway maintenance fund (WMF), along the lines of a road maintenance fund. Creating a dedicated fund does not assure an increase in money available. But it does help bring focus to longer-term sector funding needs and sources and create funding stability that is lacking when relying on annual budgetary processes. The fund’s main sources could be the state budget, payments from waterway users, and possibly the use of road vehicle taxes as occurs in some countries. A WMF would be an important improvement in VIWA’s ability to ensure continued operation of the waterways.

### 7.2.1 State Budget

MoT should consider changing its sectoral funding allocations so that VIWA receives funding more in line with its contribution to the total domestic goods traffic task. IWT carries about 19 percent of the national traffic task (total tonne-km) compared to 24 percent by road (Table 2.1). But even though waterways carry only a fifth less tonne-km than roads, the average budget allocation to the road

network is between 15-20 times higher per tonne-km carried than for waterways. This imbalance exists even though the wider external costs of transport by road are substantially higher in financial, economic, and environmental terms. Similar imbalances exist in other countries, often because IWT tends to be less visible physically, its infrastructure needs much less understood, and road authorities are bigger and better resourced for winning public funds. However, Vietnam's case is exceptionally distorted.

**The wider economic cost advantages of IWT are strongly supported by international evidence.** A major study by the European Commission examined a consistent set of indicators of all external costs for IWT and road transport for 17 EU member states. These included the costs of climate change, air pollution, noise, accidents, road congestion, and other external costs. The study found the average external cost/tonne-km is five times higher for road than IWT freight.<sup>40</sup> The findings were published in a handbook, which was recently updated and is available on the Internet.<sup>41</sup> In the United States, the Texas Transportation Institute has similarly estimated that on a tonne-km basis, road transport uses nearly 3.7 times the volume of fuel, has 300 times greater land take, 156 times higher accident fatality rate, 150 percent higher particulate emissions, and 75 percent more pollutant spillages.<sup>42</sup> Although these findings cannot be translated directly to Vietnam because of differences in technology and circumstances, there is every reason to believe that its differential between IWT and road transport is of a similar, substantial order.<sup>43</sup>

**Current budget allocations between IWT and roads are therefore giving disproportionately higher funding to the mode with the highest harmful impacts on the community.** This is a perverse mismatch. Prime Ministerial Decision 47/2015 has helpfully boosted budget funding for IWT through to 2020. This has brought significant increases in VIWA's recent budget but the country needs a consistent, ongoing strategy that delivers long-term, increased funding certainty past 2020. Because it is unlikely that the Ministry of Finance can provide more funding for transport overall, this will need to come from internal reallocation from roads expenditure, both for current and capital budgets.

## 7.2.2 User Charges

**VIWA port authorities already collect fees and charges for use of inland waterway ports and landing stages.** As Table 5.4 shows, 90 percent of the fees collected (mostly tonnage fees on barges) are retained by port authorities for their own use. The small amounts collected as port in/out charges (about 12-13 percent of the total fees and charges collected) are remitted in full to the state budget. The retained revenues would seem to be just enough to fund the activities of port authorities. There are no other navigation fees or charges on shipping operators for use of the waterways network itself, which, if implemented, could help VIWA meet its responsibilities in infrastructure management.

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<sup>40</sup> Infrac, 2000, External costs of transport (accidents, environmental and congestion costs) in western Europe, Paris, Infrac Zurich, IWW, University of Karlsruhe.

<sup>41</sup> Ricardo-AEA. "Update of the Handbook on External Costs of Transport: Final Report." For the European Commission. DG MOVE 2014. Available at: <https://ec.europa.eu/transport/sites/transport/files/themes/sustainable/studies/doc/2014-handbook-external-costs-transport.pdf>

<sup>42</sup> Texas Transportation Institute. 2007. "Waterways: Working for America: A Modal Comparison of Domestic Freight Transportation Effects on the General Public."

<sup>43</sup> Vietnam's inland vessels are much less energy-efficient and more polluting than those in the EU but the same is true of Vietnam's road trucks.

**There would be some justification to create for the WMF an annual charge on operation certificates for inland waterway ports and landing stages.** As noted in Section 2.4, at the beginning of 2017 Vietnam had about 7,250 ports and landing stages of which about 4,750 were on the national waterway network (placing them under the jurisdiction of the central government). Of the national waterway facilities, 3,492 were licensed by VIWA and 1,217 were unlicensed. There was a total of 306 inland waterway ports, including 254 on the national waterways and 52 on local waterways. Establishing charges for using inland ports and landing stages would recognize the ongoing commercial benefits that flow to the operators of these ports and landing stages from VIWA's management of the inland waterways. For this to have direct value for VIWA, MoF would need to revise its current revenue submission and retention arrangements so that VIWA could keep some percentage of the revenues from such a charge, perhaps at the same 90 percent level for tonnage fees.

### **7.2.3 Social 'Bounty' from Road Transport**

**There may also be a case for considering diverting to the WMF some revenue from road transport taxes.** The shifts could include a proportion of road vehicle taxes or fuel charges. Such a redistributive "bounty" to the IWT industry might correct (in economic efficiency terms<sup>44</sup>) for the fact that road haulage does not pay for the external costs which it creates at a higher rate than IWT (for example, pollution, carbon emissions, and accident costs). Some other countries—China, Germany, and France, for example—use taxes and charges on road users to partly finance other transport mode networks.

## **7.3 VIWA Infrastructure Capital Investment**

### **7.3.1 VIWA Capital Raising**

**VIWA cannot feasibly raise additional capital for investment.** Raising a proportion of finance outside government budgets is possible for some public transport infrastructure authorities internationally but only if they can demonstrate an assured funding source for repayment and can offer a legally enforceable form of security for those repayments. Internationally, some publicly owned port authorities, toll-road companies, and airport companies raise commercial finance and service their debt obligations from a positive net revenue stream. VIWA cannot do this because it is not independently creditworthy, has a negative net income stream, and few tangible assets to pledge (it does not even own development rights on waterway banks). This is also true of the world's busiest and most established inland waterway administrations. In the three case-study jurisdictions, user revenue has proven insufficient to cover more than a fraction of the costs of O&M of navigable waterways and seldom any of the capital costs of construction and reconstruction.

### **7.3.2 Development Loans**

**ODA financing remains an attractive source of investment financing, though naturally requires government funding of loan repayments.** With government approval, MoT/VIWA could in principle access relatively attractive loans from international development banks such as the World Bank, the Asian Development Bank, and the Asian Infrastructure Investment Bank. These loans would be for specific projects that meet the lending criteria and fiduciary and other requirements of the specific banks. In theory, if the incremental user fee streams generated by the project were to exceed the

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<sup>44</sup> This is an extension of principles espoused by the economic theory of "second-best." The "first best" solution is to charge each mode its full marginal social costs, including externalities.

project's O&M costs, that difference could become a user contribution to funding of repayments. But the immediate challenge is to raise user fees to a level where they would recover just the O&M costs. Hopes of also funding a substantial part of capital cost are unrealistic for the immediate future. For now, the ultimate source of funding repayments would have to be the budget and hence taxpayers. As mentioned in Section 5.3, ODA will likely be less accessible as a longer-term source of funding for capital investment as Vietnam's welcome and continued economic development will make it hard to qualify for concessional financing.

### 7.3.3 Government Budget

**As with maintenance costs, MoT could reallocate part of the road capital budget to IWT capital projects.** Section 5 noted that only minimal (less than 1 percent) amounts of capital investment in IWT infrastructure have been provided by GoV, mainly for use in the preparation of IWT master plans and project investment preparation. As shown in Table 5.1, VIWA's capital expenditure has been extremely low in recent years, between VND 1.00 and 6.38 billion per year over the 2013-2017 period. Making available even a modest proportion of the capital budget for national roads, say 3-5 percent, would be a transformational increase in capital for waterways while only marginally slowing the pace of road network development.

### 7.3.4 Private Finance

**With the GoV trying to encourage private sector investment in transport infrastructure, VIWA has listed several potential PPP projects for inland waterways on its website and in promotional documents.** Several possible PPP, BOT, BT or other public-private arrangements have been identified by GoV (see Annex B for projects listed). The private sector can in principle bring valuable skills, expertise, and resources to capital projects. For port projects with good traffic throughput, private financing may be a realistic option. Waterway projects involving shipping channels and navigation assets are more challenging. The general concept sought by GoV would be for VIWA or MoT to offer private companies (on a competitive basis) a lease or concession to finance, upgrade, and maintain a piece of navigation infrastructure for a given number of years in return for a stream of revenue from user fees.

**However, international experience suggests that, without government financial support, the private sector would be reluctant to embrace both the engineering risks of waterway projects and the inherently risky<sup>45</sup> revenue stream from commercial barging.** Government support might be a capital subsidy upfront, government revenue guarantees, a guaranteed periodic "availability" charge, or some combination of these. Even if the private sector were willing to finance the project (and international experience in the IWT sector provides few successful examples<sup>46</sup>), the availability payments would still need to be largely publicly guaranteed or funded, though the government could then recover some of its outlays by collecting user fees. That is, the government could take the market

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<sup>45</sup> Evident risks include traffic risk, regulatory risk, climatic risk, and sovereign risk.

<sup>46</sup> In 1995, the Argentine government awarded a concession contract for the dredging and signalization of the Paraná River and River Plate. A private company maintains the navigational depth and collects tolls from ships that navigate the fairway in the lower stretches. The arrangement has been extended to 2021. While tolls cover the cost of maintenance dredging on the lower stretches, extending the concession to the upper stretches of the river was viable only with continuing government subsidies.

risk on collecting revenue from user fees, while using this revenue to partially offset its availability payments to the private sector provider of the service or infrastructure.

**It is therefore important for government to identify and design those PPP projects, including giving guarantees or commitments which could attract private investment.** PPP projects cannot be successfully pursued purely through an “arithmetic” process. That is, PPPs and other such projects involving private sector participation are not the end result of a process that lists all the projects the government has identified, subtracts those it is able to fund itself, leaving PPPs (or other public-private arrangements) as the projects remaining. All capital projects, irrespective of their funding source, should go through proper planning, prioritization, and preparation, all of which are vital initial steps for government (see Section 7.4). In the view of the Bank team, very few waterway projects would meet all the criteria necessary to ensure that PPP is the best financing alternative. The potential and criteria for PPPs in Vietnam’s IWT sector are discussed further in Section 7.6.

