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Opportunities for Trinational Governance of Ecologically Connected Habitat Sites in the Gulf of Mexico

[Shortened Title: Trinational Governance in the Gulf of Mexico]

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ABSTRACT

Biological connections throughout the Gulf of Mexico region pervade waters of the United States, Mexico, and Cuba. Identification of important high-biodiversity habitats and the species that utilize such uncommon habitats in the Gulf of Mexico provides a scientific basis for cooperative international marine conservation and policy. A combination of a compatibility analysis of existing national marine policies and ecosystem-based marine spatial planning would improve management of transboundary living marine resources based on biophysical characteristics of the large marine ecosystem. Goals of such a science-based governance approach are to enhance the understanding of connectivity elements and processes, to map distribution of habitats with high biodiversity, to minimize discontinuity among national marine policies, and to maximize coordinated international protection. The proposed outcome is the design and implementation of an international network of marine protected areas to conserve shared transboundary living marine resources of the Gulf of Mexico. Existing conditions in the Gulf of Mexico region support an enterprise to design several alternatives for an international network of marine protected areas for joint consideration by policy decision-makers from the United States, Mexico, and Cuba. The same model combining science and policy could apply to other transboundary large marine ecosystems.

Key words : transboundary ecosystem, marine protected area network, connectivity, international governance

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1. Introduction

The Gulf of Mexico (GMx) is a semi-enclosed, international sea that comprises a large marine ecosystem (LME) bordered by three nations: the United States (U.S.), Mexico, and Cuba. As such, the GMx provides important habitat for many transboundary living marine resources, ranging from highly migratory species to sessile invertebrates. Most transboundary species represent connectivity of the existing ecological network within the GMx and into the Caribbean Sea. These species may rely on important habitat features, such as hard and soft banks, hard-substrate reefs, and even man-made structures such as oil platforms, distributed in a semicircular fashion around the GMx continental shelf. Known key habitat areas have varying vertical relief from the seabed, collectively constituting a complex seascape of submerged islands. Protection of these habitat features throughout the GMx is an integral component of ecosystem conservation and management on an international scale. Properly designed habitat protection is imperative for maintenance of ecological connectivity and biodiversity, which are the most commonly identified criteria necessary to sustain marine ecosystem health (Foley *et al*., 2010).

A healthy marine ecosystem is a prerequisite for the continued provision of ecosystem services to coastal communities in the U.S., Mexico, and Cuba. Fishing (commercial, recreational, and subsistence) is prominent in all three nations, and the stability of fisheries has rippling socioeconomic effects throughout coastal communities. Not only do fisheries provide food to communities, but they also provide economic security to related industries, such as seafood processors, marinas, and tourism. GMx coastal communities are inherently linked to the ability of the LME to provide other goods and services as well. The habitat complex in the GMx benefits humans by protecting the coast from routine and episodic disturbances (*e.g.*, hurricanes), providing refugia for biota, and maintaining cultural and spiritual significance.

The U.S., Mexico, and Cuba already protect some important habitats as each nation has designated marine protected areas (MPAs) in the GMx. However, existing MPAs throughout the GMx are managed only in accordance with legislation of one nation, which may be inadequate considering the motility of many important living marine resources in the region. Continuation of existing MPAs is important as is collective consideration of their management goals and objectives to address the transboundary nature of many living marine resources in the GMx. Also, some additional protection may be warranted at some sites that currently have little or no protection. Coordinated management and protection of transboundary living marine resources would ensure effectiveness through trinational collaboration with scientists

and resource managers.

Over the past several years, scientists, resource managers, and policy analysts from the U.S., Mexico, and Cuba have been collaborating to address the joint concern regarding the future of shared living marine resources. In November 2007, a collaborative Trinational Initiative group developed, and the group met again in March 2009, October 2009, and September 2010 (Guggenheim and Chamero, 2008; Trinational Initiative, 2011). Participants from the U.S., Mexico, and Cuba agreed to encourage research and conservation of several taxa as well as strengthening and extending existing MPAs in the GMx and western Caribbean Sea. Although the Trinational Initiative does not yet have a fully developed implementation plan, the group does have participants from Federal agencies of each of the three nations.

