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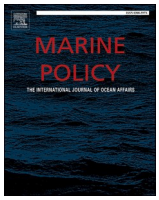

Maritime transport governance challenges in the Global South

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ABSTRACT

The majority of problems in managing maritime transport originate from fragmented governance. The practice of coordinating decisions across different ports or between port and hinterland can pose a significant challenge in many countries. A related issue is that suggestions for maritime transport governance in the current literature are less clearly focused on the Global South. The present study aimed to identify challenges in improving the governance of maritime transport systems. This paper presents a case study focused on Indonesia to serve as an example from the Global South. We conducted a content analysis of policy and implementation documents to paint a comprehensive picture of contemporary governance practices and the challenges encountered in maritime transport. Here, maritime transport is defined as a system that consists of three main subsystems: port-to-port, within-port, and port-to-hinterland connectivity. Our study illustrates that the same maritime transportation system in the Global South can have different governance patterns with different strengths and weaknesses. We point to the importance for transportation planners and policy makers in the Global South to be aware that fragmentation must be understood in view of these interrelated subsystems, but also that coordination requires a focus on practicalities and thus that less-comprehensive forms of integration may well be legitimate in policy formulation. In improving maritime transport systems, transportation planners and policymakers in the Global South must be aware of the challenge that changes in one sub-system will define other sub-systems while no universal one-fits-all solution for the whole system exists.

1. Introduction

Maritime transport is a vital component of logistics all over the world. Sea transportation accounts for 90% of global trade [1–3]. Maritime transport is an important factor in economic development; reduction of maritime transportation costs has been found to foster industrial development, attract new businesses, and increase the gross domestic product (GDP) [1,4–6]. Therefore, in many countries, governments are increasing their policy efforts to stimulate further reduction of maritime transportation costs and increase the efficiency of their maritime transport system. These efforts have been hindered by external shocks such as the global pandemic and the war in Ukraine [7]. Other factors also play a role, as policies often focus predominantly on the physical aspect, such as technological and the hard dimension of infrastructure-related parts of the maritime transport system, in particular ports and their efficiency. This focus on infrastructure within maritime transport systems traditionally resonates in much of the literature on maritime transport planning [8–10]. Recently, however, increasing attention has been paid to the governance as a soft dimension of maritime transport systems [11,12]. Complementing the hard with the soft dimension of infrastructure is important since the issues in maritime transport system connectivity are not merely technical issues that require support for the availability of physical infrastructure but are also governance issues.

Transport system governance occurs on the basis of structured interactions between multiple stakeholders. These interactions produce a set of norms, rules, practices, cognitive routines, competences, and materialities embedded in a transport system [13]. Stakeholders include public authorities, the transport industry, research institutions, the public, and others. The embeddedness of transport governance within a wider system means that governance problems can contribute to transport inefficiencies. Indeed, governance issues such as free riding, lack of contractual relationships, information asymmetry, and inadequate incentives for cooperation have been found to trigger problems such as

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long processes of loading and unloading at the port, congestion at intermodal terminals, customs problems, and logistical delays [14]. Increasing efficiencies, therefore, not only require investment in the physical infrastructure of the transport system but also require efforts to establish suitable governance models.

The current literature on maritime transport governance points to two general knowledge gaps. First, the international understanding tends to discount the interconnectivity *within* a maritime transport system as the existing literature is predominantly focused on the governance of individual subsystems, e.g., shipping or port governance [10], and of the effects of maritime transport on natural systems [1,15–17]. A void is left at the maritime transport system level while at this level the technical and social elements of various infrastructures interact with one another. Second, even though maritime transport is considered to be a global phenomenon in which the Global North and the Global South are intertwined, existing studies often focused on the Global North while neglecting the Global South [18]. Given the differences with respect to the state of the infrastructure [7], the regulatory and institutional frameworks – which have been characterized as complex, absent, or inadequately enforced [19,20] – strong differences with respect to maritime transport governance can also be expected.

In this study, we focused on maritime transport governance in Indonesia. As an archipelagic country with more than 17,500 islands and measuring 5,000 km across, maritime transport is very important for Indonesia, particularly to provide connections between the islands. Currently, however, transport costs are high. It has been estimated that logistic costs amount to 26% of gross domestic product [21]. In response, the national government has made the maritime sector one of the priority development agendas and intensified its efforts to reduce transportation costs, among others by establishing a 'maritime highway' (*tol laut* in Bahasa Indonesia) [22]. At the same time, however, Indonesia faces governance issues that hinder the improvement of the connectivity between the islands. Sande [23], for example, has shown how transport governance in Indonesia is struggling with rigid regulations, complicated procedures, and limited private sector involvement. These issues can also be found in other countries in the broader ASEAN region [24]. To better understand what causes these governance issues to emerge, we aimed to gain insight into the various governance models applied in transport governance in Indonesia. Governance theory suggests that governance challenges emerge especially when several different governance models are applied. We therefore examined the governance models that are applied in Indonesian maritime transport governance. Following Arvis et al.[25], we distinguish three different subsystems within the maritime transport system: (i) the ***port-to-port subsystem***, which involves connections between ports via the sea; (ii) the ***within-port subsystem***, which revolves around port efficiency; and (iii) the ***port-to-hinterland subsystem***, which comprises the supporting activities of a port within a particular region. In addition, we differentiate between the governance models as discussed in policy and implementation documents. We present the results of an in-depth review of policy and implementation documents and an analysis of implementation practices based on 35 documents, including 9 master plans, 16 main technical regulations, and 10 evaluation documents (See Appendix A for details).

The remainder of this article is structured as follows: in Section 2, we define maritime transport governance and present our conceptual framework, criteria, indicators, and governance models. Section 3 describes the methodology to operationalize the framework in assessing maritime transport governance challenges in Indonesia. The results are presented in Section 4. Section 5 presents the discussion and Section 6 presents our conclusions.

2. Governance models in maritime transport governance

2.1. Maritime transport governance

A maritime transport system comprises a network of various sea and land routes ensuring freight delivery [26]. It includes several subsystems, such as ports, terminals, intermodal connections, navigable waterways, and a fleet of vessels [27,28]. It is important to note that in this expansive definition, the maritime transport system includes not only sea transport and related infrastructure but also transport over land. Maritime transport governance thus includes not only actors that play a role in port-to-port connections (e.g., shipping companies, cargo operators) and at the port itself (e.g., port authorities, container stevedores, and terminal operators) but also actors who are involved in port-hinterland connections (e.g., forwarder companies and road and railway providers). Maritime transport governance involves the process of forming, applying, interpreting, and reforming rules, norms, and strategies that guide the behavior of these stakeholders, which are both public and private in nature and span multiple levels of scale [25,29–32].