## **7.4 Port Infrastructure Capital Investment**

### **7.4.1 Private Owners/Investors**

**Section 2 drew attention to the poor state of berths, equipment, and connectivity at many ports on the national waterways network.** These ports are owned by private companies that have the prime responsibility for funding investments in them. The Bank team does not favor diverting scarce capital funds away from VIWA’s much-needed investments in national waterway navigation infrastructure. Instead, it seems more appropriate that ports be a subject for private investment. However, the Bank team believes that provincial and centrally affiliated city governments could also play a more active role through adoption of the landlord port model, as described below.

### **7.4.2 Joint Development Agreements, the Private Sector, and Provincial Governments.**

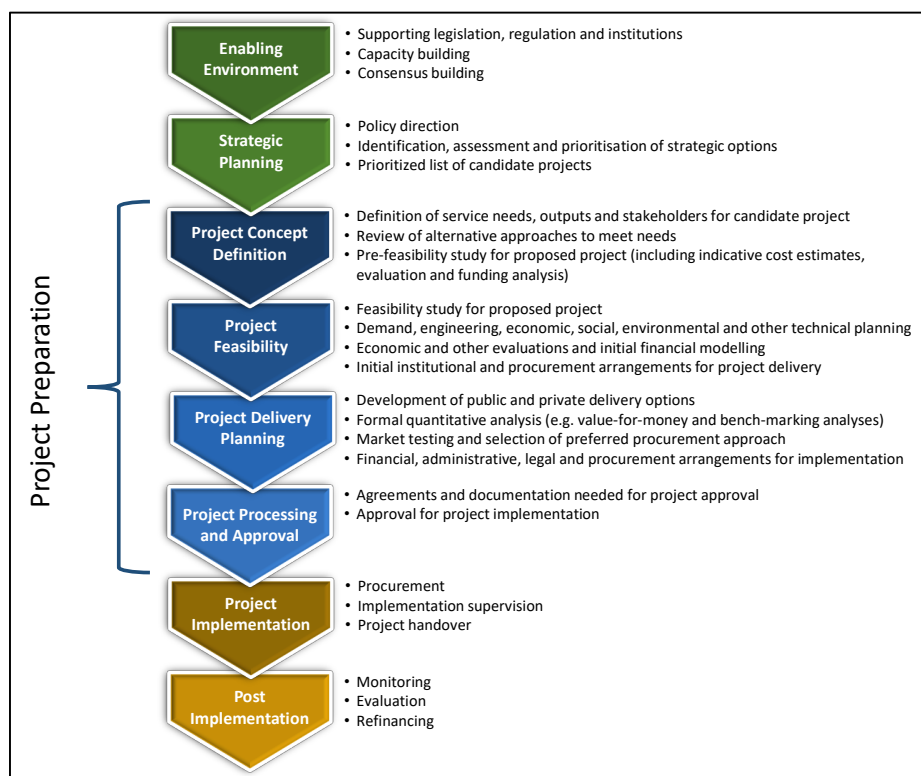
**Provincial and centrally affiliated city governments have a legal responsibility to pursue national goals in IWT development.** They also have a strong interest in the local flow-through of economic benefits that successful port activity can bring. For this reason, provincial and local governments in comparator countries are heavily involved in developing ports. Internationally, a common and successful port organization model is the “landlord port,” in which a public authority (often owned at the local level) owns and invests in the basic sub-structure (berths, jetties, land area, road connections, etc.) while private companies invest in and operate all the transport service elements (vessel handling, loading, unloading, storage, etc.) This is discussed further in Section 7.6.3 below.

**The GoV could consider piloting this model at two or three of the main inland ports where investment is most needed.** Provincial governments would agree to fund or partly fund necessary investments in the port sub-structure and road connectivity and make land available for expansion. But this would be subject to a firm commitment by private terminal operator(s) to make matching investments in such things as mechanized cargo handling, warehousing, and storage. This joint approach would give provincial and centrally affiliated city governments a much stronger stake in inland ports in their jurisdiction. Aligning the interests of local governments and operators may be a more effective and sustainable strategy than simply offering rent-free land or interest subsidies to existing private operators.

## 7.5 Project Preparation and Processing

Competent and comprehensive project preparation is critical to assessing fundamental project feasibility prior to determining the most appropriate funding sources and modes. This is true for ODA-sponsored projects, those prospectively funded through the budget allocation process, and especially for projects that could involve engaging the private sector through PPP, BOT, BT, or other public-private arrangements. Whether funding is public or private, doing this job successfully typically requires the steps laid out in Figure 7.1.

Figure 7.1: Recommended Project Preparation Steps



VIWA, in conjunction with MoT, MoF, and other relevant agencies, should work to develop and strengthen its expertise to undertake these steps and studies. In addition to building confidence among potential private investors, these studies would provide VIWA and MoT with crucial justifications for increased capital allocations from the government budget.

## 7.6 Use of PPPs in Waterway Development

### 7.6.1 Background

PPPs are arrangements between the public and private sectors in which part of the services and/or infrastructure assets that fall under the responsibility of the public sector are provided by the private sector. PPPs have been used to develop or improve sectors such as energy, water, transport and urban mobility, telecommunications, information technology, and buildings. They have also found use in social sectors such as health and education. However, it is important to note that in virtually all countries, PPPs have provided only a part of overall infrastructure and service delivery, with governments remaining the main providers.



PPPs are typically a long-term contract between a private party<sup>47</sup> and a government entity to provide a public asset and/or related service, in which the private party bears significant risk and management responsibility. The private party’s remuneration is linked to performance, either through payments it collects from users of the service or payments—in part or full—from government. PPPs can provide for new and existing assets and related services, with the private partners focusing on innovation and technology; project management, design, and operation; lifecycle optimization; and financing.

The public sector’s role in PPPs is pivotal to their planning, structuring, procurement, and ultimate success. This role may include the initial policy for and the identification and planning of the PPP; its specification and preparation in the lead-up to a competitive procurement; and managing the private party’s compliance with the contract, including making payments to the private party for the asset or services provided. Typically, the public sector retains ownership of the asset, with operation transferred back to it at the end of the contract, along with responsibility for ensuring the delivery of the relevant service (typically through the now contracted private sector party). It is important to note that PPPs do not constitute privatization, in which ownership is permanently transferred to the private sector along with all responsibilities for funding and delivery of services. Figure 7.2 below shows the respective roles of public and private sectors in PPPs.

**Figure 7.2: Roles of the Public and Private Sectors in PPPs<sup>48</sup>**

	Identify Infrastructure Need	Propose Solution	Project Design	Project Financing	Construction	Operation & Maintenance	Ownership
Bid/ Build	Public Sector				Private Sector	Public Sector	
Design/ Build	Public Sector	Private Sector	Public Sector	Private Sector	Public Sector		
Design/ Build/ Finance	Public Sector	Private Sector				Public Sector	
Design/ Build/ Finance/ Operate/ Maintain	Public Sector	Private Sector					Public Sector

A key feature of a PPP contract for a major infrastructure project is that it bundles together multiple project phases or functions. These phases typically include some or all of the following:

- Design (also called engineering work): This entails developing the project from initial concept and output requirements to construction-ready design specifications.
- Build or Rehabilitate: When PPPs create new infrastructure assets (sometimes called greenfield projects), they typically require the private party to construct the asset and install

<sup>47</sup> In PPPs, the private party or sponsor is the entity providing the equity investment into the project. This could be as a single investor but more often is a consortium or group of investors.

<sup>48</sup> Adapted from P. Sabol and R. Puentes. 2014. “Private Capital, Public Good: Drivers of Successful Infrastructure, Public-Private Partnerships.” Washington, DC: Brookings Institution.

all equipment. Where PPPs involve existing assets (brownfield projects), the private party may be responsible for rehabilitating or extending the asset.

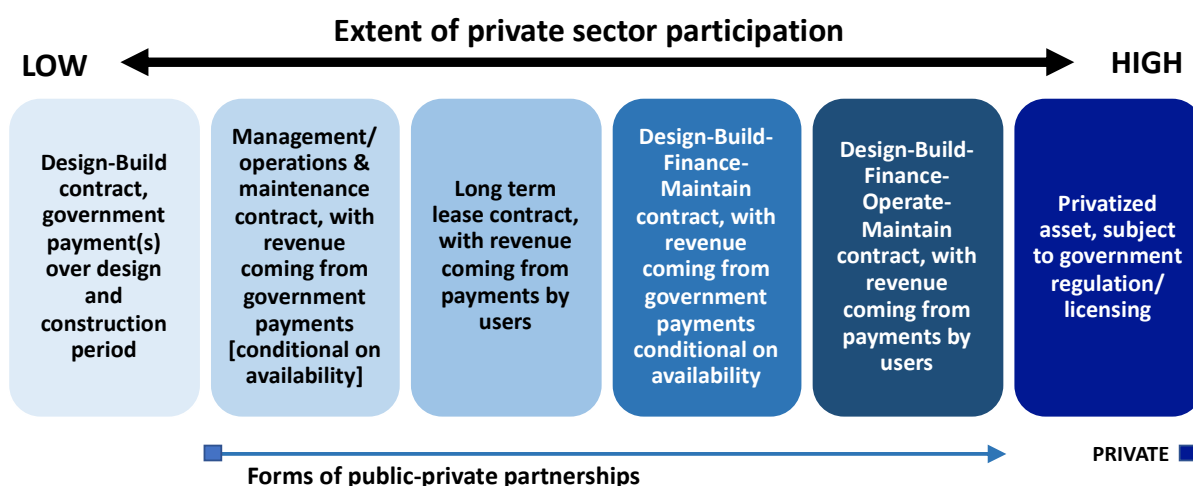
- **Finance:** When a PPP includes building or rehabilitating the asset, the private party is typically also required to finance all or part of the capital expenditure.
- **Maintain:** PPPs assign responsibility to the private party for maintaining an infrastructure asset to a specified standard over the life of the contract. This is a defining feature of PPP contracts.
- **Operate:** The operating responsibilities of the private party to a PPP can vary widely, depending on the nature of the underlying asset and associated service. For example, the private party could be responsible for:
  - Technical operation of an asset and providing a bulk service to a government off-taker—for example, running a bulk water treatment plant.
  - Technical operation of an asset, and providing services directly to users—for example, a PPP for a water distribution system.
  - Providing support services, with the government agency remaining responsible for delivering the public service to users—for example, a PPP that creates a school building and provides janitorial service, but with the public sector providing the teaching staff.