In 2008, the U.S. National Marine Sanctuary Program (NMSP) hosted a scientific forum to discuss the "Islands in the Stream" concept (Ritchie and Keller, 2008). The concept is based on the distinct geological features in the GMx that represent habitat nodes with high biological connectivity, species abundance, and/or species richness. The NMSP's existing statutory authority is limited to that provided by the National Marine Sanctuaries Act of 1972, as amended (16 U.S.C. § 1431 *et seq.*). However, the "Islands in the Stream" concept suggests additional authority provided by other statutes, such as the Magnuson-Stevens Fishery Conservation and Management Act of 1976, as amended (16 U.S.C. § 1801 *et seq.*), could expand the zone of marine conservation influence in the U.S. to protect more species and habitat sites. Several sites in the U.S. and Mexico were identified for inclusion in a network of MPAs at the forum. As a follow-up to the 2008 meeting, many of the same organizations and individuals as well as some additional supporters reconvened for a second scientific forum hosted by Mote Marine Laboratory in May 2011. The 2011 forum, entitled "Beyond the Horizon," focused on "creating a network of special ocean places to strengthen the ecology, economy, and culture of the Gulf of Mexico" (Beyond the Horizon, 2011). The group concluded that such a network requires development and agreement regarding international governance, selecting specific sites that warrant additional protection, centralizing economic data for cost/benefit analyses, and broad stakeholder support and involvement.

In 2009, the Global Environment Facility (GEF), partnered with the United Nations Industrial Development Organization, created the Gulf of Mexico Large Marine Ecosystem Project (GoM-LME, 2011). The project's goals are to identify hurdles, solutions, and strategies for transitioning the GMx to ecosystem-based management through collaborative efforts of the U.S., Mexico, and Cuba. Specific GEF study priorities for the GMx include hypoxia, fisheries, biodiversity, and coastal development. Originally supported by the Federal governments of the three GMx-bordering nations, the project is currently supported by the U.S.'s National Oceanic and Atmospheric Administration (NOAA) and Mexico's Secretariat of the

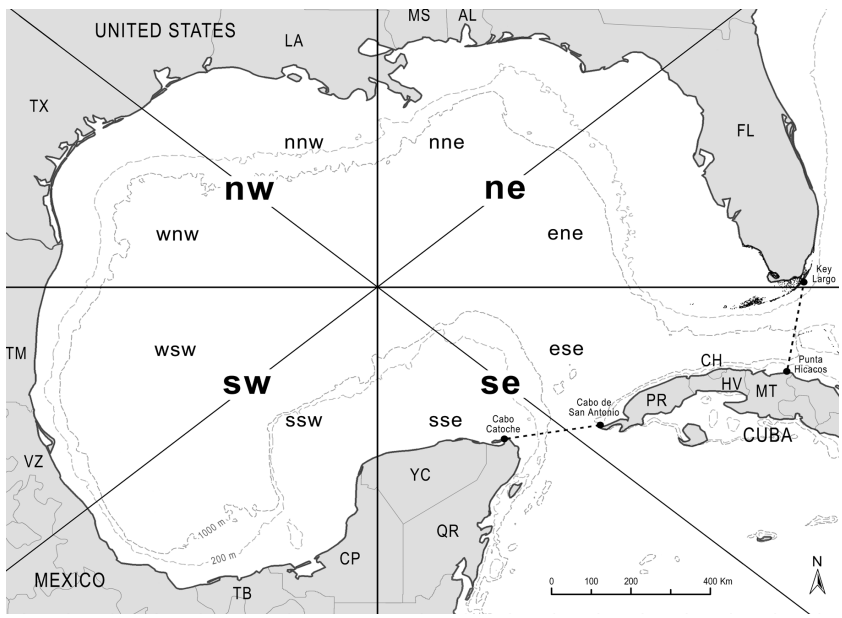
Environment and Natural Resources. Perhaps in the future Cuba will rejoin the project to ensure a truly regional design for sustainable ecosystem-based management in the GMx.

