REVIEW ARTICLE

Interactive Governance for the Sustainability of Marine and Coastal Resources in Thailand#

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ABSTRACT

Coastal zones are biodiverse, with complex and dynamic interconnectivity between terrestrial and marine areas, and with multiple interactions between ecological and social systems. Despite on-going efforts to conserve and protect these ecosystems, destructive extraction and unsustainable resource utilization are persistent, posing challenges for governance. Issues and concerns in coastal zones are cross-sectoral and cross-boundary, often with overlapping jurisdictions. They are considered 'wicked' governance problems, requiring nuanced approaches to address, rather than technical quick fixes. Interactive governance is one such approach that examines relationships within and between the ecological and social systems, as well as with the governing system. Theoretically, the governability of coastal zones depends on the inherent quality of these systems and their interactions, and improving governability needs to take place in all three orders of governance. At the 'first order', a better understanding of the diversity, complexity and dynamics of coastal zones, and related scale issues is required. Improving governability at the 'second order' involves evaluating and adjusting the existing legal and institutional frameworks to improve the performance and the correspondence with the systems they aim to govern. Finally, discussion about coastal governance needs to be elevated to 'meta-order' where principles are set and values derived so that hard choices can be made, for instance, between conservation and utilization of coastal resources. Guided by the interactive governance framework, the paper presents an overview of coastal governance in Thailand, summarizing key features of the natural, social and governing systems associated with coastal zones, and discussing what can be done to improve coastal governability.

1. INTRODUCTION

Coastal zones and the adjacent seas are biodiverse, with complex and dynamic terrestrial/marine inter-relationships and with multiple interactions between ecological and social systems. Coastal areas around the world face rapid and unplanned development, population growth and demographic change, which contribute to loss of habitats, increased erosion and ecological degradation, among others issues. Despite on-going efforts to conserve and protect aquatic resources and coastal ecosystems, destructive extraction practices, and unsustainable resource utilization remain.

Multiple uses and activities in coastal systems, which are often cross-sectoral, cross-boundary and with overlapping jurisdiction, create 'wicked' governance problems that are difficult to define and solve. As posited by Rittel and Webber (1973) and Jentoft and Chuenpagdee (2009), they require nuanced approahes to address, rather than technical fixes. Conceptually, integrated coastal management (ICM) recognizes the wicked nature of coastal issues and is considered a better alternative to the traditional sectoral management (Cicin-Sain and Knecht, 1988; GESAMP, 1996; Satumanatpan, 2018). ICM is a dynamic process designed as an intersectoral,

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intergovernmental, land-sea and science-based management, which has been employed globally in promoting sustainable coastal development since the early 1980s. The goal of which is to maintain or restore ecological integrity and enhance the quality of life, while focusing also on developing the economies (Burbridge, 2004; Cicin-Sain and Belfiore, 2005; United Nations, 1982; Celliers et al., 2021).

Despite long experiences of ICM practices around the world, coastal ecosystem health continues to decline, making sustainability a lofty goal. Olson (2000) posits that ICM challenges are linked to governance processes, which, according to Christies et al. (2005), require integration and coordination support, participative management, relevant policies, legislation and institutional arrangements and long-term commitment. It has been argued that continuing evaluative and adaptive processes are imperative, using a system of indicators, but the application of this is not without a challenge due to the multi-faceted nature of coastal ecosystem. Eger et al. (2021), for instance, suggest that governance characteristics, including formal governance structure, engagement with diverse actors, and innovative mechanisms for coordination and cooperation among multi-actor groups, are key elements that need to be examined for successful ICM, measured by numerous input, process and output indicators (Ehler, 2003).

A shift from traditional, single sector-based management approaches to cross-sectoral coastal governance is considered a critical pathway towards coastal sustainability. While there are several models that promote holistic and integrated perspectives in coastal zones, this paper follows the interactive governance theory (Kooiman et al., 2005) in examining the relationships and interactions within and between the natural and social coastal systems that are being governed, and the governing system, as key areas for improving coastal governance, as well as governability over time. The latter is a related concept that refers to the overall quality of the governance system, which includes the inherent characteristics of the systems themselves, as well as the capacity of the governing system to perform its tasks. In the first instance, a coastal system can be more or less governable depending on the diversity, complexity, dynamics and scale of the natural and social systems (Jentoft and Chuenpagdee, 2009). Generally speaking, a system that is diverse, complex, dynamic, and has scale and boundary issues is likely to be less governable, unless the governing system is adaptive and highly capable of dealing with the challenges posed by these characteristics. The diversity, complexity, dynamics and scale of the governing system also contribute to governability, which additionally depends on how well it aligns and corresponds to the nature of the coastal systems that it aims to govern.