2.2. Governance models in maritime transport

The existing literature suggests that governance models range between polycentric and centralized monocentric governance [33–37]. This kind of variation can also be seen in maritime transport governance. Regarding polycentric governance, Monios [38] and Van Leeuwen [16], for example, have shown how port and shipping activities, respectively, involve various actors at different scales with overlapping jurisdictions. The articles state that in these domains actors will have to take account of one another. Polycentric governance assumes that no single actor is able to control a governance system – instead actors voluntarily coordinate their work, collaborate, or at least resolve conflicts with the other actors in the governance system [36]. Regarding centralized monocentric governance, Dadashpoor and Arashteh [39], for example, discuss how in the context of port-hinterland connections, power tends to be monopolized, thereby offering opportunities for government to balance or increase the degree of spatial inequality between port and hinterland. In this type of government model, one actor can dominate the governance system and, for example, is able to issue policies that bind and integrate all other actors involved [40].

The governance literature suggests that challenges emerge when different governance models are applied in the same system [36,41,42]. To be able to identify different governance models in a governance system, we build on Trein et al. [43] and distinguish between the extent of integration and coordination a governance model provides.

Integration revolves around processes that enable the incorporation of some elements into a larger entity or a unified whole [43]. In maritime transport, for example, integrating various organizations is considered to improve the sharing of competencies among the different stakeholders [15] or to achieve operational efficiencies and strategic effectiveness of the supply chain [44]. The integration of various organizations can be assessed by measuring the similarity between components such as policy goals and instruments [43,45,46] at different dimensions: vertically between different tiers of government, horizontally between departments or sectors, spatially between regions, and temporally between different time frames [47].

Coordination revolves around organizational processes that enable separate processes or units to work together [43]. Coordination thereby sets the boundaries for the interactions of entities. Coordination includes the availability of a platform to enable discussion between actors and the presence of some form of facilitation, which together provide room for cooperation to happen. In maritime transport studies, coordination is for example discussed in the context of logistic chains, where interdependent actors need to coordinate as changes in one part of the chain are experienced in other parts of the chain [48]. Coordination can be assessed by investigating the organizational structures that facilitate interaction between the actors in the governance system. It is possible to find, for example, coordination rules, information sharing, and incentives in the governance system [14,49,50]. Low levels of coordination, for example, are marked by the creation of interfirm alliances, such

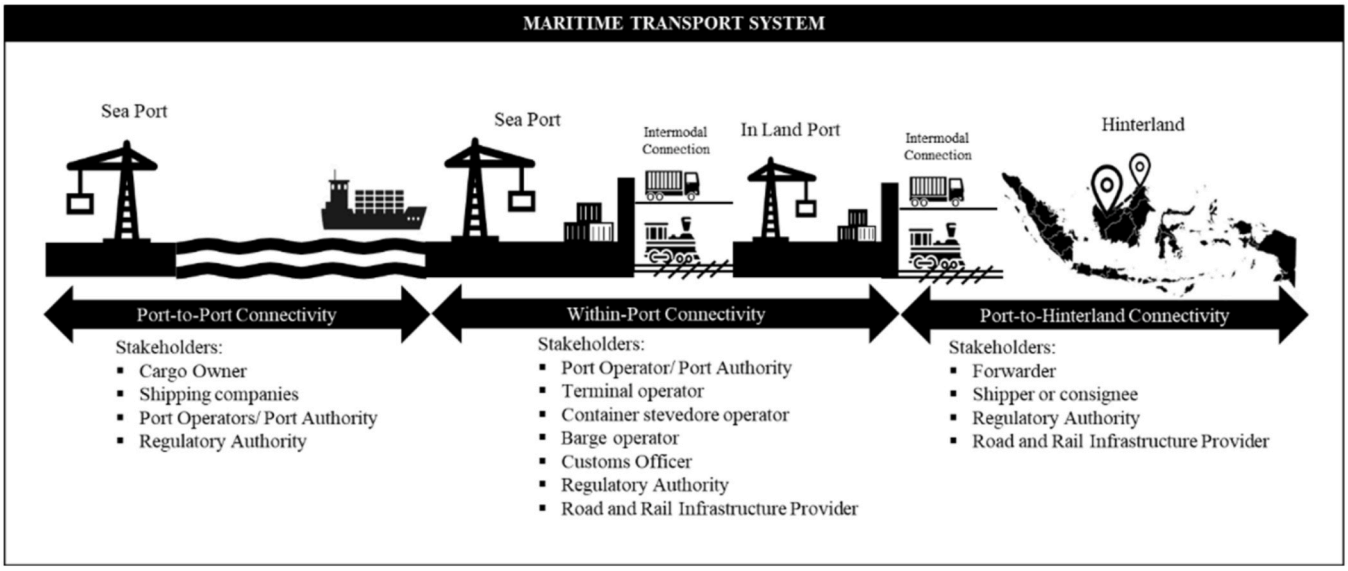

Fig. 1. Maritime transport system.
(Adapted from Arvis et al. [25], with modification).

as subcontracting, project-specific contracts, standardized procedures, standards for quality and service, joint working in the impact assessment of policy implementation, or co-signing of proposals or projects [14,51]. Medium levels involve the creation of transversal agencies or a new unit to facilitate coordination, for example, councils or working groups [51, 52]. High levels of coordination involve the merging of organizations, for example in a public private partnership [49,51].

As two extremes, the polycentric governance model is characterized by low integration and high external coordination and, conversely, the monocentric governance model is characterized by high integration but low external coordination. As depicted in Fig. 2, in addition to these two governance models, in the literature on maritime transport governance we also find four alternative, hybrid governance models that are characterized by various degrees of integration and external coordination. Particularly polycentric governance models come in different shapes as

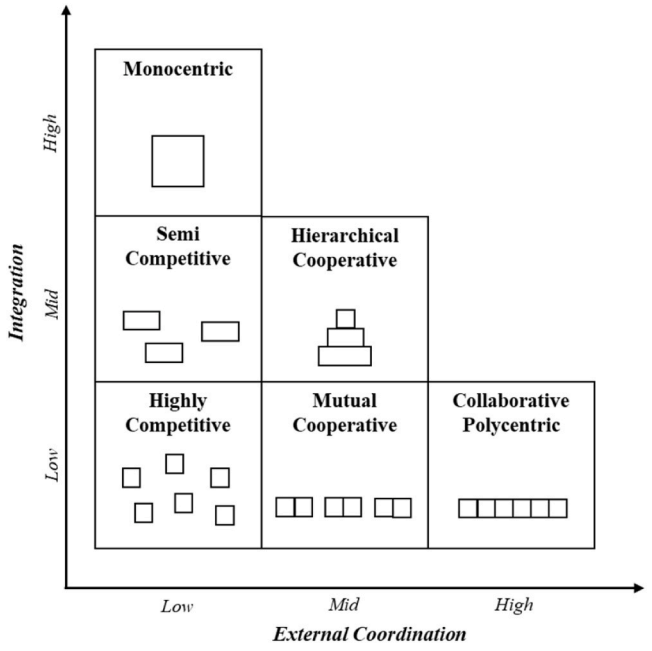

Fig. 2. Maritime transport governance models.

each governance model also involves various degrees of polycentricity [53]. Our integrative and semi-systematic literature review showed that there are many different faces of polycentric governance. Integration and external coordination are inversely related. Higher integration will result in less external coordination and vice versa. Table 1 summarizes the features of these models. It is important to note that governance focuses on actors' interactions within institutional frameworks [41], in practice, governance is embedded in this institution as a devised constraint, either in rules or norms that govern the maritime transport system.