In 2010, several organizations—Harte Research Institute for Gulf of Mexico Studies (HRI) at Texas A&M University-Corpus Christi, Gulf of Mexico Large Marine Ecosystem Project, and the University of Veracruz—collaborated to develop an annual series of trinational student workshops regarding governance in the GMx region. In June 2010, representatives from various universities and organizations from the U.S., Mexico, and Cuba participated in the first workshop, which HRI hosted. The focal point was sustainable governance of MPAs in the GMx, and the participants identified important issues including biological, cultural, and socioeconomic connectivity; spatial planning; stakeholder pressures; and joint features of existing MPAs (Cruz and McLaughlin, 2010). The University of Veracruz hosted the second annual trinational governance workshop in Veracruz, Mexico in August 2011. The second workshop theme emphasized watershed and coastal issues throughout the GMx. Discussions focused on transition from sector-based governance to ecosystem-based management, integrated coastal zone management, spatial planning and geographic information systems, watershed planning approach, environmental risk assessment and prevention, freshwater inflow and river pollution, and protected areas. Influenced by the trinational initiative group, scientific fora, and ocean governance workshops, this paper explains the importance of unified, comprehensive protection of ecologically connected habitat sites throughout the GMx. With emphasis on habitats exhibiting biological connectivity and biodiversity, the existing ecological network can be transformed into an international network of MPAs in the GMx. A protected network in the GMx would act as an ecological insurance policy in the face of natural and anthropogenic threats, both gradual and episodic. An international MPA network would facilitate the ecosystem's recovery and resiliency while strengthening international relations among the U.S., Mexico, and Cuba as they work together to protect shared, highly valued living marine resources. This paper discusses the existing ecological nexus and the ripeness of desire among the three nations for integrated marine conservation and management policy in the GMx.

2. Biophysical setting

The region for the proposed international MPA network is the GMx, which encompasses waters of the U.S., Mexico, and Cuba. The GMx is a semi-enclosed oceanic basin that is connected to the Caribbean Sea via the Yucatan Channel and to

the northwestern Atlantic Ocean by the Florida Straits. Terrestrial boundaries of the GMx include the U.S. to the north, Mexico to the south and west, and Cuba to the east. For the purposes of this analysis, the eastern marine boundaries of the GMx extend from Key Largo, Florida, U.S., to Punta Hicacos, Matanzas, Cuba, and from Cabo de San Antonio, Pinar del Río, Cuba, to Cabo Catoche, Quintana Roo, Mexico (Figure 1; Felder, Camp, and Tunnell, 2009).



Source : Adapted from Felder, Camp, and Tunnell, 2009

Figure 1. Gulf of Mexico study area

As denoted by the contour lines in Figure 1, the GMx is a large basin with a variable continental shelf, which is typically characterized by a broad, carbonate shelf in the eastern portions, a narrow shelf with terrigenous substrate in the western portion, and a terrigenous shelf of moderate width in the north (Tunnell, 2009). The GMx has a surface area of about 1.5 million square kilometers, approximately a third of which covers the continental shelf (Tunnell, 2009). The Sigsbee Abyssal Plain is the deepest region at over 3700 m deep and is located in the southwest quadrant of the basin. Other distinct, important physical features include the DeSoto Canyon in the northeast quadrant and the Florida and Campeche Escarpments off the Florida and Yucatan Peninsulas, respectively.

Regardless of shelf sediment type, the vast majority of the GMx continental shelf is composed of soft substrate. However, several hard-substrate habitats, including

reefs, banks, diapirs, and rocky outcrops, exist in spots along the continental shelf and exhibit various levels of biodiversity. While hard-substrate habitats comprise only a small portion of the GMx continental shelf, they have concentrated, high biodiversity when compared to biodiversity of species that inhabit the surrounding soft-substrate habitats (Parker and Curray, 1956; Rezak, Bright, and McGrail, 1985). Areas with true coral reefs include the Florida Keys region off southern Florida, the Flower Garden Banks on the outer continental shelf off Texas, the Lobos-Tuxpan and Veracruz Reef Systems off the Mexican state of Veracruz, the Campeche Bank Reefs (e.g., Alacrán Reef) on the shelf west of the Yucatan Peninsula, and reefs in the region of the Guanahacabibes Peninsula and Los Colorados Archipelago off northwestern Cuba (Figure 2; Tunnell, 2007a). Coral reefs in the northwestern GMx are submerged while coral reefs in the southern and eastern GMx are typically emergent. The hard-bottom banks, such as Stetson and Southern Banks in the north-northwestern part of the GMx, exhibit a gradual transition from temperate communities nearshore to tropical communities offshore (Rezak et al. 1985). The transition for benthic communities on the GMx mid and outer shelves, as seen elsewhere as well, appears to be associated with substrate type (Rezak, Bright, and McGrail, 1985).