The interactive governance theory further posits that sources of governability (and opportunities to enhance it) can be found in all three orders of governance. The meta order is concerned with values, images and principles guiding governing institutions at the second order and governing interactions at the first order. When meta-order elements are well articulated and appreciated by all involved coastal stakeholders, and that laws and regulations are formulated accordingly (second order), which make it easy for the implementation on the ground (first order), coastal governability is likely to be high. Adjustment and transformation may be needed to better align the three orders of governance, which would then lead to improving governability (Chuenpagdee and Jentoft, 2009).

The article extends from the work by Satumanatpan et al. (2014), Satumanatpan and Chuenpagdee (2015), and Satumanatpan et al. (2018) in looking at how interactive governance and three governance orders provide the needed foundation to help achieve coastal sustainability in Thailand. With a maritime territory of more than 320,000 km^2, or about 60 percent of the land area, and with 23 provinces adjacent to coastal seas, Thailand's coastal and aquatic resources generate a high economic value of about 24 trillion baht annually. The Thai government has been supportive of ICM and dedicated the responsibility of coastal management to the Department of Coastal and Marine Resources (DMCR) in 2015. Like other coastal regions elsewhere, Thailand faces several governance challenges related to inter-governmental and inter-sectoral coordination, communication and dissemination of information, stakeholder participation, long-term financial support, and consistent monitoring and evaluation, among others (see e.g., Christie et al., 2005; White et al., 2006; Satumanatpan et al., 2017; Eger et al., 2021). Thailand is a signatory to Sustainable Development Goals (SDGs) (NESDC, 2021), supporting the ocean sustainable development agenda, including the most recent Blue Growth and Blue Economy initiatives.

Coastal areas are among the most complex and challenging systems to govern. On that premise alone,

the application of a theoretical framework like interactive governance to unpack the wicked problems embedded in the coastal system offers valuable lessons. Thailand coastal system is presented in the paper to illustrate such an application. Yet, how coastal areas in Thailand are governed presents additional challenges, as well as opportunities for improving governance, given the new laws and regulations governing coastal and fisheries resources. It serves as a good case study for resource governance reform, which many countries are either implementing or contemplating.

In this paper, we first undertook a desk review of the policy and legal basis for governing marine and coastal resources in Thailand. The review included the following key documents: the 20 years National Strategy and the Master plan, the National Economic and Social Development Plans, the Five Year Environmental Management Plan, and other relevant national laws. After completing the reviews, we employed the interactive governance in guiding the discourse analysis by exploring the overall coastal system, including the systems that are being governed, the governing system and the governing interaction. Additionally, we examined these systems in three orders of governance, in the understanding of coastal governability, using the following questions. For the Meta-order governance: What are the goals and principles underlying the coastal governance system? Do governing actors recognize or ignore them? For the second-order governance: What institutional characteristics do the governance system have? Are existing regulations conducive for effective coastal management? Are there instruments to support the goals? And finally, for first-order governance: What are the day-to-day operations? Are patterns of interaction among stakeholders supporting coastal management? Where appropriate, we also put relevant examples, which clearly explain where and how to address the coastal challenges and improve governance.

The article is organized as follows. We begin with the theoretical framework of interactive governance and the description of the natural and social coastal systems, the governing system, and the interaction between the two. Key legislations that took place since the Rio's conference in 1992 are highlighted to illustrate the diversity, complexity and dynamic of the governing system. This is followed by discussion about issues and challenges in coastal governance following the three orders analysis. We conclude with suggestions about how to improve coastal governability in Thailand, as part of the possible pathways towards sustainable coastal development.