3. Methodology

We adopt the combination of a Semi-Systematic Literature Review (SSLR) and an integrative review approach to build maritime transport governance framework. The SSLR was used to identify knowledge gaps within the current literature and the Integrative Review approach helped to combine perspectives to create the governance models [74]. In conducting the SSLR, we followed the Zunder's [75] two-step approach in scoping and identifying top-level results. The literature was retrieved from Scopus, the largest database of peer-reviewed research literature [76]. This scientific database is considered credible since it has been used in large-scale analyses in research assessments, research landscape studies, science policy evaluations, and university rankings [77]. First, in the scoping process, literature was retrieved from this database by using several keywords [78]. The selection of SSLR instead of a pure Systematic Literature Review was based on the consideration that relatively few relevant articles could be found on the basis of the search term "Maritime AND Transport AND Governance". Consequently, the scoping process of this research included related topics that were close to maritime transport governance, such as maritime governance, or specific governance topics, at each component of the maritime transport system, for example, shipping governance, port governance, and the governance of intermodal integration to the hinterland. Therefore, our keywords included: 1). Maritime AND Transport AND Governance; 2). Maritime AND Transport AND Governance AND Model; 3). Shipping AND Governance AND Model; 4). Port AND Governance AND Model; 5). Port AND Hinterland AND Governance AND Model. In total 448 articles were found in this scoping process. Second, these articles were screened. This screening process filtered articles to 111 articles based on their relevance. Within the filtered articles, we selected top-level results based

Table 1
Different Governance Models in Maritime Transport Governance.

Model	Monocentric	Highly Competitive	Semi Competitive	Mutual Cooperative	Hierarchical Cooperative	Collaborative Polycentric
Integration	High	Low	Medium	Low	Medium	Low
External Coordination	Low	Low	Low	Medium	Medium	High
Description	– Single ownership; single mandate [54]; – Central authority; national government sets a collective-choice decision, and a lower level of government follows from this command [37].	– Completely left to the market, all regulatory functions and operational activities are performed by private companies [56]; – Relations with competitors are on a 'win-lose' basis [59]: one actor's gain means a loss for the other actors.	– Curbing competition to a moderate level by enhancing the contractual relationships in a joint venture or joint actions [66]; – Government can include several requirements in contract documents to minimize negative effects of perfect competition.	– Forming an alliance with other stakeholders to gain a mutual benefit [59]; – Partnership to win market share [69].	– Infusion of vertical integration [66]; internalization or unifying ownership to tackle negative effects of cooperation, for example, to minimize opportunism [71].	– Comprising several centers of authority [38]; – No entity dominates [86]; no top-down mandate [38].
Strengths	– Single vision [54], thus offering more clarity [35]; – Clear leadership and accountability [55].	– Boosting innovation [60, 61]; – Mitigating risk and providing expertise in developing facilities [54].	– More efficient than in perfect competition [66]; offering a possibility for stakeholders to merge to achieve contractual goals yet provides room for moderate competition.	– Pooling resources will increase capability-based efficiency to win market share [44,69]; – Mutual benefits gained from cooperation will create more incentives and stimulate better performance [48].	– Able to push transaction costs [71]; – Well-coordinated with government [55].	– Better reflects the reality of actual practice with various involvements of the stakeholders (Roe, 2009). – Promotes institutional adaptation to create collective solutions and overcome the path dependency of traditional hierarchical governance [38].
Weakness	– May lead to a monopoly of power with a single decision structure [39]; – Lack of competition can lead to inefficiencies, lack of innovation, and reduced market-orientation [56]; – All revenues go to the central government [57]; less performance-stimulating.	– Risk of market failure; may result in monopolistic behavior [56]; – Limited sharing of best practices since the entities are in competition [55]. – Risk of ending up in a 'lose-lose' situation [59].	– Can be hindered by distrust and misunderstanding between actors, which can lead to joint venture failure [67].	– Transaction costs: bounded rationality and opportunism [14,66].	– Integration reduces adaptive capacity and creativity [55]; – If the public sector is more dominant, it can run the risk of under-investment [56].	– Fragmentation of authority [38]; – Free-riding problem, lack of contractual relationships, information asymmetry [14].
Practical Example	– Monopoly of powers in the port by setting a government-restrictive and anti-competitive policy [58].	– Competition between seaports to be the transshipment hub [62–64]. – Competition between transport chains [65].	– Joint venture between a large shipper and a freight forwarder to provide an intermodal service [68].	– Port managers coordinate to develop a mutual assistance process with other ports that share the same hinterland [70].	– State-owned enterprises (SOE) operating in terminal and port development [72].	– Port authorities establish task forces together with various stakeholders (carriers, shippers, transport operators, labor, and government bodies) [73].

on the most cited articles, and recent articles in combination with examination of their abstracts. In total, in the SSLR, we selected 22 relevant articles. Subsequently, we applied snowballing to select additional relevant articles that were referred to in the 22 articles. This resulted in the inclusion of 41 additional articles, which we used to perform an Integrative Review. The details of all articles selected on the basis of the SSLR and the additional articles included in the Integrative Review can be found in Appendix B. In the articles included in the review, different governance modes were discussed making use of various terms, such as, monocentric governance, polycentric governance, competition, cooperation, collaboration, coordination, contractual relationship, joint venture, mutual assistance, hierarchical governance, and public-private partnership. Following Trein et al. [43], we distinguish between the various maritime transport governance models by positioning them vis-à-vis each other with regard to the extent of integration and external coordination provided in these models. The names of these models respresent the terms that were frequently applied in the reference to these models.

The maritime transport governance framework derived from above process was applied to the Indonesian context using policy content analysis. The national government in Indonesia has issued a broad range of policies that aim to increase efficiencies in the national maritime

transport system. As shown in Appendix A, many of these policies originate from the Ministry of Transport and some policies are also stipulated by national law and presidential decree. As discussed above, any effort to increase efficiencies not only requires investments in the infrastructure of the transport system but also a deeper understanding of the governance issues. Given the notion that challenges emerge when several different governance models are applied, we reviewed existing policy documents to assess governance across all three interrelated subsystems: the port-to-port subsystem, the within-port subsystem, and the port-to-hinterland subsystem. We examined documents that specify how policies should work and how policies are actually implemented (Appendix C). We included both master plans and technical regulations issued by the national government. The first documents date back to 2005, while the most recent ones were issued in 2022. With regard to how policies are implemented, we included all evaluation reports published by the Ministry of Transport from the most recent ten-year period and supplemented these with recent evaluation reports by international organizations, such as the World Bank and OECD, and with academic studies.