**PPP projects differ from traditional public sector projects in several ways:**

- **For a PPP, all phases of a project are usually awarded to a single party.** This allows scope for better, smarter solutions. In traditional procurement, each phase may be contracted out to a different party.
- **The private PPP party bears some or all of the costs of the project.** The revenue with which the private party is repaid these costs can come in two ways, either:
  - From the government, which pays installments over the life of the project based on the agreed outputs (such as the availability payments discussed above)
  - or
  - From users who pay the private party for the service through a user fee, such as a toll or tariff.
- **The procurement process for PPP projects takes longer than with traditional projects.** That is why PPPs are only worthwhile for projects requiring a significant level of investment and/or where there are substantial efficiency gains to be captured.
- **If the private party does not deliver the outputs as agreed, the government may impose penalties.** These might include withholding part of the payment, imposing financial penalties, and terminating the contract.

**In practice, PPPs represent a continuum of possible project structures.** At one end of the continuum are the core government budget-funded capital works where the private sector is contracted for the design and construction of new infrastructure. At the other end are projects with high levels of capital participation by the private sector. This is illustrated in Figure 7.3:

Figure 7.3: Continuum of Public and Private Sector Roles in PPPs<sup>49</sup>



Perhaps the most significant feature of PPPs concerns the allocation of risk. The delivery and operation of large infrastructure projects bring numerous risks. It is the identification and allocation of these risks that are at the center of PPP contracts. The risks are specific to the nature of the infrastructure asset, the type of PPP contract (such as design-build-finance-operate-transfer and operations and maintenance only, involving no private financing of any capital investment). The underlying principle for the allocation of risks is that they should be borne by the party best placed to manage them. In the context of a PPP, this means deciding which party to the PPP contract will bear the cost (or reap the benefit) of a change in project outcomes.

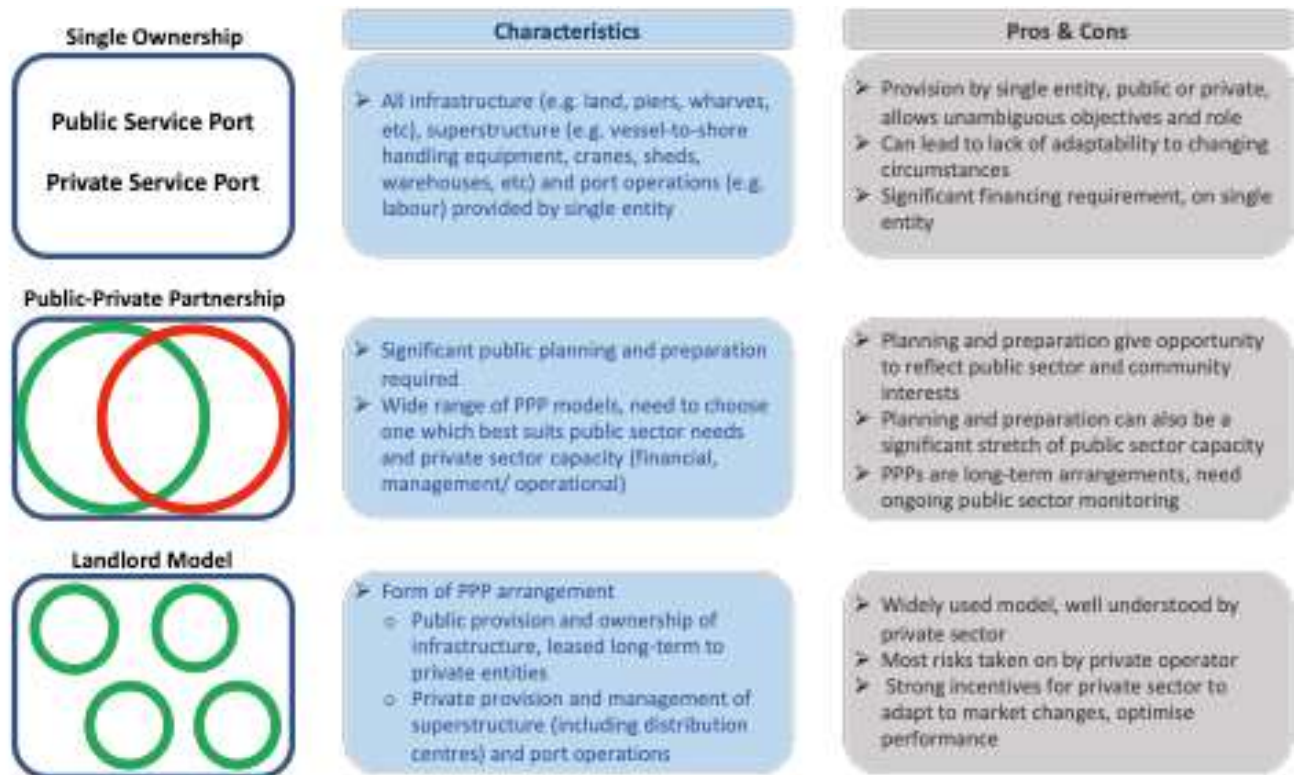
### 7.6.2 Inland Ports and PPPs

Inland ports have a wide range of options in terms of ownership and management models. Ports can be wholly public or privately owned and operated, or a combination of the two. There are three major models:

- **Single Ownership.** The inland port project is developed and operated by a single public or private entity.
- **Public-Private Partnership.** The public and private sectors share the development of an inland port by setting up a special purpose entity. Usually, the public sector is responsible for the development of sub-structure, while the private sector develops the superstructure.
- **Landlord Model.** The public sector owns the land and develops the basic sub-structure. Long-term concessions are offered to the private sector for commercial activities using that sub-structure, where private companies invest in and operate some or all of their own vessel handling, loading and unloading equipment, storage, and logistic facilities. In IWT, landlord ports are a widely adopted form of PPP.

<sup>49</sup> Adapted from “Public Private Partnerships Reference Guide,” Version 3. 2017. Public-Private Infrastructure Advisory Facility. Washington, DC: World Bank.

Figure 7.4: Inland Port Models<sup>50</sup>



### 7.6.3 Vietnam's IWT Sector and PPPs

The IWT sector in Vietnam has undergone remarkable structural changes in a very short time. Inland ports ownership and management, barge ownership and operations, and waterway dredging and maintenance have been almost fully transferred to the private sector through equitization and divestment. Through VIWA, government retains a vital role in management and operation of the waterways. The potential of PPPs to offer a significant source of funding differs notably for waterways infrastructure (navigation routes, channels, and aids) and ports infrastructure.

#### PPPs for Waterway Navigation Infrastructure

MoT/VIWA has proposed several PPP projects but none has been successfully implemented. Phase 1 of the Cho Gao Canal, which seemed one of the more promising opportunities for a PPP structure, had been developed on the basis of user charges as the source of revenue. This met significant user resistance and the government has not pursued a PPP approach. Any future expansion of the canal is now envisaged as a GoV budget-funded project.

The very rare international experience in applying PPPs successfully to navigation infrastructure, combined with VIWA's lack of relevant experience, suggest a cautious approach would be best for pursuing PPPs. A small number of waterway projects were developed in Latin America under a PPP

<sup>50</sup> Based on J-P Rodrigue. 2017. *The Geography of Transport Systems*, Routledge, adapted from B. Slack and C. Comtois, *Identification des modèles de gouvernance d'un pôle logistique en lien avec la réalité québécoise, Aménagement d'un pôle logistique au Québec: cadre d'analyse de l'étude de faisabilité, Étude 1.2. (2010)*

model, one of which—the Paraná-Paraguay Waterway Concession in Argentina—is detailed in Annex C as a case study. This project provides some useful lessons for Vietnam’s IWT PPP program:

- Establishing clear and detailed risk allocation clauses and compensation mechanisms from the beginning is of paramount importance to preserving the benefits of competition achieved in the procurement process. This is true especially when the financial proposal has been instrumental in the selection of the private partner.
- If the government commits to provide assets or equipment, it should not guarantee the conditions or state of such assets, unless those conditions are certain (for instance, if the asset is covered by a manufacturer’s warranty). Private partners should assess the condition of public assets in drafting their technical and financial proposals. These partners should receive public assets or equipment “as is,” reducing chances of claims based on the quality of any assets.
- Governments should limit the ability to add scope to existing PPP contracts. Although contracting with the incumbent is generally less time-consuming as a PPP is being negotiated, the benefits of competition in infrastructure projects have proven to be greater and widespread.

Overall, sensible caution should prevail in the use of PPPs in the IWT sector, in particular the build-own-operate (BOO) model.<sup>51</sup> This model is not well proven for this sector and is practically non-existent in other transport sectors compared to the build-operate-transfer (BOT), build-lease-transfer (BLT), and operation and management (O&M) models.

**GoV should be aware that many governments have been hesitant to transfer public assets to the private sector under a BOO model because it is effectively a form of quasi-privatization.** A review of global practice in the IWT sector shows that none of the usual PPP countries (e.g. the UK, Australia, India, and the Philippines) and none of the development partners have published a model BOO contract. The BOO model has not been tested on an actual IWT project. Other forms of PPP may be more relevant for IWT in Vietnam.

**A developmental approach to PPP implementation seems sensible: smaller rather than larger, shorter rather than longer term, and evolving rather than beginning with complex, highly structured arrangements.** Through a small number of pilots, VIWA could consider expanding some of its current small service-based contracts for dredging into small-scale PPPs. These might feature:

- Multi-year contracts rather than the current one-year terms, building on the approach taken by the roads sector on its performance-based road maintenance contracts. Terms of two to three years initially could subsequently be extended to perhaps five years.
- Performance-based availability payments, using success in key performance indicators as the basis for payment.
- Development of VIWA’s contract/performance monitoring capacity so that it can oversee the initial crop of small-scale PPPs and the disbursement of availability payments. This monitoring

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<sup>51</sup> MoT BOO Contract Guidelines for Inland Ports, June 2016. Available at <http://ppp.mt.gov.vn/pppunit>, accessed 6 February 2019

could help foster the next generation of service-based PPPs for longer periods and with wider performance requirements.

**Through an evolutionary process, VIWA may later acquire capacity to tackle more complex PPP projects.** Using the project preparation process identified in Section 7.5, VIWA could identify, assess, prepare, and apply an availability payment-based PPP approach to a likely small number of proposed infrastructure projects. GoV would be willing to commit in advance to long-term budget funding of the availability payments.