Many habitat areas with hard substrates were created by various geological processes, notably sedimentation and subsurface salt movement. The continental shelf in the areas of western Florida and the Yucatan Peninsula is composed of carbonate sediments while the continental shelf off eastern Mexico, Texas, and Louisiana consists of mostly terrigenous sediments (Rezak, Bright, and McGrail, 1985). The combination of sedimentation, subsurface salt movement, and rifting results in salt diapirism, which is common in some areas of the GMx. Salt diapirism is a process in which a subsurface base layer of allochthonous salt protrudes through dense, hard substrates, which, in the case of the GMx, results in a salt dome that can trap petroleum beneath the hard bottom while simultaneously creating shallower-water habitat for marine biota as the dome rises above the bottom (Liddell, 2007). Salt domes or diapirs form in areas with substantial sediment loading, which explains why large salt formations on the outer continental slope are not as developed as salt structures closer to or on the continental shelf (Humphris, 1979). As a result, the continental shelf has irregular bathymetric relief where there are salt diapirs, such as off the Texas and Louisiana coasts and in the Bay of Campeche, which is the southernmost portion of the GMx (Rezak, Bright, and McGrail, 1985).

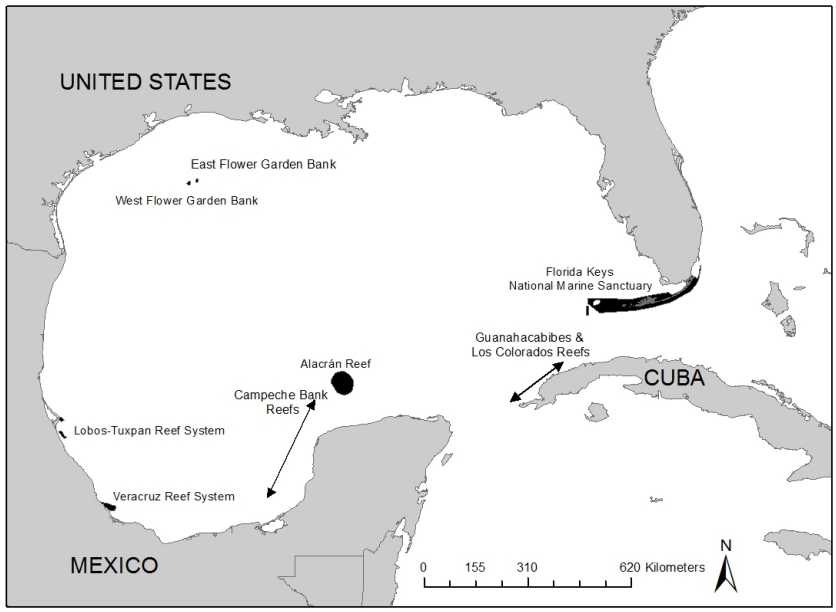


Figure 2. Gulf of Mexico areas with true coral reefs
(Note that the Campeche Bank Reefs and the Guanahacabibes & Los Colorados Reefs are shown in more detail in Figures 4 and 5, respectively.)

In other areas, such as the continental slope off eastern Mexico, the bottom resembles a ridge system because the subsurface consists of denser shale instead of salt deposits (Rezak, Bright, and McGrail 1985). Beyond the continental shelf in the GMx, salt movement in geopressured zones results in hydrocarbon seeps at the edge of the allochthonous salt layers where associated faults form in the overlying shale on the continental slope (Cordes *et al.*, 2007; Roberts, 2011). Expulsions on the continental slope can be classified into three types: mud-prone rapid delivery, mineral-prone slow delivery, and intermediate delivery (Roberts, 2011). Intermediate-delivery cold seeps, including hydrocarbon expulsions and brine seeps, often have robust chemosynthetic communities. Most cold seeps, although fairly isolated, exhibit similar biodiversity usually dominated by tubeworms, clams, and mussels (Cordes *et al.*, 2007). Therefore, salt diapirism produces densely populated habitats in areas with carbonate sediments (cold seeps on the continental slope) as well as areas characterized by terrigenous sediments (salt diapirs on the continental shelf).