In total, 35 documents were included. The documents included 9 master plans, 16 main technical regulations, and 10 evaluation documents. These documents were assessed through content analysis both within and across the documents using ATLAS.ti. Expanding on Trein et al.[43], we developed various indicators of integration and coordination, which we observed and interpreted in each of the three subsystems. To identify the governance model in each maritime transport subsystem, we assessed the extent of integration and coordination using a variety of indicators.

With regard to integration, we assessed whether we could find horizontal, vertical, spatial, and temporal integration across both policy goals and policy instruments [47]. When we found integration across only one dimension, we ranked it as relatively low. When we found integration across two dimensions, we ranked it as medium, and in the case of three or more dimensions as high. This applied to both policy goals and policy instruments.

With regard to coordination, we focused our analysis on the type of organizational structures that were present and on the type of interaction between the actors involved. In terms of organizational structures, we assessed whether interfirm alliances, transversal agencies, and perhaps even mergers of organizations could be found. Regarding the type of interaction between actors, we assessed the dominant type of communication, the presence of incentives to collaborate, coordination rules, and whether information was shared between the actors involved. Also here, when we found coordination in only one of these dimensions, we ranked it as relatively low. Coordination across two dimensions was ranked as medium, and three or more was ranked as high. Details of the indicators and the assessment process can be found in the Appendix C - supplementary materials.

4. Results: maritime transport governance in Indonesia

The maritime transport system serves a crucial role in the Indonesian transport system. It supports intra-island, inter-island and international connectivity [23]. Within this system, the government plays a key role in the development of the port-to-port, within-port, and port-to-hinterland subsystems. In the port-to-port sub-system, the government aims to protect the national economy by restricting the involvement of foreign shipping companies. Currently, foreign shipping companies account for only 2% of the total registered companies in Indonesia [79]. In the port subsystem, the Data Portal of the Ministry of Transport recorded 602 ports spread throughout Indonesia in 2022. These built ports are classified using a hierarchy that includes 28 main ports that serve international and national shipping, 159 collector ports that serve inter-province shipping, 159 regional feeder ports that serves intra-province shipping, and 256 local feeder ports that serves intra-municipal shipping. Between all these ports, 21 % are commercial ports that are managed by the state-owned enterprise PT. Pelindo, which has a monopoly role on the main commercial ports [80], the rest are operated by local departments from the Ministry of Transport [24]. Even though the government has opened the possibility for privatization, in reality not many private sectors are involved in port operations. The involvement of private companies is still limited to the specific terminal operation to support particular economic activities, such as, mining, industry, agriculture, and forestry. According to the Port Information System of the Ministry of Transport, in 2024 there are 2,071 terminals for specific purposes, of which 86 % are actively operating. Also in the port-to-hinterland subsystem, the national government stimulates private and foreign companies to engage as forwarder. However, its supporting facilities, i.e. road and rail infrastructure, are still largely under government control and the differences in jurisdictions of the national, provincial and city or municipal government, create challenges in the port-to-hinterland connectivity.

4.1. Integration and external coordination in policy documents

Our analysis revealed that in policy documents, the port-to-port, within-port, and port-to-hinterland subsystems had high degrees of both integration and external coordination. Interestingly, a governance model with such high degrees of both integration and external coordination is theoretically non-existent.

4.1.1. Port-to-port subsystem

Current policies suggest high degrees of integration with regard to policy goals and instruments. ***Horizontally***, port-to-port connectivity goals should be integrated supporting other sectors, for example, economic development and protection of the national security. To this end, the government applies cabotage to oblige domestic shipping to be handled by national shipping companies.

> *"Domestic sea transportation is held by national companies, using Indonesian-flagged ships and handled by Indonesian crews."* Translation of Law No. 17 of 2008 Regarding Shipping, Article 8 Section 1

Maritime transport policies in general, including shipping, must also be ***vertically*** integrated. The policy goals and instruments at the local level must be in line with those at the national level. Even though the government has adopted a decentralization policy since 1998, the policy documents indicate that the national government remains crucially important. This can be inferred for example from the following article:

> *"The Blueprint for the Development of the National Logistics System serves as a guide for ministers, heads of non-ministerial institutions, governors and regents/mayors in formulating policies and work plans […]."* Translation of Presidential Regulation No 26 of 2012 Regarding Blueprint for the National Logistic System, Article 2

Spatially, maritime transport policy is directed at improving inter-region integration to achieve a balanced development. The Maritime Highway Policy (*tol laut*), for example, is proposed in the national policy document and should stimulate regional development.

> *"The Maritime Highway Policy (tol laut) can be interpreted as an effort to strengthen the implementation of maritime transportation that connects the areas of Indonesia […] to ensure balance development […]. The National Port Master Plan includes policies set in line with the Maritime Highway Policy."* Translation of the Decree of Minister of Transportation No. 432 of 2017 Regarding the National Port Masterplan, p. 2–5

With respect to coordination, the policy documents also suggest high coordination. In terms of organizational structures, the national government has created a transversal agency, the so-called Coordinating Ministry for Maritime and Investment Affairs (Government Regulation No. 31/ 2021), which has task to coordinate the multitude of stakeholders and facilitate transportation investments. With respect to the

interaction between stakeholders, the documents show that the government has ideal coordination rules, develops platforms that enable information sharing, and provides incentives and disincentives ideally.

> *"Elaborating on the 2020–2024 President's mandate […], the need to modernize service systems in the shipping sector will become an important item on the agenda (the implementation of INAPORTNET, gate-in, e-ticketing, etc.)."* Translation of the Strategic Plan of Directorate General of Sea Transport 2020–2024, p. 104

> *"The development of local, inter-island and national connectivity is integrated by developing shipping lines and short sea shipping operations on a scheduled basis and providing incentives to logistics service actors and providers engaged in short sea shipping routes […]."* Translation of the attachment of Presidential Regulation No. 26 of 2012 Regarding Blueprint for the National Logistic System, p. 78

4.1.2. Port subsystem

Similar to the port-to-port subsystem, current policies also assume high degrees of integration of policy goals and instruments in this subsystem. ***Horizontally***, port development should support other sectors, such as the economy and environment. ***Vertically***, the port masterplan must be in line with the National Spatial Plan, provincial and municipal/city spatial plan. This is regulated for example in the following article:

> *"(1) Every port is required to have Port Master Plan. (2) The Port Masterplan must consider: (a) National Spatial Plan, Provincial Spatial Plan, Regency/City Spatial Plan […], (d) The harmony with other related activities at the port, (e) The technical economic and environmental feasibility"* Translation of Law No. 17 of 2008 Regarding Shipping, Article 73 Sections 1–2

The national government plays a dominant role in port governance. Not only are there delegations from the central government at non-commercial public ports, such as to the port management unit, but also governmental port authority and harbourmasters at all commercial ports. These are government entities whose organization and work procedures are determined by the Ministry of Transport. In addition, even though all commercial port operations are handled by PT. Pelindo, this is a state-owned enterprise (SOE) that follows the government's logic of governance.