2. INTERACTIVE GOVERNANCE AND GOVERNABILLITY

Governance is a concept that has several meanings and definitions (Graham et al., 2003; Lockwood et al., 2010; Moore et al., 2011). For instance, Graham et al. (2003) define governance as the interactions among structures, processes and traditions that determine how power and responsibilities are exercised, how decisions are taken, and how citizens or other stakeholders have their say. Moore et al. (2011) state that governance involves the exercise of power, decision making, and implementation of decisions. They also point to laws or rules, institutions and processes among the key governance components. In another instance, governance is referred to as the structural, institutional, and procedural umbrella under which development programs and management practices operate (Bennett and Dearden, 2014). Singh (2014), on the other hand, defines governance as the ability of a state to govern its resources as prescribed in the form of legal instruments, supplemented by policy, programs and institutional interventions, all operating in a holistic manner with effective synergies among and within the various entities.

Interactive governance, as defined by Kooiman (2003), is similar to the above but has its emphasis on interactions. Specifically, interactive governance refers to "the whole of public as well as private interaction taken to solve societal problems and create societal opportunities" (Kooiman et al., 2005). It includes the formulation and application of principles guiding those interactions and care for institutions that enable them. The emphasis on interactions, posited in interactive governance theory, encourages a whole-system analysis of all aspects of governance, in identifying challenges and obstacles, and in exploring new opportunities and perspectives to address them. These interactions occur in all levels and all orders of governance, and these interactions are part of what make the system more or less governable (Chuenpagdee and Jentoft, 2009).

In accord with the interactive governance concept, coastal systems are characterized by the diversity, complexity and dynamics of the system components, which operate at various scales. These characteristics can be found in the natural and the

social systems-to-be-governed (SG), the governing system (GS) and the governing interaction (GI) within and between the SG and GS. They are fundamental building blocks of a governance structure, and therefore must be carefully examined when assessing the capacity and performance of the governance system. As previously stated, systems with low diversity, dynamic and complexity, with a well-defined boundary, and activities taking place in a small spatial scale, may be more governable than those that are highly diverse, complex and dynamic, and are ridden with boundary and scale issues. Yet, the latter systems can still be governable if the governing system is highly capable of performing its function, and it is organized to align with these characteristics and can respond in timely and effective manner.

2.1 The natural and social coastal SG

Coastal areas of Thailand are rich with many key aquatic ecosystems and habitats including mangroves, coral reefs, seagrass beds, sandy beach, muddy shore and rocky shore. Mangroves, coral reefs and seagrass beds, in particular, serve as feeding ground and nursery areas, for many aquatic organism. According to a recent report by DMCR (2022), mangrove covers an area of about 2,780 km^2, coral reefs 239 km^2, and seagrass beds 159 km^2. A total of 96 species of mangrove plants have been identified, with the dominance of *Rhizophora* spp. There are 273 species of coral, the majority of which are branching corals (*Acopora* spp.) and massive coral of the species *Porites lutea*. Two seagrass species, *Halophila ovalis* and *Enhalus acoroides*, are common among the 12 species found in Thailand (DMCR, 2022).

The rich natural coastal system supports diverse stakeholders with multiple uses in both coastal and marine areas. They provide food security and local livelihoods for coastal communities engaged in fisheries, aquaculture and tourism. Ports and shipping, oil and gas exploration and production, and coastal development are other activities taking place in these coastal areas. Fish and seafood are a key part of the Thai diet, with about 29 kg/year of fish being consumed per capita, which is higher than the world average of 21 kg/capita/year (FAO, 2020). The importance of fisheries, especially small-scale fisheries, cannot be under-estimated. Small-scale fisheries take place in all the 22 coastal provinces, and according to the latest catch survey statistics by the Department of Fisheries, the sector produced about 161,500 ton of marine fishery catch or about 11% of the country's total production (DOF, 2020). The number of fishers has also been estimated at 168,140 people actively fishing during peak season, with 57,800 households depending on fisheries livelihoods (DOF, 2016), the majority of which are involved in the small-scale fisheries value chain.

Threats to coastal and aquatic resources in Thailand have been increasing for decades and continue to grow. For instance, marine resources have been over-exploited, with some destructive fishing practices causing damage to habitats and marine mammals (PEMSEA, 2019). Coral reefs suffer damages from multiple causes including tourism, sedimentation, marine debris and untreated wastewater discharge. Sewage, sedimentation from coastal projects, destructive fishing, and shrimp farming have been reported to accelerate the decline of seagrass and other coastal vegetation. Loss of mangrove forests continues through deforestation and conversion to aquaculture, industrial development, construction of road, piers and other infrastructure, and agriculture. The mangrove forest area decreased from approximately 3,680 km^2 in 1961 to 1,680 km^2 in 1996. With reforestation programs carried out by government agencies, private sectors, and NGOs, mangroves have recovered with a reported area of about 2,780 km^2 in 2020 (DMCR, 2022).