### **PPPs for Ports Infrastructure**

**Vietnam's inland ports fall under the private service model (Figure 7.4).** Following equitization, private operators are responsible for the full range of port sub-structures, superstructures (cranes and other handling equipment), and port services. Given VIWA's need to prioritize use of very limited public capital resources to national waterways navigation infrastructure, and given the private sector's ownership of ports, the Bank team considers that the private sector should retain the prime responsibility for port investments overall, particularly for port superstructure assets.

**However, there remains an important role for local government in creating incentives for the private sector to invest in the better infrastructure that ports need.** Provincial and centrally affiliated city governments could be more active in ports development through adoption of a landlord port model involving joint development agreements (JDAs) between private port operators and provincial or centrally affiliated city governments. These sub-national governments have a legal responsibility to pursue national goals in IWT development and a strong interest in the local flow-through of economic benefits that successful port activity can bring. Adopting the landlord port model would require a comprehensive review of impediments and opportunities. This might bring revisions to several features in the current private port model, such as:

- Land ownership and transfer, including any legislative requirements
- The parties to, the form, and the term of current agreements between the government and the port owners
- Port user charges and revenue allocation

**GoV could consider piloting this model at two to three main inland ports where investment is most needed and where the provincial or city government is supportive.** Provincial government would jointly agree to fund or partly fund investments in the port sub-structure (approach channels, quay walls, berth depth, etc.) and road connectivity, and where necessary make land available for expansion. This public investment would only be released in return for a firm commitment by the private terminal operator(s) to make matching investments in mechanized cargo handling, warehousing, storage, etc.

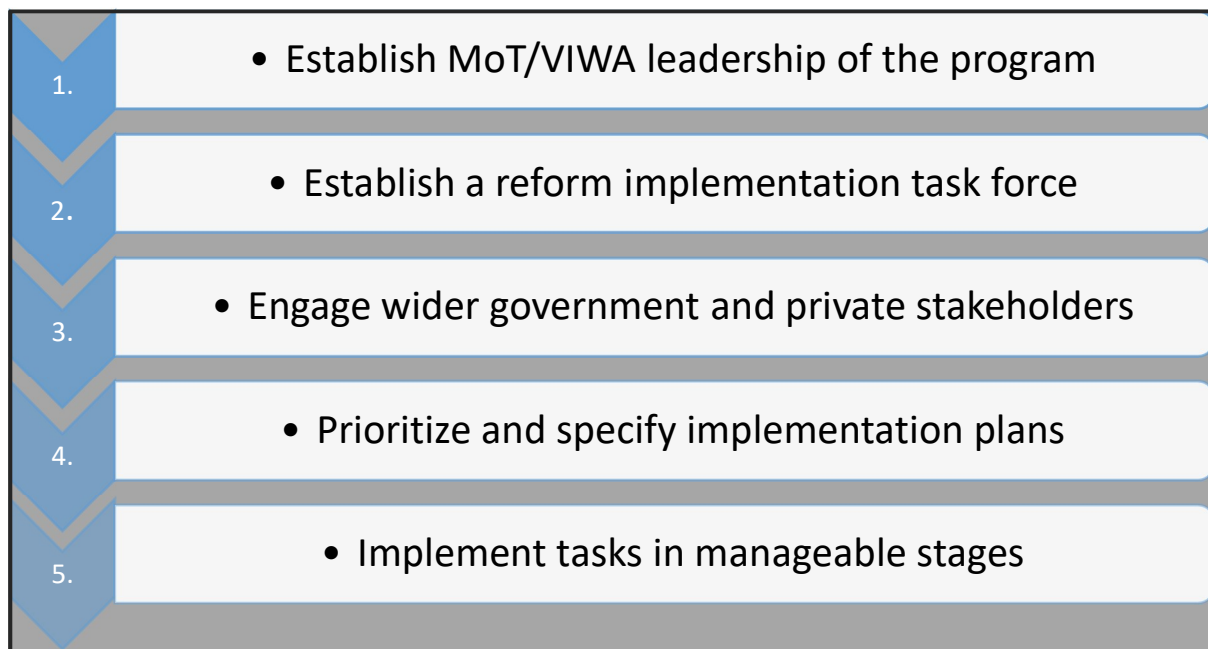


## 8. IMPLEMENTATION

### 8.1 Managing a Reform Program

Implementing multiple and interrelated reforms in busy government agencies that have day-to-day duties to carry out requires political commitment, organization, and persistence. The Bank team considers it better to view the individual measures identified here as a reform program rather than just a list of initiatives. The program could then be shaped and implemented in an integrated way, while recognizing that individual elements may be modified or deleted, or new measures added. Figure 8.1 identifies five main elements of an implementation plan. Each is described in the subsections that follow.

Figure 8.1: Main Elements in Implementation of a Reform Program



### 8.2 Ministerial Leadership

A reform program would require the Ministry of Transport to endorse, adopt, and support the program. While some measures are within VIWA's own decision-making authority, adoption of some of the more substantial measures would need ministerial endorsement. This would require MoT and VIWA staff to undertake the necessary detailed work on whether, how, and when to implement specific initiatives. This is particularly true for measures that would impact VIWA's scope of activities, organization, and management structure, or which would affect the transport budget or its allocation between modes. The ministerial order itself could be a clear and simple statement of the changes to be investigated or implemented and the apparatus for following through, as described below. The program leadership could then be named by the director general and responsible vice-minister.

### 8.3 The Reform Task Force

A motivated and empowered joint MoT/VIWA reform task force would be the best way to manage the reforms. The task force would undertake the day-to-day assessment of recommendations,

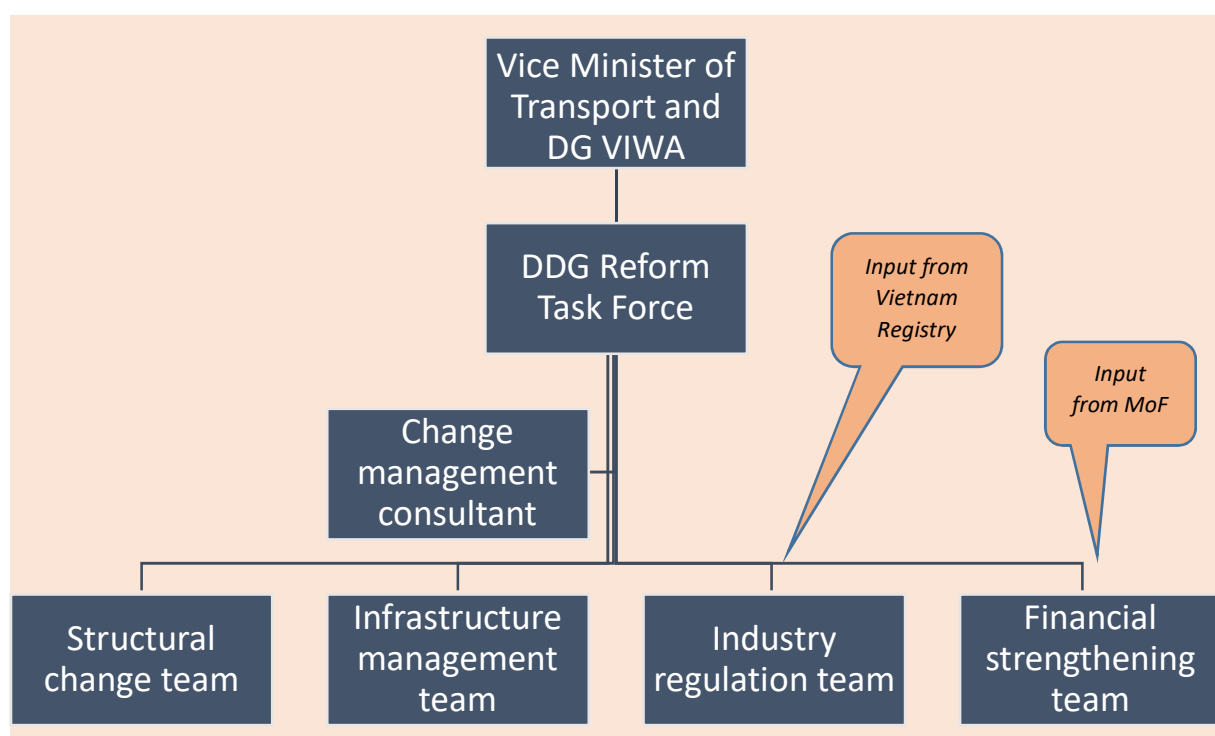


prioritize actions, and begin specifying and planning the changes sought. Day-to-day direction of the task force might be vested in a nominated DDG reporting to joint meetings of the director general and the responsible vice-minister of transport.

**The reform task force would be responsible for reviewing the measures proposed, strengthening as necessary, augmenting with other measures identified by the team, and preparing and managing the implementation.** The task force director would work closely with VIWA’s HR staff to develop wider consultative mechanisms to keep the staff of VIWA informed about the program. Figure 8.2 suggests a possible task force structure of four teams. Each team would focus on one of four key aspects of reform: reform of VIWA structure; infrastructure management improvements; industry regulation improvements; and strengthening of the financial framework. Measures that could fall within the responsibility of each team are shown in Table 8.1.

**MoT/VIWA should shape the reform program based on its greater knowledge of the challenges and constraints.** Its leaders might identify additional reform measures not included in this report; they might also decline to consider some that the report recommends. At the same time, it is unlikely that MoT and VIWA already have all the skills to manage a reform program. The Bank team advises hiring a qualified external adviser or consultant with a track record in institutional change management in Vietnam to support the task force. Ministry of Finance (MoF) input would be essential to the financial strengthening team. Ideally, MoF would nominate an officer with experience in budget management in the transport sector to be part of that team. Similarly, an officer of the Vietnam Register could be represented on the industry regulation team.