Spatially, port planning is accommodated in the port master plan. The National Port Masterplan is long-term planning that consists of a long list of ports throughout Indonesia based on its hierarchy (main, collector, and feeder port), to ensure they are spatially integrated. ***Temporally***, the current policy also assumes the synchronization of intertemporal planning policies. The synchronization of the long-term national port plan, for example, is accommodated through a periodic review every five years.

> *"(4) The National Port Master Plan is valid for a period of 20 (twenty) years. (5) The National Port Master Plan may be reviewed 1 (one) time in 5 (five) years."* Translation of Law No. 17 of 2008 Regarding Shipping, Article 71 Sections 4-5

In terms of coordination, maritime transport policy assumes strong interaction between actors. All indicators, such as communication, coordination rules, information sharing, and incentive disincentives are perfectly set in the master plan and technical regulations. Current maritime transport policy includes organizational restructuring through the creation of interfirm alliances, cooperation between government with private parties, a concession to port operators, and direct assignment to a certain port operator which create same challenges as in port-to-port governance. The creation of a transversal agency in port governance is reflected in the creation of port authority and harbourmaster which coordinate activities at the port, and through the establishment of a Coordinating Ministry for Maritime and Investments Affairs that links transportation planning with investment to support regional development.

4.1.3. Port-to-hinterland subsystem

The national Port Masterplan and related technical regulations, also suggest high degrees of policy integration in the Port-to-Hinterland subsystem. ***Horizontally***, maritime transport is directed at creating an intermodal and intersectoral integration.

> *"National port policy is part of a multimodal and cross-sectoral integration process."* Translation of Decree of Minister of Transportation No. 432 of 2017 Regarding Port Masterplan Section 2.1

Vertically, this goal is adopted in both national and local development plans. To enhance this integration, the government through the Ministry of Transport as a regulator has set several instruments for freight forwarders. The Regulation No. PM 59 of 2021, for example, requires dozens of documents that must be provided by the forwarder company. In addition to these documents, forwarder companies are also obliged to have business permits that need to be updated every two years. ***Spatially***, this development is intended to achieve a balanced development among regions.

Policy documents also suggest high levels of external coordination. Compared to the two previous sub-systems, the government in this subsystem provides more opportunities for competition, especially for freight forwarding business in road base. The national government, for example through the Transportation Minister Regulation No. PM 59 of 2021, opens opportunities for an interfirm alliance by allowing foreign companies to involve as freight forwarders through a joint venture scheme.

> *"Forwarding businesses carried out by joint ventures and foreign investment are required to have a Business License."* Translation of the Transportation Minister Regulation No. PM 59 of 2021 Regarding the Operation of the Transport Business Related to Water Transport, Article 17 Section (1)

4.2. Integration and external coordination in policy implementation and evaluations

In comparison to the above, our policy analyses and evaluations that focus on policy implementation showed a different picture. The port-to-port subsystem and the within-port subsystems were characterized by medium integration and coordination. The port-to-hinterland subsystem also had medium integration but was characterized by low coordination. Thus, in actual practice, the governance models were considerably different from those on paper. Below, we discuss for each of the subsystems how the governance models we found on the basis of the policy documents did not match the governance models we found in the policy implementation practices.

4.2.1. Port-to-port subsystem

For the port-to-port subsystem, the policy documents set a lot of centralized requirements. These, however, prove difficult to implement in practice. Horizontal integration across sectors, for example, by integration of environmental regulations in the shipping sector and by integration of economic and national security through cabotage. The government is eager to protect national companies by limiting competition with foreign companies in inter-island shipping. However, few Indonesian companies meet the requirements, such as complying with the International Convention for the Prevention of Pollution from Ships.

> *"The problem is that there are still very few Indonesian ships that have pollution free certificates, whereas ship owners or operators who operate ships of certain types and sizes must meet the requirements for safety management and prevention of pollution from ships."* Translation of The Strategic Plan of Directorate of General of Sea Transport Evaluation 2020–2024, p. 34

To enable spatial integration and create a balanced development, the national government aims to improve connections to underdeveloped areas – especially in the East of Indonesia – by giving subsidies to shipping operators to create a 'maritime highway' (*tol laut*). With regard to vertical integration, spatial plans at the local level are expected to integrate this idea. However, our policy analyses showed that in practice the connection between national goals and local development is absent. Moreover, the maritime highway is facing significant backhaul problems, where a ship travels to a destination in the Eastern part of Indonesia with cargo but there is no cargo to transport on the return voyage, so the ship has to travel back largely empty [81,82].

In comparison to the policy documents, the evaluation documents showed lower levels of coordination. For one, this may be a result of the fact that organizational structures to support coordination, for example, subcontracting or standardized procedures, lack transparency in Indonesia.

While interaction between actors is described as fluent and unconstrained in the policy documents, in practice this proves to be difficult, in part as a result of poor technical operations. The evaluation documents, for example, showed that there is no certainty about ship arrivals in less developed areas. Although the government has arranged a plan to enable information sharing, only a few ships and ports are equipped with the technology to track and trace ships. Especially in the eastern areas, this technology is scarce [81,82]. Finally, coordination is also hindered by the fact that many government organizations have overlapping mandates and do not interact in establishing regulations to coordinate domestic logistics [81].

4.2.2. Port subsystem

While the policy documents assume a high degree of horizontal integration, the evaluation documents showed that in practice each sector runs separately, largely due to the absence of monitoring and evaluation instruments to assess the implementation of intersectoral policies [84].