2.2 Coastal GS

In line with how natural resources are generally governed in Thailand, coastal resources are governed under a decentralization system, with local government officials responsible for the day-to-day management and local decision-making since 1999 (Table S1).

In 2003, a bureaucratic reform took place, which resulted in an establishment of the new Ministry of Natural Resources and Environment (MONRE), designated as the main agency responsible for environmental and natural resource management in the country (Royal Gazette, 2003). The Department of Marine and Coastal Resources (DMCR) is one of the units under the ministry, in charge of promoting sustainable management and conservation of Thailand's marine and coastal resources, particularly mangrove forests, coral reefs, seagrass and marine endangered species. DMCR has a direct mandate for coastal resource management, but shares decision-making responsibility with other government agencies that also have jurisdiction in the coastal zone, such as the Department of National Parks, Wildlife and Plant

Conservation, and Office of Natural Resources and Environmental Policy and Planning under the MONRE, Department of Fisheries under the Ministry of Agriculture and Cooperatives, Marine Department (main authority for marine transportation and shipping) under the Ministry of Transport, Department of Public Works and Town Planning under the Ministry of Interior, and Office of the National Security Council under the Office of the Prime Minister. (Supplement A, upper box shows major institutions involved in governing marine and coastal resources at the national scale).

Prior to 2015, coastal resources were managed under a number of related laws (Table S1). Since March 2015, the Promotion of Marine and Coastal Resources Management Act (hereafter, 2015 Coastal Act) was enacted, with provisions for setting up institutions for managing coastal resources, either at the national or the local scale, and promoting community participation in coastal resources governance. In November of that year, the Royal Ordinance on Fishery came into effect, with the mandate of protecting fishery resources through similar institutional arrangement (i.e., national and provincial fishery committees) and promoting fishing communities' participation in fishery governance. In 2019, the National Park Act and the Marine Interest Protection Act are the two most recent laws, playing a supporting role in the governance of marine and coastal resources in Thailand (Table S1). We provide comprehensive details of direct governing institutions created under the 2015 Coastal Act as the second-order governance in section 3.2.

In sum, multiple government agencies have jurisdiction in the coastal zone and all have decision making authority at both national and provincial scales, thus creating a highly complex governing system (Supplement A). For instance, at the provincial scale (grey box in Supplement A), there are a minimum of three committees directly responsible for marine and coastal governance – the PMCRC (under the Coastal Act), the PFC (under the Royal Ordinance on Fisheries), and the PMECC (under the Marine Interest Protection Act). Additionally, two more committees will be added in the provinces that have environmental protected areas (the PCCME created under the National Environmental Quality Act) and marine protected areas (the PMNPC under the National Park Act), respectively.

2.3 Governing interaction

Several forms of interactions among several governing actors and the institutions (like the legal instruments) can be found, mostly in connection with the roles and responsibilities of different agencies, following principles such as participation, access to information, transparency and accountability. Specifically, there is a close connection and relationship between the Coastal Act and the Royal Ordinance on Fisheries, both of which have similar requirements to promote the participation and support of coastal communities (section 16) and local fishing communities (section 25) in the management, maintenance, conservation, restoration and exploitation of coastal and fishery resources. As in other areas, there are laws and legislations that can be drawn upon to enhance participation and interaction in the governance of coastal resources. For instance, the 1997 Official Information Act (Royal Gazette, 1997) establishes the right of people to access public information and makes all state agencies legally responsible for disseminating it. Additionally, the 2018 National Environmental Quality Act (second amendment, Royal Gazette, 2018a) requires that an environmental impact study be conducted on large-scale development projects that might affect coastal resources, with meaningful consultations with the communities to assess and mitigate impacts. There is also a mechanism that allows representatives of coastal communities to participate in committees at the provincial and national level.