**Figure 8.2: Suggested Joint MoT/VIWA Task Force Structure**



**Table 8.1: Suggested Breakdown of Measures to be Considered by Each Program Sub-Team**

Overall Reform Task Force Structure		
MoT/VIWA teams	Reform goal	Measures for consideration
<b>Structural change team</b>	<i>To improve the structure of VIWA and its accountability and transparency</i>	<ul style="list-style-type: none"> <li>• Remodel VIWA organization structure.</li> <li>• Establish an industry advisory board.</li> <li>• Create IWT industry monitoring and promotion capability.</li> <li>• Produce and publish annual reports and accounts.</li> <li>• Investigate VIWA taking responsibility for river policing.</li> <li>• Act on other structural changes identified by MoT/VIWA.</li> </ul>
<b>Infrastructure management (IM) team</b>	<i>To improve the way that VIWA manages the national waterways network</i>	<ul style="list-style-type: none"> <li>• Strengthen maintenance contracting (duration, performance, and e-procurement).</li> <li>• Develop an asset management system.</li> <li>• Adopt key IM performance indicators.</li> <li>• Establish climate resilience action plan.</li> <li>• Investigate feasibility and benefits of RIS.</li> <li>• Act on other IM measures identified by MoT/VIWA.</li> </ul>
<b>Industry regulation (IR) team</b>	<i>To improve the way VIWA regulates vessel and port operations on national waterways</i>	<ul style="list-style-type: none"> <li>• Publish a handbook for operators.</li> <li>• Consider the development of an electronic regulatory manual.</li> <li>• Introduce key IR performance indicators.</li> <li>• Initiate a fundamental review of port authority functions to improve regulatory efficiency.</li> <li>• Act on other IR measures identified by MoT/VIWA.</li> </ul>
<b>Financial strengthening team</b>	<i>To establish increased, more diversified, and sustainable sources of finance for operations and investment</i>	<ul style="list-style-type: none"> <li>• Explore feasibility of an inland waterways maintenance fund.</li> <li>• Assess options for introducing waterway user charges for Class 1 vessel operators.</li> <li>• Make targeted proposals for gradually reallocating some road capital and maintenance budget to waterways.</li> <li>• Encourage pilot port development projects through JDAs.</li> <li>• Focus in detail on advancing the one or two most promising PPP projects.</li> <li>• Act on other financial strengthening measures identified by MoT/VIWA.</li> </ul>

#### **8.4 Consult a Wider Group of Stakeholders**

Many different branches of government have a stake in the performance of the IWT industry or might be impacted by reform measures. It is therefore necessary for MoT and VIWA to consult with these branches and obtain their views. They include the Ministry of Finance (for any measures affecting sector budget or borrowing); provincial and centrally affiliated city governments (for regulatory or port development measures); the Vietnam Register (for vessel regulatory issues); the Ministry of Public Security (which is currently responsible for the River Police); and the Ministry of Natural Resources and Environment (environmental regulations).

Considering the views of vessel and port operating entities regarding specific measures might help achieve the reform goals. If the industry advisory board could be established quickly, it could have an important role in influencing priorities and implementation plans.

## 8.5 Prioritize and Specify Implementation Programs

VIWA does not have the resources to do everything at once, so the task force would need to recommend to MoT/VIWA leadership a prioritization of actions. Table 8.2 shows what the Bank team considers to be a sensible order of priorities for addressing the issues, based on classification (1) to (3), where (1) means the measure should be considered earliest, (3) means it could be deferred for later, with (2) in between. However, the reform task force and its MoT/VIWA leadership must form their own judgement as to what is possible and practical given political and material constraints. In the Bank team’s view, all the measures would contribute to more efficient and effective administration of Vietnam’s waterways.

**Table 8.2: Suggested Priorities in Addressing Each Measure**

Overall Reform Task Force		
MoT/VIWA teams	Measures for consideration	Suggested priority
<b>Structural change team</b>	• Remodel VIWA organization structure.	(1)
	• Establish an industry advisory board.	(1)
	• Create IWT industry promotion and facilitation capability.	(2)
	• Create capability for production of annual reports and accounts.	(1)
	• Investigate feasibility of VIWA taking responsibility for river policing.	(3)
	• Act on other structural change measures to be identified by MoT/VIWA.	*
<b>Infrastructure management (IM) team</b>	• Strengthen maintenance contracting.	(1)
	• Develop an asset management system.	(1)
	• Adopt key IM performance indicators.	(1)
	• Establish climate resilience action plan.	(2)
	• Adopt a feasible development path for river information services.	(2)
	• Act on other IM measures to be identified by MoT/VIWA.	*
<b>Industry regulation (IR) team</b>	• Publish a handbook for operators.	(1)
	• Consider the development of an electronic regulatory manual.	(2)
	• Initiate a fundamental review of port authority functions.	(1)
	• Improve regulatory enforcement in areas not covered by port authorities.	(1)
	• Introduce key IR performance indicators.	(2)
	• Act on other IR measures to be identified by MoT/VIWA.	*
<b>Financial strengthening team</b>	• Explore feasibility of an inland waterway maintenance fund.	(1)
	• Assess options for introducing waterway user charges.	(1)
	• Make targeted proposals for budget reallocation from roads.	(1)
	• Encourage pilot port development programs through JDAs of ports/provinces.	(2)
	• Focus in detail on advancing one or two most promising PPP projects.	(2)
	• Act on other financial strengthening measures to be identified by MoT/VIWA.	*

**For each measure found feasible and desirable, the MoT/VIWA teams would produce a detailed task specification and implementation schedule.** This would need to be a practical plan which describes the key decisions and actions necessary to advance to implementation and would contain a plan for both the implementation process and the operational phase. There would also need to be a detailed timeline for implementation and, if appropriate, a budget estimate for implementation and on-going operation. Most measures listed fall within the current sphere of responsibility of MoT (or as delegated to VIWA) and would not require major legal changes.<sup>52</sup> More substantial measures may require new ministerial decisions or circulars. The reform task force would utilize VIWA's legal officers to draft the appropriate instruments.

**If the MoT/VIWA adopt this reform program, they should see it as an opportunity to revitalize the administration of IWT in Vietnam.** MoT and VIWA should be bold—they will have the chance to craft an organization that is more focused and cost-effective and will speed the development of a vital resource for Vietnam's future prosperity. VIWA managers may be able to identify many further improvements in the way the agency functions. Some of the measures already listed here will involve VIWA taking on new processes or functions and so may require development of human resource capability through specialist training or recruitments.

## **8.6 MoT Gender Action Plan**

**The reform program would provide an opportunity for VIWA to move forward with measures in support of MoT's Gender Action Plan.** In recent years, Vietnam has closed gender gaps across a range of social and economic measures. Improvements achieved are set out in the Bank's country partnership framework.<sup>53</sup> The women's labor force participation rate is within 10 percent of men's—a smaller gap than in most comparable countries. There has been an upward trend in the share of women in wage work, mainly driven by increased employment for women in foreign-owned, export-oriented factories. Nevertheless, some gender gaps persist, including women's access to high-level leadership positions in the public and private sectors and a gender earnings gap, in which women earned 20 percent less than comparable men in 2012. Women also make up a large share of unpaid family workers, particularly in agriculture.

**Vietnam's National Strategy on Gender Equality<sup>54</sup> forms part of its national socio-economic development strategy.** It is a foundation of the human resource development strategy of the party and state. Gender equality is recognized as one of the basic elements for improving the quality of life of every person, every family, and society as a whole. Section 14 of the strategy specifies that ministries, ministerial-level agencies, and governmental bodies shall participate in strategy implementation; formulate and organize implementation of annual and five-year action plans for strategy implementation; accelerate inter-sector coordination, especially through the inclusion of

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<sup>52</sup> Giving VIWA responsibility for the River Police would probably require major legislative actions.

<sup>53</sup> World Bank, 2017. "Country Partnership Framework for the Socialist Republic of Vietnam for the Period FY2018-22." Washington, DC: World Bank.

<sup>54</sup> Prime Minister's Decision 2351/QĐ-TTg. "National Strategy on Gender Equality for the 2011-2020 Period." December 2012.

gender equality issues in planning and policy making work; and inspect and evaluate the strategy implementation in their ministries or agencies.

**MoT has assumed its responsibilities in national strategy implementation in the transport sector through development and promulgation of a MoT gender action plan.** The plan has seven main objectives, each of which is supported by specific measures and in most cases numerical targets. The objectives are:

1. Promoting women's participation in leadership and management positions
2. Narrowing gender gaps in economic affairs, job opportunities, and employment
3. Enhancing the quality of female human resources to gradually ensure the equality of male and female in education and training
4. Ensuring gender equity in accessing and benefiting health care services
5. Ensuring gender equity in culture and information
6. Ensuring gender equity in family life and gradually eliminating gender-based violence
7. Enhancing the capacity of state administration of gender equity

Some of the objectives and measures in MoT's gender action plan relate to the ministry's own administrative sphere, which includes its agencies such as VIWA. Others are wider, relating to promoting gender equality in transport sector operations as a whole.

**The scope of this report does not encompass a detailed examination of vessel transport operations or of the industrial and workforce structure in the IWT industry.** It therefore did not incorporate field surveys that might establish gender-specific differences in the experiences of women as suppliers and users of IWT services. Annual enterprise surveys, conducted by the General Office of Statistics, pose some questions on IWT but no questions on the gender of business owners/managers.

**It is known in general terms that a significant proportion of the transport services industry, especially the operation of smaller vessels, are family livelihoods.** In family-operated vessels, women spend extended periods living on waterways and sharing work which is often physically demanding and sometimes hazardous. Without gender-specific data, it not possible to substantiate a case that women experience more difficulties and constraints than men in their contributions to the industry. However, if VIWA is to meet the aims of MoT's gender action plan, it will need to develop and utilize capacity to conduct such surveys in the IWT sector and respond to any differentials in gender impact or opportunity that are identified. Such data should attempt to identify private female-owned businesses involved in transport of key commodities through waterways (by sector, region, type of vehicles, type of commodity, volume, and value); employment (for both transport and logistics); work positions (operators, managers, and workers); training needs, and experience. The waterway vocational colleges, which fall partly under VIWA governance, should be in a position to respond to training needs for women in the industry.

**More immediately, there are areas within VIWA's own scope of responsibilities where gender progress can be made.** As infrastructure manager and industry regulator, VIWA could use implementation of the reform program suggested in this report to make solid progress toward the goals of MoT's gender action plan. The proposed industry advisory board is one such opportunity at the governance level. If a board is created, women could make up a reasonable proportion of the members, including representatives of women or family vessel operators and of IWT customer organizations.