Many rivers and estuaries deliver terrigenous sediments, nutrients, and freshwater as they flow into the GMx. Additionally, the Yucatan Current transports planktonic organisms from the Caribbean Sea through the Yucatan Strait. Upon entry into the GMx, surface water is entrained into the Loop Current, which intrudes to variable extents into the eastern GMx and then exits via the Florida Current, which

becomes the Gulf Stream. When the Loop Current extends into the northwestern GMx, the flow destabilizes enough to shed, over the course of months, large anticyclonic eddies that gradually move to the west and southwest (Sturges and Leben, 2000). Neither the Loop Current's oscillation nor the eddy-shedding frequency presents a strong pattern, making surface circulation difficult to predict (DiMarco, Nowlin, and Reid, 2005; Carrillo, Horta-Puga, and Carricart-Ganivet, 2007). Another major circulation phenomenon in the GMx is a large anticyclonic gyre off the coast of Texas. This gyre, the western portion of which is also called the Western Boundary Current, is consistently present yet of variable velocity as it is driven by winds and Loop Current eddies (Sturges, 1993). Finally, there is a cyclonic gyre in the Bay of Campeche, and numerous cyclonic eddies and other surface currents exist throughout the GMx (DiMarco, Nowlin, and Reid, 2005; Carrillo, Horta-Puga, and Carricart-Ganivet, 2007).

3. Ecological framework

Although an MPA network would likely result in numerous ecological benefits, the goal to facilitate the ecosystem's resiliency and recovery after a disturbance is most strongly supported by two conservation targets: connectivity and biodiversity.

3.1 Biological connectivity

Biological connectivity can occur as genetic connectivity or demographic connectivity (Cowen, 2002). The former is based on temporal "stepping stones" in the context of a large spatial scale, and the latter stems from the effects of geographic "stepping stones" over a long temporal scale. Accordingly, intact demographic connectivity generally maintains genetic connectivity (McCook *et al.*, 2009). While studies of both types of connectivity are relevant to the task of designing a network of MPAs, a focus on maintaining demographic connectivity is better suited for a multi-species approach and spatial planning for a LME such as the GMx.

Demographic connectivity is a phenomenon of ecological linkage resulting from geographical movement of individuals of a population or metapopulation from one habitat site to another during any life stage. In the marine environment, particularly among coral reef communities, demographic connectivity likely occurs most widely through pelagic larval dispersal but is also evident in some species

based on juvenile recruitment and post-settlement adult movement patterns. As a result, sustained demographic connectivity represents an ecological insurance policy providing populations with resilience to substantial disturbances, such as hurricanes or oil spills, that may affect one habitat site while another site in the protected network remains undisturbed and, thus, can contribute to recovery of some populations, subpopulations, or assemblages.

3.1.1 Passive ecological connectivity

Pelagic early life stages of some species undergo passive transport, either solely or in concert with active movements. Passive biological connectivity stems from oceanographic currents that act as vectors to transport nutrients and early life stages, such as planktonic eggs and larvae as well as some juveniles, from one habitat feature to another. Surface currents, deep currents, convergent currents, and episodic turbulence and their variable velocities and directions play substantial roles in dispersal or retention of eggs, larvae, and nutrients. However, currents alone do not determine connectivity paths (Roberts *et al.*, 2006). Larval behavior, such as vertical migration and late-stage horizontal swimming, denotes active movement, which is an important species-specific factor that may help explain why some species have high larval retention while others have high larval dispersal from shared spawning grounds. Other factors, such as pelagic larval duration, distance to suitable recruitment habitat, life histories, larval behavior, adult spawning strategies, current patterns, water temperatures, and extreme weather events, also affect connectivity at the larval stage. Strong storms such as hurricanes likely increase larval dispersal for some species as long as turbulent conditions do not increase larval mortality. Therefore, population connectivity through larval transport varies greatly by species, location, and oceanographic conditions.