While certain forms of interactions such as involving coastal communities in coastal decision making generally contribute to increasing coastal governability, quality of interactions and persons participating may affect the governance outcomes. This was the case with the plan to designate the dolphin conservation areas (under the 2015 Coastal Act) in Trat Province where the process began in 2018, but without much progress. Information about the causes of dolphin death was unclear, with the DMCR claiming that it was mostly caused by small-scale fishing gears, while fishers argued that the death was a result of plastic waste. Despite this, the DMCR began the planning process that did not lead to developing trust and agreement with the communities and fishers. This contrasts with a case in Trang Province, southern Thailand, where progress has been made to establish a marine protected areas (MPAs), taking into consideration local culture and sustainable use of local

people, and with an inclusive process with all relevant stakeholders sharing information (DMCR, 2021a).

3. GOVERNABILLITY IN THREE ORDERS

The ecological, social, economic and cultural importance of coastal systems makes it critical to get the governance right. As posited by the interactive governance theory, challenges and opportunities for governance, along with ways to improve governability, can be found in the system to be governed, governing system, governing interaction (section 2.1-2.3), and can be also found in the three orders of governance. We illustrate below what they imply in the context of Thai coastal zones.

3.1 Meta-order governance

The meta-order elements, i.e. values, images and principles underlying governance, are often implicit and not well articulated. Principles are the most explicit element among them and can be easily identified, at least on the face value. For instance, the five-year environmental management plan (Royal Gazette, 2017) lists twelve principles for natural resources and environment governance. These are: sustainable development, ecosystem approach, precautionary principle, polluters pay principle, beneficiaries pay principle, public-private partnership, good governance, extended producer responsibility, resource efficiency, human rights, integration, and environmental justice. The latter two principles, in particular, are emphasized in the upcoming five-year environmental management plan (2023-2027) under the Office of Natural Resources and Environmental Policy and Planning. Additionally, the sufficiency principle, originated more than 40 years ago by the late King Bhumibol Adulyadej, has been recognized as another key guiding principle for sustainable development envisaged in the SDGs, and has been incorporated in the Ninth National Economic and Social Development Plan since 2002 (NESDC, 2002).

The importance of meta-level governance, especially the sufficiency principle, in enhancing governability of many small-scale fishers in Thailand has been illustrated. Chuenpagdee and Juntarashote (2011) document how small-scale fisheries people in four provinces (Chantaburi, Prachuap Khiri Khan, Ranong and Krabi) adhered to the sufficiency principle, reflecting the positive image that they would like to portray along with their commitment to conservation. In these case studies, small-scale fisheries people were explicit in their agreement to abolish the use of illegal fishing gears and were active in their participation to protect and restore coastal resources. These actions contributed not only to maintaining the healthy marine environment but also to sustaining their livelihood and wellbeing.

Since the Rio+20 conference in 2012, the blue growth and blue economy concepts have been widely discussed and incorporated in the ocean development plans in many coastal states. Thailand has followed this trend in promoting blue economy as part of coastal and ocean sustainable development since 2015. The articulation of this concept can be found in several national strategies, including the 20 years National Strategy and the Master Plan (Royal Gazette, 2018b; Royal Gazette, 2019), and the 12th national social and economic plan (NESDC, 2016). Blue Economy is also incorporated in the DMCR action plan. Along with this is the incorporation of SDG14 (Life below water) targets in the national policy for protection and conservation of marine resources, which are implemented through, among other approaches, place-based tools such as marine spatial planning (MSP) and MPAs. These two are further discussed in section 3.2.

While principles are clearly articulated in the policy and planning documents, it is less obvious what or whose values underline them. It is also unclear what images drive the blue economy, nor whether key coastal and ocean stakeholders share them. So far the discussion about SDG14 in Thailand has been driven by the central government, and similar to other countries, the blue economy initiatives are mostly influenced by large-scale ocean-based sectors, including aquaculture, land development, industrial parks, tourism and industrial fisheries (Fabinyi et al., 2022). While there is an early attempt to provide small-scale fisheries people with alternative income (DMCR, 2021b), the most marginalized and vulnerable groups among them, such as women, will continue to be disadvantaged (Jentoft and Chuenpagdee, 2022).

3.2 Second-order governance

The second governance order refers to the institutional design and arrangement, formed in alignment with the meta-order, to enable the first order processes in problem-solving and opportunity creation. Kooiman et al. (2005) suggest that when designing or building these governing institutions, two questions must be considered: (1) whether the institutions form a proper framework for problem solving and opportunities creation; and (2) what a

division of tasks and responsibilities for each of them, or in combination between them, might look like.