**There is also a major gender imbalance in VIWA’s own staffing, which VIWA could progressively address.** In 2018, some 19 percent of VIWA staff were female. The proportion is highest at VIWA headquarters (36 percent) and in the vocational colleges (32 percent). In the main infrastructure management branches, the figures are 23 percent in VIWA-north and 18 percent in VIWA-south. The proportion is lowest in the port authorities, 12 percent. An earlier survey<sup>55</sup> identified a common perception that women were unsuitable for jobs that could involve disputes in which men might be rude and violent. If port authority functions become more automated through use of IT systems, this would mean less in-person exposure to these disputes and less excuse for job segregation concerning women.

**The new contracting-out practices for infrastructure management could open the door to putting gender participation requirements in contracts.** There should also be more scope for employing women in VIWA’s own design engineering, procurement, and contract management functions. If maintenance contracts can be made more substantial though multi-year, performance-based terms, VIWA would be in a position to incorporate specific gender aims. It might insert targets into contracts to increase the representation of women in technical and engineering roles in contracting organizations as well as use of women-owned maintenance companies.

## **8.7 Implement Tasks in Manageable Stages**

**It is neither necessary nor desirable to do everything at once.** The personnel whom MoT and VIWA would assign to the reform teams would have to combine that work with existing job responsibilities. The task force would need to decide where to start and to work through the agenda in an orderly and managed way. It is crucial to make changes well and in a way that will endure. At the same time, it is important not to lose impetus, because delay causes uncertainty. The task force should continue to monitor progress and be ready to adapt its proposals and plans as information and circumstances change.

**With proper foresight, funding, and political will, the reform program will help government to overcome many of the obstacles that are holding back the full potential of IWT in Vietnam.** Development will progress more smoothly and reliably in Vietnam if goods flow more safely and efficiently on its vast network of inland waterways. Their role in the country’s development is more important than ever.

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<sup>55</sup> Vu Ngoc Uyen. 2003. “Integrating Gender into World Bank Financed Transport Programs.” Washington, DC: World Bank.



The table below summarizes the Minister of Transport's Decision 4910/15 on "Approving Plan on Restructuring Inland Waterways by 2020."

Sections	Summary of contents
<b>Objectives</b>	<ul style="list-style-type: none"> <li>• Achieve a breakthrough in the development of IWT infrastructure and improve its capacity and market share.</li> <li>• Concentrate key works on economic and industrial need, transport intensity, and regional development aims.</li> <li>• Develop IWT consistently with development of other modes of transport.</li> <li>• Attain advantages of combined canal network and coastal shipping potential.</li> <li>• Improve capacity and effectiveness of IWT enterprises to increase market share and reduce the burden on the road transport system.</li> <li>• Combine short and long-term infrastructure plans to improve efficiency and effectiveness, ensure traffic safety, protect the environment, cope with climate change impacts, and conserve energy.</li> <li>• Restructure and improve the managerial capability of VIWA to achieve these aims.</li> </ul>
<b>Specific targets</b>	<ul style="list-style-type: none"> <li>• Promote the advantages of inland waterway transport, focus on bulk cargoes, oversize cargoes, and transport cargoes to rural areas; increase the market share of IWT with multi-purpose transport.</li> <li>• By 2020, progressively increase the proportion of interprovincial transport of goods by inland waterways to 32.28 percent, and of interprovincial transport of passengers to 0.17 percent.</li> <li>• Restructure the fleet so tugboats will make up 30 percent and self-propelled vessels 70 percent while also prioritizing the development of container ships.</li> <li>• Build up a compatible infrastructure network, concentrate on main IWT routes, and prioritize connections between the Mekong Delta and Ho Chi Minh City, and routes on the Tiền, Hậu, Red, and Thái Bình Rivers.</li> <li>• Improve the effectiveness of IWT investments.</li> <li>• Improve the state management functions, create a transparent and flexible law system, reform and simplify the administrative procedures, and incentivize investment in inland waterway infrastructure.</li> <li>• Separate the functions of state management, VIWA infrastructure management, and the construction and maintenance activities of IWT.</li> <li>• Restructure the organization of VIWA to improve state management effectiveness.</li> </ul>



<p><b>Policy directions</b></p>	<ul style="list-style-type: none"> <li>• Modernize and develop a sustainable IWT system and promote its advantages.</li> <li>• Develop the IWT fleet (specifies conformity to national standards, route-specific vessels, container ships, and multi-purpose vessels).</li> <li>• Develop inland waterway transport infrastructure (specifies physical targets, improved management, capacity upgrade, and cooperation with local governments).</li> <li>• Manage the development of inland waterway infrastructure (specifies modernization, completion of national database, more effective management and compliance mechanisms, and safety measures).</li> <li>• Maintain inland waterways in an advanced, scientific, effective, and safe way (specifies need for mobilization of resources for maintenance and management, increased funding, prompt remedial works, and more effective management).</li> <li>• Enhance traffic safety activities (specifies effective regulation and compliance of vessels and crews, and reduction of traffic accidents and casualties).</li> <li>• Modify the organization of the Vietnam Inland Waterway Administration (specifies restructuring of advisory division, organization of geographic branches, corporatization of maintenance organizations, more autonomy for training institutions, and strengthening of capacity of the inland waterway management board affiliated to the VIWA).</li> </ul>
<p><b>Main policies</b></p>	<p><b><i>1. Reform regulation and policy and speed up the reform of administrative procedures.</i></b></p> <ul style="list-style-type: none"> <li>• Review, update, and promulgate in more comprehensible form published legal and regulatory documents.</li> <li>• Simplify and reduce administrative procedures.</li> <li>• Amend law, promulgate guiding documents, and incorporate search and rescue.</li> <li>• Review regulations on fees and charges.</li> <li>• Cooperate with the Ministry of Finance to modify inconsistent regulations that block the development of inland waterways transport.</li> <li>• Research the incentive policy applied to transport enterprises and cooperatives.</li> </ul> <p><b><i>2. Raise the quality of the development and implementation of policies, plans, and projects in the development of inland waterways.</i></b></p> <ul style="list-style-type: none"> <li>• Periodically review and update development plans.</li> <li>• Effectively implement approved plans and projects, with adjustments as necessary to improve feasibility.</li> <li>• Increase planning and implementation cooperation between MoT agencies and local government.</li> <li>• Revise plans on IWT routes and ports.</li> </ul>

	<ul style="list-style-type: none"> <li>• Reclassify some national inland waterway routes to local waterways if possible.</li> </ul> <p><b>3. Increase the effectiveness of management and use of invested capital.</b></p> <ul style="list-style-type: none"> <li>• Concentrate on state prioritized works and solutions, avoid unfocused investment, and increase the effectiveness of investment.</li> <li>• Concentrate on investing in main routes according to adopted plans.</li> <li>• Strive to increase the amount of annual funding for the management and maintenance of inland waterways by 25-30 percent.</li> <li>• Concentrate on speeding up the implementation of World Bank projects.</li> <li>• Intensify attraction of investment and effective allocation of maintenance funding.</li> </ul> <p><b>4. Encourage and attract non-budget sources of investment.</b></p> <ul style="list-style-type: none"> <li>• Develop and complete mechanisms, policies, and legal framework for management and capital mobilization.</li> <li>• Create an investment environment that is equal, fair, and effective for state and private investors in the construction of IWT infrastructure.</li> <li>• carry out the project "Socializing capital mobilization for inland waterway transport infrastructure," focusing on a strategic fund to invest in strategically important infrastructure and effective use of state budget for construction of infrastructure and maintenance of inland waterways.</li> </ul> <p><b>5. Manage the development of inland waterway infrastructure.</b></p> <ul style="list-style-type: none"> <li>• Set and manage product prices and public services in the field of road and inland waterway maintenance according to the orders and targets funding from the state budget.</li> <li>• Strengthen the implementation of the "Project on evaluation of the reality of inland waterway transport and measures to promote the development of inland waterway transport."</li> <li>• Regularly review, update, and complete the norm system, unit prices, and the process of managing and maintaining inland waterways.</li> <li>• Maintain IWT infrastructure to ensure project quality, increase transport capacity, and punctually repair shallow areas.</li> <li>• Strengthen provision and maintenance of safe waterway corridors (complete signal systems and ensure navigable depth and vertical and horizontal clearance).</li> <li>• Cooperate closely with relevant agencies and local governments in ensuring traffic safety and protecting IWT infrastructure.</li> <li>• Actively research and apply advanced technologies in the management of IWT infrastructure.</li> </ul>
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- Enhance intermodal and logistics connectivity.
- Review the entire system and facilities for industry and crew training.
- Develop plans and organize the bidding or order the maintenance of waterway traffic routes; include inspection, supervision, acceptance, and disbursement procedures.

**6. Promote the application of science and technology and international cooperation.**

- Intensify the application of science and technology to improve provision and maintenance of IWT infrastructure and to improve quality and reduce cost, protect the environment, and cope with climate change and rise of sea level.
- Review, develop, and finalize national standards, technical regulations, and norms in inspection, design, construction, acceptance, and maintenance.
- Modernize and develop the vessel fleet in the direction of diversification, shallow draught sea-river vessels, container ships, self-propelled vessels, and tugboats.
- Promote tugboats (800-1,000 tonnes), self-propelled vessels (400-600 tonnes), multi-purpose vessels (1,000-3,000 tonnes), container ships of 16, 24 and 32 TEU, applying advanced transport technology.
- Encourage multimodal transport and logistics services; modernize cargo handling equipment; and intensify the application of information technology in management, administration, and development of inland waterways.
- Strengthen international cooperation to attract ODA; invest reasonably in studying science and technology applications.
- Strengthen various projects on information technology, construction management, vessel management at ports and landing stages, transport capacity, and logistics services.
- Seek new materials to attain sustainable improvements, low energy consumption, and reasonable cost.

**7. Continue to develop human resources.**

- For crew and helmsman: conduct research for training innovation; retrain, update the contents of training, and increase time for learning and practicing handling skills.
- For staff, officials, civil servants, and employees: review and determine the location of employment, ensure requirements of quantity and quality; plan for regular training of awareness, professional proficiency, working style, and behavior skills.
- Upgrade recruitment and appointment of staff to comply with standards of competence; apply standards of behavior and ethics.
- Train authorized port staff.