> *"Each sector or related institution is still running on its own, it has not received support from other sectors or institutions because there are still sectoral regulatory or policy barriers. Harmonization across sectors has not yet run smoothly because there are still many regulations at the statutory level that have not adapted yet to logistics development policies. This results in weak or non-existent cross-sectoral institutional support in overcoming problems or achieving targets."* ESCAP (2021, p. 26)

In many ports, governance organizations have relatively large room for discretion. As the OECD [83] remarks:

> *"In a few member states, including Myanmar and Indonesia, port authorities have discretion on whether to hold tenders or not, but the legislation does not set criteria about when direct assignments are allowed […]. If selection criteria are not clear or easily accessible, more efficient market players may be excluded and prevented from entering the market. The services provided by the concession holder could therefore be of lower quality."*

In addition, the evaluation documents also showed that in practice the port subsystem is characterized by limited coordination. Limited coordination between operators, for example, causes inefficiencies of freight handling, resulting in time delays and additional costs [81,82,85]. Inefficiencies with regard to freight handling are aggravated by unreliable IT systems and limited track and trace technology. Moreover, incentives for coordination are also limited. Port authorities, for example, are a direct delegation of the national authority and can assume the role of regulator and operator at once, which does not stimulate additional stakeholder involvement [24]. In line with this lack of incentives, concession profits will become state revenue. Thus, while the current policy encourages business entities to be port operators through a concession, any profit is to be paid to the state.

> *"The results of the concession obtained by the port operator are state revenues […]."* Translation of Regulation of the Minister of Transportation No. 50 of 2021 Regarding Port Operation, Article 22

4.2.3. Port-to-hinterland subsystem

While the policy documents regarding the port-hinterland subsystem indicate high degrees of integration, the evaluation documents indicate medium levels of integration at best. The national government, for example, decides the locations where ports should be constructed. In many instances, connecting a new port to the transport infrastructure network requires investments from the regional and local governments, who do not always have the budget available to fund expensive infrastructure projects. Thus, in underdeveloped areas where the infrastructure is not in place, local authorities could build supporting infrastructure but with limited capacity, thus following national ambitions of development is challenging. Meanwhile, in more developed areas where the infrastructure is already in place, we find low levels of coordination and limited competition in the railway sector, skewing the balance between railway and road transport.

> *"Kereta Api Indonesia (KAI) is the sole operator for railroad infrastructure and facilities. […] Other rail freight service providers may enter the market if they build their own infrastructure and satisfy legal requirements. […] there is no framework requiring KAI to allow third-party access to its infrastructure."* OECD (2021, p. 73)

The evaluation documents showed that the various sectors that are involved in the port-hinterland subsystem still operate separately from each other [84]. To illustrate, the owner of the goods at the destination is usually unaware of the shipment status [81]. Here, also the lack of track and trace technology is apparent. According to World Bank data, in 2018, Indonesia was below Vietnam and Thailand in terms of track and trace capabilities.

In supporting coordination, the government stimulates opportunities to create an inter-firm alliance. Ministerial Regulation No. PM 59/2021 explicitly states that foreign companies can be freight forwarders through a joint venture with local companies. However, since the feeder infrastructure is not in place, price disparity is unavoidable [82]. When scarcity exists, there is a possibility for a large forwarding company to monopolize the market and set higher prices, thus, there is a risk of market failure.

The above explanation of the policy integration and external coordination of maritime transport in Indonesia can be summarized in Table 2. This table reflects the content of the policy and implementation documents. Although most integration and external coordination indicators were found in policy and implementation documents, several were absent. Table 2 indicates them as "Not stated in policy documents" for indicating their non-existence in the policy documents and "Not reflected in the implementation documents" for indicating their non-existence in the implementation documents. The non-existence of several indicators in the policy documents means there were no explicit rules for them in the regulation. For example, for the indicator of policy integration in the temporal dimension, only the port subsystem has an instrument for temporal integration since it has a particular port master plan that rules the periodic review of this port master plan. The non-existence of indicators in the implementation documents can have two possibilities. First, these aspects were not discussed in the policy documents because these aspects were not apparent in practice since there was no implementation. Second, on the contrary, these aspects are implemented, but there is no issue in its implementation, so evaluation documents did not highlight these aspects. It should be emphasized here that this assessment only represents the existence of indicators in policy documents and implementation documents. Nevertheless, these results provide sufficient insight into how maritime transport governance practices are reflected in the policy and evaluation documents. However, for further studies, it is recommended to triangulate policy content

Table 2
Overview of Maritime Transport Governance in Indonesia.

Indicator		Sub Indicator	Maritime Transport Subsystems:					
			Port-to-Port		Within Port		Port-to-Hinterland	
			Policy Documents	Implementation	Policy Documents	Implementation	Policy Documents	Implementation
Integration	**Policy Goals Integration**	**Integration in the horizontal dimension**	Cabotage, restricting foreign company; Maritime transport development is aimed to support local economic and national security.	Only few national companies met the requirements.	Port development aims at supporting other sectors' development.	Not reflected in implementation documents.	Maritime transportation is directed at creating an intermodal and intersectoral integration to the hinterland.	Not reflected in implementation documents.
		Integration in the vertical dimension	Coherency of goals among multiple levels of government is mandated in the shipping law.	Not reflected in implementation documents.	Port development must follow the National Port Master Plan.	Not reflected in implementation documents.	A goal to create intermodal integration becomes a reference for the local development plan.	Not reflected in implementation documents.
		Integration in the spatial dimension	Shipping is directed to support balance development between regions.	Backhaul, the maritime transport plan is less integrated to the local potential development.	The Port Master Plan has ensured port development to be spatially integrated.	Large room for discretion, the government can directly assign port and shipping operator in programs to support balance development.	Master Plan instruct Port-Hinterland Development is intended to achieve a balanced development among regions.	Due to fragmentation, there is less feeder infrastructure from the port to the hinterland in undeveloped areas.
		Integration in the temporal dimension	Not stated in policy documents.	Not reflected in implementation documents.	Not stated in policy documents.	Not reflected in the implementation document.	Not stated in policy documents.	Not reflected in implementation documents.
	Policy Instrument Integration	**Integration in the horizontal dimension**	License and business permit for shipping operator to be environmentally friendly shipping; Limitation for foreign shipping companies	Only a few national shipping companies that can meet this instrument.	Government establish a wide set of instruments for stakeholders to be a port operator; Port masterplan as an instrument to achieve inter-sectoral integration;	Too many rules create complications that obstruct stakeholders involvement; The absence of monitoring and evaluation instruments to assess the implementation of intersectoral policies;	The National Port Master Plan to ensure horizontal intermodal integration to the hinterland and intersectoral integration to the economic sector.	Connecting a new port to the transport infrastructure network requires investments from the regional and local governments, which do not always have the budget.
		Integration in the vertical dimension:	Shipping regulations at the national level become a reference for lower-level government.	The connection between national goals and local development is absent.	Standardized technical criteria of the port set by the national government that become reference for lower level.	Many strategies and blueprints are defunct.	Similarity of instrument between the national and local level; Forwarders must have licenses and business permits that are regularly evaluated every two years.	Complicated procedures; Administrative evaluation every two years is too short.
		Integration in the spatial dimension	The Blueprint for the Development of the National Logistics System to ensure spatial integration; Maritime Highway Policy (*tol laut*).	Lack of regulation at the inter-sectoral level; Backhaul problem.	The National Port Master Plan to ensure spatial integration	A bottleneck in port development investment.	The Blueprint for the Development of the National Logistics System is an instrument that also ensures spatial integration to the hinterland.	Not always meets the local government's capacity in providing supporting infrastructure, proved by less feeder infrastructure from the port to the hinterland in undeveloped areas.
		Integration in the temporal dimension	Not stated in the policy document.	Not reflected in implementation documents.	Port master plan may be reviewed every five years	Not reflected in implementation documents.	Not stated in policy documents.	Not reflected in implementation documents
External Coordination	**Interaction Between Actors**	**Communication**	The public can give input to the government through inter-stakeholder synchronization, for	Discretion, hindering coordination in practice and lack of transparency.	Obligation to coordinate between actors.	Inefficiencies in freight handling, resulting in time delays and additional costs	Synergy among ministries, for example, trade facilitation	Fragmented; In remote areas, goods still tend to be distributed around ports; mostly rely on road