Although scientific approaches for comprehensively describing larval dispersal, even for a single species, are not yet mature (Jones *et al.*, 2009), many larval dispersal studies have yielded useful data. Larval retention and local self-recruitment drive population dynamics for some species (Cowen *et al.*, 2002; Swearer *et al.*, 2002). However, larval dispersal is also a means of ecological connectivity (Domeier, 2004; Roberts *et al.*, 2006; Christie *et al.*, 2010). Ecological connectivity likely results from a combination of larval retention and larval dispersal at population and community levels (Swearer *et al.*, 2002; Planes, Jones, and Thorrold, 2009; Butler *et al.*, 2011). For example, brooding corals at an individual reef may thrive from high levels of self-recruitment in addition to occasional long-distance supplements from other reefs up to tens of kilometers away; therefore, larval retention and larval dispersal are both important in sustaining the population (Jones *et al.*, 2009). Various connectivity patterns existed within a single community in Hawaii, which is likely the

case in most geographic locations (Toonen *et al.*, 2011).

Much controversy exists, mostly as a result of few empirical data, regarding local retention versus larval dispersal for marine metapopulations with pelagic larval stages (Botsford *et al.*, 2009). Many models and studies demonstrate that oceanic currents play a dominant role in larval dispersal with negligible or minor effects of late-stage larval swimming on distribution (Lugo-Fernandez *et al.*, 2001; Yeung and Lee, 2002; Siegel *et al.*, 2008; Treml *et al.*, 2008; Christie *et al.*, 2010). However, geography and larval behavior, such as vertical migration and horizontal movement, can also minimize long-distance dispersal and contribute noticeably to local recruitment (Wolanski, Doherty, and Carleton, 1997; Cowen, 2002; Jones *et al.*, 2009). Despite model predictions pointing toward greater larval retention, some regional, if not long-distance, dispersal also occurs for species whose larvae exhibit vertical migration or horizontal swimming. For example, most modeled recruitment for the Caribbean spiny lobster (*Panulirus argus*) was local, but about 20 percent of the simulated larvae settled more than 1000 km away from the spawning site (Butler *et al.*, 2011). Also, orange clownfish (*Amphiprion percula*) larvae in Papua New Guinea have retention and dispersal according to DNA parentage analysis (Planes, Jones, and Thorrold, 2009). When taking into account larval behaviors such as diel and ontogenetic vertical migrations, even a small percentage of long-distance larval dispersal supports demographic connectivity.

3.1.2 Connectivity in the Gulf of Mexico

Specifically in the GMx, habitat "stepping stones" may appear topographically distinct and somewhat isolated, but they represent ecological nodes that are connected via passive and active movements throughout the GMx and Wider Caribbean region. Several studies support connectivity in the GMx based on transport via ocean currents (Lugo-Fernandez *et al.*, 2001; Phinney *et al.*, 2001; Jordan-Dahlgren, 2002; McBride and Horodosky, 2004; Vásquez-Yeomans *et al.*, 2009; Paris *et al.*, 2008). Based on drifter routes, potential larval connectivity exists for broadcast-spawning coral species, and perhaps even some brooding species, between West and East Flower Garden Banks and to other banks and platforms to the east and southwest within the GMx (Lugo-Fernandez *et al.*, 2001). Ocean currents may have had an important role in the die-off of *Diadema antillarum* most likely by dispersal of a waterborne pathogen from the western Caribbean Sea into the GMx in 1983-1984 (Phinney *et al.*, 2001). A high degree of gorgonian species similarity occurs across large distances in the southern GMx, and gorgonian distribution appears to be linked by surface currents (Jordan-Dahlgren, 2002). Ocean currents are also capable of dispersing long-lasting, planktonic ladyfish (morphs *Elops saurus* and *E.* sp.) larvae across long distances in the eastern GMx (McBride and Horodosky, 2004). Currents are likely the driving

mechanism for transporting bonefish larvae (*Albula* spp.) from offshore areas of the GMx and Mexican Caribbean to coastal nursery grounds (Vásquez-Yeomans *et al.*, 2009). Some degree of connectivity is evident among populations of queen conch (*Strombus gigas*) that may support its existence as a metapopulation. Although the population in Campeche Banks, Mexico, appears isolated, the Mexican Caribbean queen conch population is slightly related to the Cuban and Floridian populations as a result of some subregional larval exchange via the Loop Current (Paris *et al.*, 2008). Therefore, the queen conch demonstrates weak demographic connectivity but steadily maintained genetic connectivity.