	<ul style="list-style-type: none"> <li>• Give attention to the work conditions of officials, civil servants, and employees, and their motivation, encouragement, and discipline.</li> </ul> <p><b>8. Strengthen the inspection, testing, and handling of violations.</b></p> <ul style="list-style-type: none"> <li>• Develop inspection plans, inspect annually or periodically with focus on passenger transport, extraction of sand and gravel, dredging, and collision avoidance.</li> <li>• Cooperate with the River Police and the Vietnam Register to promote the interdisciplinary collaboration in safety of IWT.</li> <li>• Pilot a model to restore traffic safety in the Hàn and Phi Liệt Rivers as a basis for further deployment.</li> <li>• Strictly and thoroughly resolve violations, especially in operation of poor quality vessels, vessel overloads and violations of qualifications for crews and helmsmen.</li> <li>• Urgently implement measures to ensure inland waterway transport safety, especially violations that cause traffic accidents.</li> </ul>
<p><b>Implementation</b></p>	<p><b>1. Departments affiliated with the Ministry of Transport</b></p> <ul style="list-style-type: none"> <li>• Advise the ministry about new or amended regulations or policies.</li> <li>• Cooperate, expedite, and guide VIWA and relevant organizations to comply with restructuring requirements.</li> <li>• Provide for the head of the ministry’s Subcommittee of Restructuring to oversee implementation.</li> </ul> <p><b>2. Vietnam Inland Waterway Administration</b></p> <ul style="list-style-type: none"> <li>• Ensure that VIWA completes a comprehensive reorganization.</li> <li>• Implement the corporatization of maintenance organizations.</li> <li>• Reorganize the inland waterway inspectorates.</li> <li>• Execute the implementation of the restructuring project.</li> </ul>



**ANNEX 2**
**PROPOSED IWT PROJECTS CALLING ON FOREIGN INVESTMENT TO 2020**

No.	Project	Location	Technical parameter	Total investment capital (million US\$)	Investment form	Organizations involved	Note
1	Upgrading Ham Luong River from confluence of Tien River to Ham Luong River mouth	Ben Tre	Route length: 90 km; level IV, III	25	PPP (pilot BOT)	Vietnam Inland Waterways Administration, Board of Investment for public-private partnership projects, Ministry of Transportation	Proposed
2	Upgrading Viet Tri-Yen Bai waterway	Pho Tho, Yen Bai	Route length: 125 km; standard: level III	47	PPP (pilot BOT)	Vietnam Inland Waterways Administration, Board of Investment for public-private partnership projects, Ministry of Transportation	Proposed
3	Upgrading four inland waterways in Day, Tra Ly, Giang, and Co Chien estuaries	Nationwide		23	PPP	Vietnam Inland Waterways Administration, Board of Investment for public-private partnership projects, Ministry of Transportation	Proposed
4	Infrastructure investment in developing waterway corridor and logistics in the south	Provinces in the South		300	ODA, PPP	Vietnam Inland Waterways Administration, Board of Investment for public-private partnership projects, Ministry of Transportation	Proposed
5	Constructing Phu Dong container port	Ha Noi	Build new river port; capacity 2.45 million tonnes/year; can receive ships of up to 800 tonnes	21	PPP (BOO)	Vietnam Inland Waterways Administration, Board of Investment for public-private partnership projects, Ministry of Transportation	Proposed
6	Upgrading Bai Chay cruise ship port	Quang Ninh	Upgrade cruise ship port; capacity 2 million passengers/year; can receive ships of 250 pax	19	PPP (BOO) / ODA	Vietnam Inland Waterways Administration, Board of Investment for public-private	Proposed

						partnership projects, Ministry of Transportation	
7	Investment in constructing Nhon Duc port	Ho Chi Minh City	Build new river port; capacity 0.7 million tonnes/year; ship size of 3,000 tonnes	19	PPP (BOO, etc / FDI	Vietnam Inland Waterways Administration, Board of Investment for public-private partnership projects, Ministry of Transportation	Proposed
8	Improving safety of river passenger terminals	Nationwide	All cross-river terminals nationwide	47	ODA	Vietnam Maritime Administration, Department of Investment and Planning, Ministry of Transportation	Proposed

## Annex 3

## Case Study: Paraná-Paraguay Waterway Concession

### Summary<sup>56</sup>

<b>Project's Name</b>	Paraná – Paraguay Waterway Concession	
<b>Location</b>	Argentina (Paraná river and River Plate)	
<b>Est.CAPEX</b>	UDS\$ 650 million (initial)	
<b>PPP Type</b>	Design, Build, Operate and Transfer	
<b>Public Authority</b>	Ministry of Federal Planning, Public Investment and Services	
<b>PPP Law</b>	Law 23.696/ 1989 (General State Reform Law)	
<b>Contractor</b>	Hidrovia S.A (SPV formed by Jan de Nul and EMEPA)	
<b>Tender Date</b>	01/14/1994	
<b>Commissioning Date</b>	02/22/1995	
<b>Major Contract Details</b>	<b>Term</b>	10 years (initial) – 26 years (after modifications)
	<b>Main Activities</b>	Design, studies and bathymetric surveying Capital and maintenance dredging Rockworks and channelling Aids to navigation Traffic control
	<b>Phases</b>	<b>Phase 0:</b> Fleet conditioning and mobilisation (3 months) <b>Phase 1:</b> Initial depths and signalling (6 months) <b>Phase 2:</b> final depth (before modifications) (24 months) <b>Phase 3:</b> Maintenance (87 months) (before modifications)
	<b>Funding</b>	Budgetary allocations and tolls

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<sup>56</sup> Jyoti Bisbey. 2016. "Case study on private sector participation in inland waterways development and maintenance." Washington, DC: World Bank Group.



<b>Major risks</b>	Tolls (tariffs) Prices	
<b>KPI</b>	<b>Depth</b>	<p><b>Initial scope:</b> First stretch – 32 ft draught. Second stretch – 22 ft draught</p> <p><b>Modified scope:</b> First section – 34 ft draught Second section – 25 ft draught Third section – 10 ft draught</p>

**Project’s Object and Scope**

In February of 1995, the Ministry of Economy, Public Works, and Services of Argentina signed a concession contract with Hidrovía S.A, an SPV formed by the Belgian dredger Jan de Nul N.V and the Argentinian construction company EMEPA S.A. Terms required Hidrovía to dredge, maintain, signalize, and operate a 709-km waterway between the city of Santa Fe and the Punta del Indio channel, located in the outer section of the River Plate estuary.

**Figure A3.1: Initial Scope of the Paraná-Paraguay Waterway PPP Project**



As shown in Figure A3.1, the initial scope of the project was divided in two sections. The first, from Punta del Indio Channel in the River Plate to the San Martín port near the city of Rosario, has an approximate distance of 665 km and has been one of the busiest routes for bulk export of grains in Argentina since the twentieth century. The second stretch, between the San Martín port and Santa Fe, is 240 km long and, while navigable before the project started, was mainly used by smaller vessels, including barges, to transport various types of bulk and cargo.

Considering these contrasting characteristics, the contract established different technical scopes for each segment, mainly related to the minimum depth needed along the waterway. The first section

required a depth that allowed vessels of 32-foot draught, while the second section had to guarantee access of vessels of 22-foot draught. The concessionaire was in charge of developing all designs and determining the amount of dredging, rockwork, and channeling required.

The contract also regulated schedules for implementation and maintenance of signals and beacons and required the concessionaire to develop bathymetric surveys and control traffic along the entire waterway.

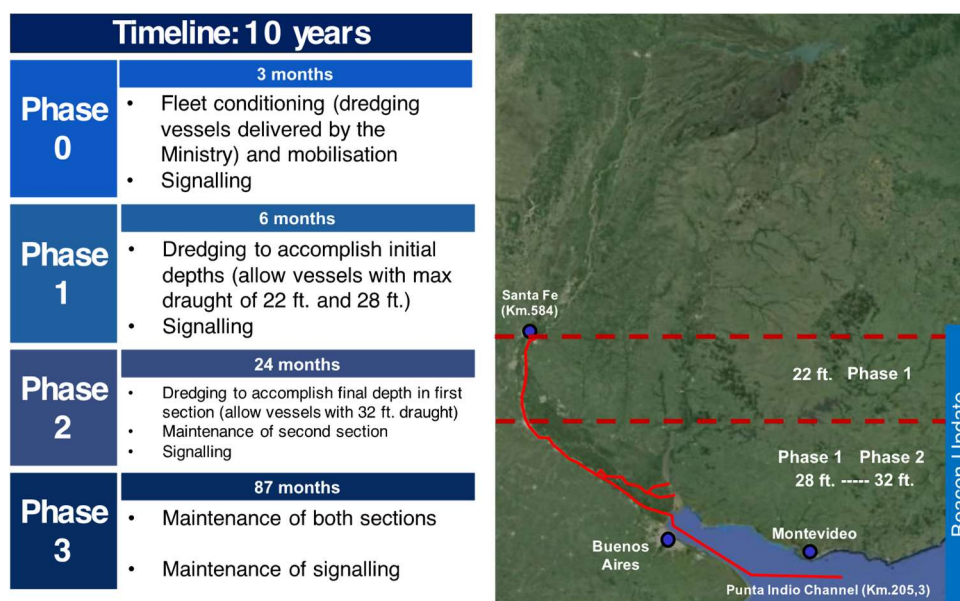
### Transaction Structure

The contract had an initial duration of 10 years, divided in four phases (Figure A3.2).

The first three months (Phase 0) were assigned for the preparation of dredges delivered by the ministry and for initiating the installation of signals and beacons along the waterway. During the next six months (Phase 1), the concessionaire had to accomplish the second section's minimum depth and reach a temporary depth in the first section (28 feet), while continuing the process of updating beacons. Once these minimum depths were accomplished, the concessionaire had 24 months (Phase 2) to achieve the definitive minimum depth for the first section and conclude the signalization process in the entire project.

Lastly, when all the interventions were concluded, the concessionaire had to maintain and operate the waterway for 87 months (Phase 3).

**Figure A3.2: The Project's Initial Structure**



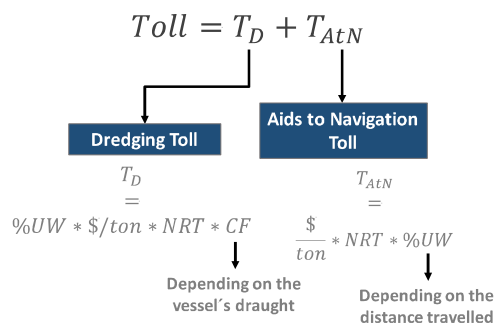
An audit report published by the Argentinian Senate disclosed that Phases 0 and 1 had some setbacks, attributed to two main causes: (1) the delay of the ministry in providing the dredges mentioned previously, and (2) difficulties in installing the signals required in the second section of the waterway. Nonetheless, Phase 2 was finished ahead of schedule in September 1997, accomplishing the definitive depth and signalization in 29 months from the beginning of the contract.