(*continued on next page*)

Table 2 (*continued*)

Indicator	Sub Indicator	Maritime Transport Subsystems:					
		Port-to-Port		Within Port		Port-to-Hinterland	
		Policy Documents	Implementation	Policy Documents	Implementation	Policy Documents	Implementation
		example, the Minister of Transportation coordinates stakeholders in establishing shipping route.			caused by lack of coordination.	strategy to the hinterland.	transport, rail freight service providers may enter the market if they build their own infrastructure.
	Coordination rules.	Shipping operators are obliged to report their shipping activities to the Minister of Transportation.	Not reflected in implementation documents.	Obligation to report port-related activities to the Ministry of Transportation.	Not reflected in implementation documents.	Forwarders and foreign investors are obliged to report to the ministry.	Not reflected in implementation documents.
	Information sharing.	Information System Technology to enable information sharing, for example, INAPORTNET.	Direct Assignment creates discretion; In less developed areas, there is no certainty about ship arrivals.	Port authorities have discretion on whether to hold tenders or not.	Discretion in port operation; Unreliable IT Systems at ports in underdeveloped areas.	Information system for forwarding activities.	Sometimes the owner of the goods at the destination is usually unaware of the shipment status; and lack of track and trace technology, especially in underdeveloped areas.
	Incentives-Disincentives	Indonesian Shipping Law regulates incentive and disincentive mechanism.	Not reflected in implementation documents.	Government set incentive and disincentive mechanisms for port-related activities; Concession profit is a state revenue.	Not reflected in implementation documents.	Sanctions for forwarders who do not fulfill their obligations.	Not reflected in implementation documents.
Organization Restructuring	**Creation of an interfirm alliance**	Agreements and Contracts between government with shipping companies; Project-specific contracts in shipping.	Partnerships in Maritime Highway are mostly between the government with State Owned Enterprises Shipping Operator.	The cooperation between a government with business entities, a concession to port operators, and direct assignment to a certain port operator.	Not reflected in implementation documents.	Foreign companies can be freight forwarders through a joint venture with local companies	The feeder infrastructure is not in place, price disparity is unavoidable in underdeveloped areas.
	Creation of a Transversal Agency	The establishment of the Coordinating Ministry for Maritime and Investment Affairs.	Institutional dualism in logistic coordination; Overlapping mandates; Lengthy process of coordination.	The establishment of the Coordinating Ministry for Maritime and Investment Affairs.	Institutional dualism in logistic coordination; Overlapping mandates; Lengthy process of coordination.	The establishment of Coordinating Ministry for Maritime and Investment Affairs.	Not reflected in implementation documents.
	Merger of organizations	Not stated in policy documents.	Not reflected in implementation documents.	Not stated in policy documents.	Not reflected in implementation documents.	Not stated in policy documents.	Not reflected in implementation documents.

analysis with other techniques.

5. Discussion: governance issues

As discussed above, the policy documents suggest a governance model that is theoretically implausible. As depicted in Fig. 3, the policy analysis and evaluation documents suggest that different governance models are applied in practice. We thus identify mismatches between the envisioned and the materialized governance models. These mismatches create several governance issues.

First, the port-to-port and the within-port subsystem both are characterized by medium levels of policy integration and external coordination in their implementation. In these subsystems, the governance model can be classified as a hierarchical cooperative governance model. In practice, this model, where the central government is hierarchically positioned above the local government and other non-governmental organizations, has created order among the stakeholders. The existence of a command-and-control structure, in principle, provides clear objectives for maritime transportation development. However, as a result of the high degrees of integration and external coordination that are being strived for, the national government has developed a wide set of instruments that indicate, for example, the steps that stakeholders can take to enter the policy arena. However, in practice we also find that a multiplicity of rules create complications that obstruct the process. In addition, we see high transaction costs, with consultation between the various parties and levels of authority involving lengthy processes.

Second, the port-to-hinterland subsystem can be characterized by medium integration and low coordination, which corresponds to a semi-competitive governance model. Here we see that the ambitions to achieve high levels of both integration and coordination in practice result in limited room for competition between stakeholders, which, as emphasized throughout the evaluation documents, may also lead to monopolizing the market and consequently even market failure.

Third, while the policy documents all envision a similar, non-existent governance model, we found that in practice different subsystems in the wider maritime transport system use different governance models. This creates governance challenges between the various governance models. The governance models in the port-to-port and the within-port subsystem mostly serve connectivity through more intensive authority from the national government. The national government has the authority to determine which stakeholders are involved in the system, for example, by using cabotage to protect local players or by giving direct assignments. Meanwhile, the port-to-hinterland subsystem is often within the remit of provincial and municipal government organizations. Thus, we see here a large influence of local authorities. As a result, we see governance issues such as the siting of a new port creating tensions between central government and the local level. This is further aggravated by the fact that the national government may open the possibility for foreign companies to be freight forwarders through a joint venture with local companies while this not always meets the local government's capacity in providing supporting infrastructure.

Our finding is in line with what is posed in previous literature implying that challenges emerge when different governance models exist, and profiling that governance is important to argue the strengths and counter the weaknesses of governance models [36,41,42]. We have built a maritime transport governance framework that shows these various governance models along with their strengths and weaknesses. Mayntz [41] argued that various governance models emerge from the awareness of blind spots resulting in changes in political reality, and that their application is not mutually exclusive, instead, their combination can be more effective. In line with this, our framework also shows fluid and open-choice options that offers many possibilities for governance models. Our empirical test adds the perspective that governance might vary, even within the same system. This variation can create challenges since maritime transport systems consist of interrelated sub-systems in which changes in one sub-system will affect other sub-systems. Our analysis also adds the reflection that what is envisioned and materialized can differ in terms of different governance patterns. Any actor in maritime transportation governance must therefore be aware to consider that every governance model has specific characteristics with its own strengths and weaknesses.