As illustrated in the above, Thailand has a strong foundation of legal and policy instruments to support the sustainability of marine and coastal resources in the country (section 2.2). Through the 2015 Coastal Act, the NMCRC is inclusive in the approach to policy and planning for marine and coastal resources, with members representing 19 relevant ministries. Additionally, 12 academic or independent experts in fields related to coastal and marine resources are included in the committee, with a minimum of six individuals from coastal communities. The Prime Minister chairs the NMCRC and the DMCR Director-General serves as a secretariat, providing to a certain extent a high-level coordination and continuity to the coastal policy and planning process. The work of the NMCRC is done through eight sub-committees, which deal with specific issues (see Table S1 under the 2015 Coastal Act).

The 2015 Coastal Act also enables an establishment of the provincial level committee (PMCRC), with similar membership and response-bilities, as well as supports the registration of coastal community organizations, as another mechanism to enhance participation of coastal communities in resource governance. The involvement of community groups and local stakeholders in the provincial committees aligns well with what studies show about the importance of involving coastal actors in adapting and planning for change (see for instance Amarasinghe and Bavinck, 2011; Dearden et al., 2017; Prado et al., 2015).

In addition to setting up these institutions, the two spatial tools employed for coastal management in Thailand are worth noting in terms of their institutional design. Currently, Thailand has about 15,336 km^2 (close to 5% of the total maritime zone) designated as MPAs (NESDC, 2021), but is aiming to increase it to 10% by 2030. It is not clear, however, how the target will be met since coordination and harmonization among involved departments is highly problematic. The designation of an MPA in Thailand can be executed under three main laws including the Marine National Park Act (by DNP), the National Environment Quality Act (by ONEP), and the Coastal Act (by DMCR). Unavoidably, overlapping efforts and redundant work occur, causing confusion among coastal communities, especially about the different laws that allow or prohibit certain activities. The MPA designation has been delayed because of this lack of coordination.

Similar problems are likely to be observed in the MSP process, with two major laws related to its execution. The Marine Interest Protection Act provides power and authorities to the Office of the National Security Council in integrating multiple activities in the marine and coastal zone, and the Coastal Act enables protection of marine and coastal resources, but offers no direct power to DMCR to lead other institutions in integrating multiple activities in an area. Yet, without the legal responsibility to create an MSP, the DMCR has worked on drafting MSP plans for several areas in eastern and southern Thailand over the past five years. The Royal Thai Navy, an official institution in charge of mapping coastal seas, is also heavily involved in supporting the MSP process. Strong coordination between the lead agency and relevant institutions as related to MSP is imperative for an effective implenation of a place-based tool like MSP (DMCR, 2021c), especially in the context of Blue Ecnomy. As argued by Jentoft and Chuenpagdee (2022), MSP process must consider multi sectoral uses, and be inclusive of small-scale sectors, such as small-scale fishers and other vulnerable groups, to achieve just and equitable access and utilitzation of resources.

3.3 First-order governance

The first-order governance deals with day-to-day coastal management activities required to solve societal problems and to create societal opportunities. Principally speaking, when values, images and principles are well articulated and reflected in how the institutions are designed, actions at the first-order should follow correspondingly. Yet, many conditions are required for an efficient operation, most importantly the capability and capacity of governing actors and the shared understanding about the law and legal instruments among coastal stakeholders.

Across the country, staff persons in the two main agencies (local DMCR and the PMCRC) have limited skill to deal with complex problems, which are often interdisciplinary in nature. The local DMCR staffs are generally unequipped to tackle large-scale problems with multiple sources of threats to coastal and marine ecosystems. They are challenged by the need to approach coastal and marine degradation from the perspective of spatial integration, following MSP, and to identify the ways in which pressures from different sources are interconnected (Satumanatpan et

al., 2018). The reliance on familiar tools and approaches to deal with problems, and the lack of knowledge and opportunity to reflect on the root causes is a common challenge in coastal governance, not only in the case of Thailand (Eger et al., 2021).