## Funding and Payments

The initial capital expenditure of the project amounted to US\$650 million. In order to repay that investment, the contract relied exclusively on two sources: tolls and direct subsidies from budgetary allocations.

Tolls were collected directly by the concessionaire according to a tariff structure established in the contractor's proposal and contract. As Figure A3.3 illustrates, this tariff structure had two main components: (1) dredging tolls, determined by the vessel's net registered tonnage and the distance travelled in the waterway, adjusted by a correction factor linked to the vessel's draught, and (2) aids to navigation tolls, affected exclusively by the net registered tonnage of the ship and the distance travelled on the waterway.

**Figure A3.3: Toll Formula**

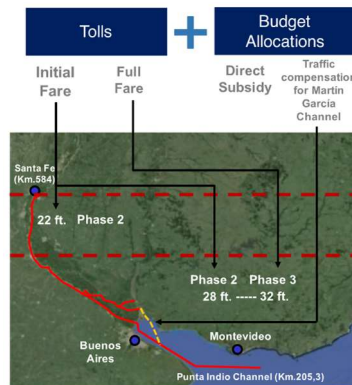


The dollar/tonne variable, applicable to both components, was a fixed amount per tonne determined by the concessionaire in its economical proposal and expressed in U.S. currency to mitigate the effects of Argentinian inflation in the payment structure. In any case, this amount could only be fully billed to the users when the project's Phase 2 was finished. Under these conditions, the contract transferred the risk of demand to the concessionaire, except for traffic reductions caused by the construction and operation of the Martín García Channel, which had to be compensated independently by the ministry.

Regarding the second source of the payment mechanism, although no official information was found as to the value and conditions of these direct subsidies from budgetary allocation, other sources indicate that they reached yearly sums of US\$40 million, more than triple the amount estimated for toll collection in an identical period.

Figure A3.4 depicts the general structure of the project's payment mechanism.

**Figure A3.4: Payment Mechanism – Sources and Types**



## Risk Allocation

Although the information available for this study fails to mention the existence of a proper risk allocation clause in the concession contract, it does state that the project's risk allocation was governed by the theory of *riesgo empresario* or businessman risk. Under this approach, virtually all risks are assumed by the concessionaire, excluding only those that were explicitly assumed or caused by the ministry (such as the Martín García channel, mentioned earlier). Specifically, this theory dictates that the contractor must assume any change or alteration in the prices or availability of the resources required for the project, unless such change or alteration was a direct result of the Argentinian government's actions.

As a consequence, all the technical, financial, and operational risks of the contract ought to be solely on the shoulders of the concessionaire.

The matrix in Table A3.5 summarizes the risk allocation under such a perspective.

**Table A3.5: Initial Risk Allocation**

Risk	Public	Private
Design: Fluctuations in total cost of the project related to design.		X
Construction: Fluctuation in prices of workforce, machinery, supplies etc.		X
Construction: Variations in quantities of construction		X
Construction: Additional works to repair damages in structures caused by changes in water level		X
Construction: Additional works due to changes in the river course		X
Dredging quantities		X
Services: Fluctuation in prices of workforce, equipment, supplies etc.		X
Risk of demand (Excluding Martín García Channel)		X
Risk of demand (Martín García Channel)	X	
Financial closure		X
Variation in financing conditions		X
Macroeconomics		X
Counterpart risk (other sources of funding)		X
Liquidity risk		X
Regulatory Risk: General law		X
Regulatory Risk: Tariffs	X	
Regulatory Risk: Environmental		X

Nonetheless, in 1997, both the concessionaire and the ministry modified the concession's financial structure by increasing the tolls (i.e. the US\$/ tonne variable) with the purpose of restoring the economic equilibrium of the contract. In their opinion, it had been disturbed by the price increase between 1995, the year in which the contract was signed, and 1997. In this agreement the parties also

stated that the concessionaire had the right to receive the internal rate of return included in the financial model submitted with its financial proposal, 19.38 percent. This position seemed inconsistent with the businessman risks described above.

### Planning and Procurement

There wasn't sufficient information available to assess the planning process for the project. Nevertheless, some information that came to light regarding the procurement process enables a succinct analysis of its characteristics.

The ministry called for proposals in a national and international public tender for contracting the project in May of 1993, through a double envelope system. The first envelope (technical) contained the bidders' credentials related to experience and technical capacity, while the second envelope (financial) laid out the proposal concerning the US\$/tonne applicable to the tolls throughout the concession and the financial model in which the proposal was based.

After a 12-month procedure, the ministry vetted the technical proposals of the following groups (Figure A3.6):

**Figure A3.6: Names and National Origin of Bidders**

Bidder	Origin	Companies
1		Pentamar S.A and Great Lakes Dredge and Dock Company
2		Jan de Nul, EMEPA and other local companies
3		Supercemento and Dragados y Obras Portuarias

Once their financial proposals were opened, Jan de Nul/EMEPA, which offered the lowest US\$/tonne, was awarded the contract.

### Renegotiations

The contract has been extended and modified on several occasions. The most relevant modifications took place in 1997, 2002, and 2005 (Figure A3.7).

#### 1997 Modification

This modification introduced additional scope to the project, namely a stretch of 33.8 km that prolonged the Punta del Indio channel further into the Atlantic Ocean. This was also accompanied by an eight-year extension.

#### 2002 Modification

In order to restore the economic equilibrium of the contract related to the additional works agreed upon in 1997 and the outstanding payments of the Martín García channel compensation, the parties agreed on a toll increase in 2002.

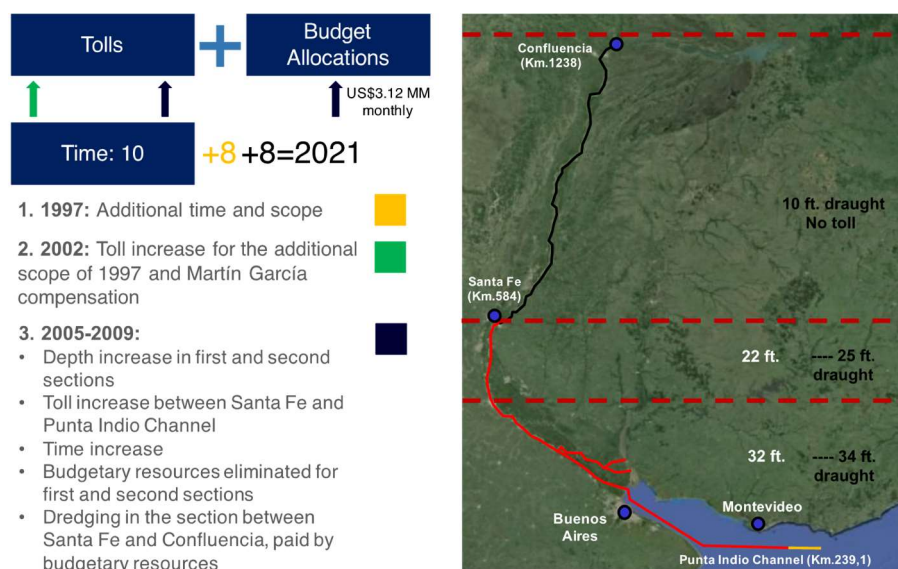
#### 2005 Modification

The 2005 modification was perhaps the biggest amendment to the initial scope conducted to date. Among its many changes, it established new depths for the first and second section of the waterway (32 and 25 feet draught, respectively), and added a third section, beginning in Santa Fe and stretching

654 km up to Confluencia, located on the border between Argentina and Paraguay, with a minimum depth of 10 feet draught.

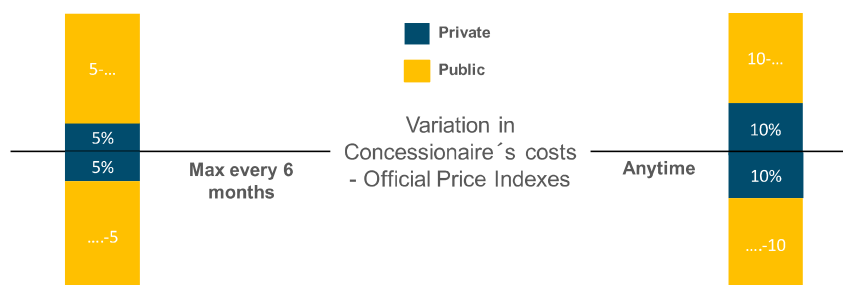
To repay those investments, the parties increased the toll in the first section of the waterway, eliminated the direct subsidies, extended the contract for another eight years and established monthly availability payments of US\$3.14 million for maintaining the depth in the newly added third section between Santa Fe and Confluencia.

**Figure A3.7: Scope Modifications**



This modification also introduced a mechanism to limit the applicability of the economic equilibrium thesis, which determined when it is possible to request an adjustment (reduction or increase) of the toll, based on the alteration of the concessionaire’s costs. According to the modification, this request is only acceptable when the variation of the concessionaire’s costs is greater than 5 percent in a period of six months, or greater than 10 percent in any given period, taking into account the reference prices included in the financial model and official price indexes (Figure A3.8). As a consequence, when the variation stays within those limits, the loss or gain derived from it is assigned to the concessionaire.

**Figure A3.8: Effect of the Variation in Concessionaire’s Costs**



**Lessons Learned**

1. Establishing clear and detailed risk allocation clauses and compensation mechanisms from the beginning is of paramount importance to preserve the benefits of competition achieved during the procurement process. This is true especially when the financial proposal has been instrumental in the selection of the private partner.

2. If the government commits to provide assets or equipment, it should not guarantee the conditions or state of such assets, unless those conditions are certain (such as the asset is covered by manufacturer's warranty). Private partners should assess the condition of public assets in drafting their technical and financial proposals. These partners should receive public assets or equipment "as is," reducing chances of claims based on asset's quality.
3. Governments should limit the ability to add scope to PPP contracts. Although contracting with the incumbent is generally less time consuming as a contract is being negotiated, the benefits of competition in infrastructure projects, especially in PPP, have proven to be greater and widespread.