Currently, in practice, the combination of high policy integration and high external coordination does not work in Indonesia. A study including other countries may well reveal different results. Our study shows a case study in the global south context, with a specific location in Indonesia. It needs further testing to check whether a similar trend would appear in other global south countries or in the global north. Although this framework can be used as a universal measuring tool, the results may show different patterns from one country to another. In addition, since governance focuses on actors' interactions within

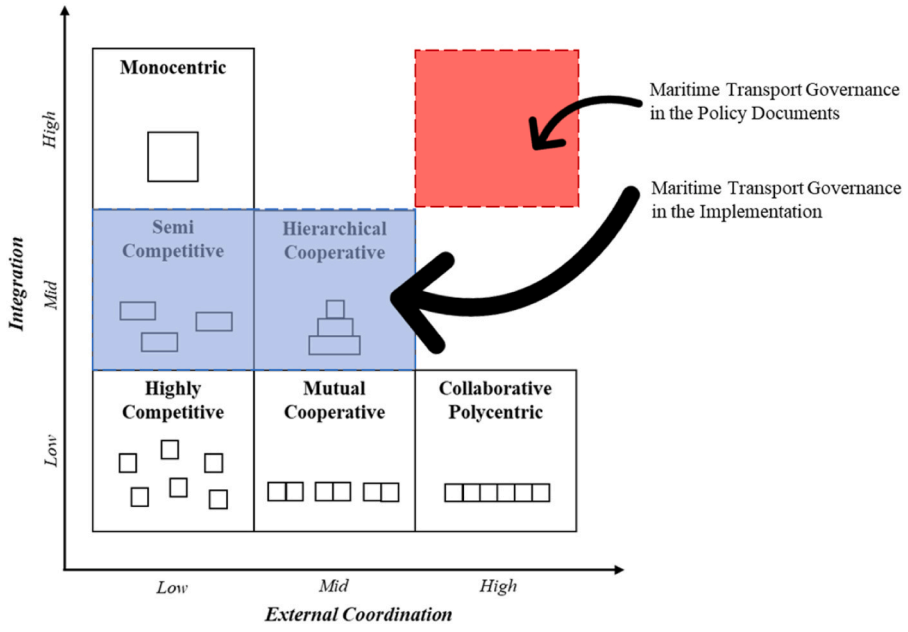

Fig. 3. Position of maritime transport governance in the governance spectrum in Indonesia.

institutional frameworks [41], and every country has a different institutional setting, it is recommended to include this institutional aspect in-depth for further study. It is worth mentioning that this framework is not finite and still leaves room for the development in its configurations. However, our maritime transport governance framework provides an essential basic profile that captures a picture of governance theory that is still evolving.

6. Conclusion

This article provides insight into maritime transport governance in Indonesia. As an archipelagic country, maritime transport is very important for Indonesia in facilitating connections between islands. However, Indonesia is facing high transportation costs, which in part can be attributed to governance issues. To date, much of the existing literature on maritime transport governance has focused on governance issues in the Global North. In the Global South, however, many governance issues result from complex, absent or inadequately enforced rules, norms, and strategies. Indeed, we find that in Indonesia, the governance models that are envisioned in policy documents do not match the governance models in implementation practices. We have discussed governance models as set governance instruments, perspectives and implementation that together result in a certain degree of integration and inter-stakeholder coordination. While maritime policy documents assume governance models that provide almost perfect integration and external coordination, our analyses indicate that the various subsystems in practice are characterized by much lower levels of integration and external coordination.

Mismatches between policy and its implementation exist in the port-to-port, within-port as well as port-to-hinterland subsystems. This arises from deadlocks where the ideal, yet unrealistic policy cannot be fully implemented, for example, in the establishment of the cabotage principle in the port-to-port subsystem. In an attempt to support the national development goals to protect the national economy and national security, the current policy requires domestic shipping to be handled by national shipping companies. However, the government has also set a series of instruments whose implementation are difficult to fulfil. Law No. 17/2008 regarding Shipping arranges that shipping operations must meet layers of approval from the local and the central government and a business company should be able to fulfil all standards and criteria proven by having licenses and certificates. On the one hand, the government wants to protect national companies by prioritizing them to join the market, while on the other hand not many national companies can meet the rigid requirements set by the government. Another example of such a mismatch was found in port governance, where the government prescribes integration and external coordination ideally. However, in practice the authority of the government in the ports is dominant. The port authority as a delegation of the government has the authority to coordinate all services provided by business entities and can also provide services. This double role as regulator and operator at the same time creates discretion for the government and may not stimulate more new involvement of competitive actors [24]. Another mismatch was found in port-to-hinterland governance. The government set maritime transport development to support the national goal of achieving balanced development among all regions in Indonesia. National government can decide port locations, but the connecting road from a port to the hinterland could be a local road whose funding depends on the capacity of the local government. However, not all local governments can finance infrastructure development with the same funding capability and speed of development as the central government.

In addition to the existing literature, we were also able to show the differences between governance models in the three different subsystems. To date, maritime governance studies have focused on one of these subsystems only, either the port-to-port, the within-port, or the port-to-hinterland subsystem. By providing a more comprehensive overview, we were able to show that these various subsystems are characterized by different governance models. The governance literature suggests that governance issues emerge when multiple governance models are applied. The fact that multiple governance models are applied in maritime transport governance indeed adds to its complexity. However, in the case of Indonesia, this is not only the result of the fact that several different governance models are applied in the different subsystems, but it is also a result of the fact that the policy documents refer to an ideal-type and perhaps even utopian situation, which theoretically cannot be achieved. Indonesia thus also faces governance issues that emerge in between policy rhetoric and policy practice.

As such, our study may help the government to gain a sense of perspective. The involved stakeholders in the maritime transport sector must be sensitive to the strengths and weaknesses of each subsystem to be able to solve its problems. Insensitivity in identifying forms of governance as well as the strengths and weaknesses of each governance model is a challenge that needs to be addressed in Indonesia. On the basis of our study, the government may be able to develop a deeper understanding of the type of governance it could use and may want to capture in its governance principles. On the one hand, our study provides the government with an understanding of the strengths and weaknesses of each model. On the other hand, in further developing its potential governance approach, our study also makes clear that the maritime transport system is complex by nature. There is no silver bullet that can alleviate all governance issues in the whole system.

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CRediT authorship contribution statement

Johan Woltjer: Conceptualization, Supervision, Writing – review & editing. **Taede Tillema:** Conceptualization, Supervision, Writing – review & editing. **Tim Busscher:** Conceptualization, Methodology, Resources, Supervision, Writing – review & editing. **Lisna Rahayu:** Conceptualization, Data curation, Formal analysis, Methodology, Resources, Visualization, Writing – original draft.

Data Availability

Data will be made available on request.

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Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.marpol.2024.106147.

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