A specific example is related to the operationalization of the Environmental Protected Areas (EPAs) in Phetchaburi and Prachuap Khiri Khan Provinces, and Koh Tao in Surat Thani Province, both of which were designated under the 1992 National Environmental Quality Act. EPAs is managed by the local governments (under the decentralized system) and is regulated through the EPAs committees, which comprise multi-stakeholders from relevant government agencies, local experts, private sectors, state enterprises and members of NGOs. The structure of the governing system is well defined and rather stable, which should facilitate the operationalization of the EPAs on the ground. Yet, a study by Satumanatpan and Chuenpagdee (2015) reveals that the EPAs do not function well, due mostly to the lack of understanding among the committee members about the natural and the coastal systems associated with the EPAs, the poor relationship and interaction between coastal stakeholders and the EPA committees, low enthusiasm and limited leadership from the EPA secretariat, and weak financial commitments for managing the EPA. Similarly, as revealed by Satumanatpan et al. (2017), the Koh Tao EPAs committees had limited understanding of the ministerial announcement about the Koh Tao EPAs, and their roles as decision makers, and had not held regular meetings but would convene only when there was a request for it. As such with all reported constraints, long-term goals for Koh Tao's sustainable development are unlikely to be achieved in a timely manner.

4. IMPLICATIONS FOR COASTAL GOVERNABILLITY

The above review illustrates how the coastal natural and social systems interact with the governing system in all three orders of governance, which then influences coastal governability. Certain features of the coastal systems, such as the rich habitats and multiplicity of coastal activities, are highly diverse, complex and dynamic, and operate at various scales, causing the coastal zones of Thailand to be difficult to govern effectively. When coupled with the highly complex and dynamic governing system, consisting of multiple agencies sharing responsibility and overlapping jurisdiction, and with limited staff capacity and poor coordination, the governability challenge is made even more difficult. Despite having the essential principles for good coastal governance, supported by laws and legislations, their operationalization is not straightforward, and coastal governance is often done without any good reflection about what it implies. In other words, the arrows in Jentoft and Chuenpagdee's figure (2022) go one way as a trickle down process from the meta-order, without any trickle up. The opportunity for interactive learning and adaptiveness is therefore limited. In this circumstance, some of the effective mechanisms to strengthen interaction between the orders would include communication and sharing information, along with a regular assessment of the alignment and correspondence. Further, governing interaction between the GS and SG can be facilitated through the participation mechanism in coastal governance, provided that it is meaningful and inclusive, and well facilitated and coordinated.

The interactive governance analytical approach offers opportunities to consider where in the governance system the coastal governability can be improved. First, at the meta-order governance, policy documents and vision for sustainable development need to be more explicit about principles such as social justice and equity. Specifically, better discussion with relevant coastal stakeholders about what Blue Economy means, what it should look like, and how to achieve it would be necessary. The same applies to the principles underlying the MSP process in a way that enables just and inclusive participation of small-scale fisheries and coastal communities. A broader conversation about the importance and values of coastal ecosystem, and the imminent role they play to support life and livelihoods of coastal people, is imperative.

In the second-order, serious considerations are required to examine the role and function of the different government agencies, making clear about their responsibility, authority and jurisdiction. Coordinating mechanisms need to be established to facilitate cooperation and harmonization, as well as to minimize duplication and confusion to increase credibility. Consideration should also be given to creating a process that recognizes the local culture and is respectful of the time and efforts of coastal community representatives involved in the governing committees. Coastal governability could also be enhanced through investment on relationship and trust building between governments and communities,

given the past experiences and the current political climate.

For the first-order, transdisciplinary training and capacity development programs need to be designed to enhance knowledge and skills of staff persons in the different government departments. The focus of the training is to build appreciation for the wicked nature in coastal governance, the reality of diverse worldviews agendas, and avoiding thus the application of technical fixes to favor iterative solutions co-creation. It is also about sensitizing staff persons with issues and concerns affecting coastal communities, and how they can work together to come up with innovative solutions for coastal sustainability. At the end, it is through mutual respect and collaborative efforts that would make governance work in the first-order.

5. CONCLUSION

This article uses the interactive governance theory, especially the three orders of governance, for examining coastal governance challenges, using the case of Thailand as an illustration. The findings can aid in understanding where governability challenges lie and how to enhance coastal governance. The study reveals the applicability of the interactive governance framework in other coastal developing countries that have similar contexts and that share the common goals to sustain marine and coastal resources.

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