Beyond larval dispersal, other types of ecological connectivity also exist at higher trophic levels throughout the GMx and Wider Caribbean. For example, post-settlement movements of large red snapper (*Lutjanus campechanus*) are evidence for connectivity on a regional scale, and red snapper have the demographic structure of a metapopulation in the GMx (Patterson, 2007). Also, highly migratory species demonstrate ecological connectivity patterns on a wider scale. Some well-known migratory species, such as loggerhead turtle (*Caretta caretta*) and whale shark (*Rhincodon typus*), actively move throughout the GMx and Wider Caribbean (Girard, Tucker, and Calmettes, 2009; Hueter *et al.*, 2009).

Within the GMx and Wider Caribbean region, ecological connectivity at various scales can be mapped according to specific life history strategies, suitable habitat sites, and geophysical conditions and patterns. As exemplified above, demographic connectivity of metapopulations, wide-ranging populations, and highly migratory species should be protected in the GMx to provide the ecosystem the best opportunity for recovery after a disturbance. The most reliable place-based method for protecting connectivity is to protect habitats that such species require to complete their life cycles.

3.2 Biodiversity

Biodiversity is the variety of species and the variability of their abundances throughout space and time of a defined study (Magurran, 2004). Reduction of biodiversity can adversely affect ecological stability. Functional groups of species perform specific roles, many of which are linked to ecosystem services provided to society, and removal of a functional group can destabilize an ecosystem (Folke *et al.*, 2004). Therefore, maintaining biodiversity, which includes isolated populations, is an important objective in ecosystem-based management and marine spatial planning initiatives.

Key biodiversity indicators include measures of species richness and species evenness as well as identification of occurrences of rare species, such as those listed

according to Federal statutes (*i.e.* Endangered Species Act of 1973, as amended [16 U.S.C. § 1531 *et seq.*]) and the IUCN (International Union for Conservation of Nature and Natural Resources) Red List of Threatened Species (IUCN, 2010). The GMx hosts more than 15,000 species making it one of the most diverse marine ecosystems in the world (Tunnell, 2009). The GMx is a faunal transition zone, or ecotone, with high biodiversity of mesopelagic fishes (Bangma and Haedrich, 2008). GMx had the highest species richness and species abundance when comparing mesopelagic fish fauna to those of the North and South Sargasso Seas as well as the Venezuelan and Columbian Basins of the Caribbean Sea. High but variable levels of biodiversity of benthic fauna exist throughout the GMx continental shelf (Rabalais, Carney, and Escobar-Briones, 1999). However, the northern GMx generally does not have high biodiversity of deep-benthic fauna, but the Mississippi Trough has the highest deep-benthic species richness in the northern GMx (Haedrich, Devine, and Kendall, 2008). Finally, seabird diversity varies seasonally, but the southern GMx hosts close to four times as many seabird species as the northern GMx (Peake, 1999; Davis, Evans, and Wursig, 2000; Tunnell, 2007c).

A comprehensive biological inventory of the GMx reported thousands of species in various habitats through 2007, which is the most recent biodiversity assessment published for the GMx region (Felder and Camp, 2009). There are few site-specific biodiversity reports available, with the exception of many publications based on studies conducted at the Flower Garden Banks in the northwestern GMx. Because there are so many high-biodiversity banks and reefs in the northwestern GMx, it is the “center of distribution and evolution” for species and community diversity in the northern GMx (Figure 3; Rezak, Bright, and McGrail,1985). In the southern GMx, coral reef biodiversity gradients decrease from east to west and from south to north (Withers and Tunnell, 2007). Beyond the available information for the Flower Garden Banks, biodiversity estimates can be calculated subregionally using query results from the online portal for the Biodiversity of the Gulf of Mexico Database, which is the most comprehensive, recent compilation of species accounts in the GMx (Moretzsohn, Sanchez Chavez, and Tunnell, 2011). Biodiversity estimates and comparisons could be used to identify which of the many hard banks and reefs on the GMx continental shelf (Table 1) would be ideal sites for increased protection based on species richness and abundance.

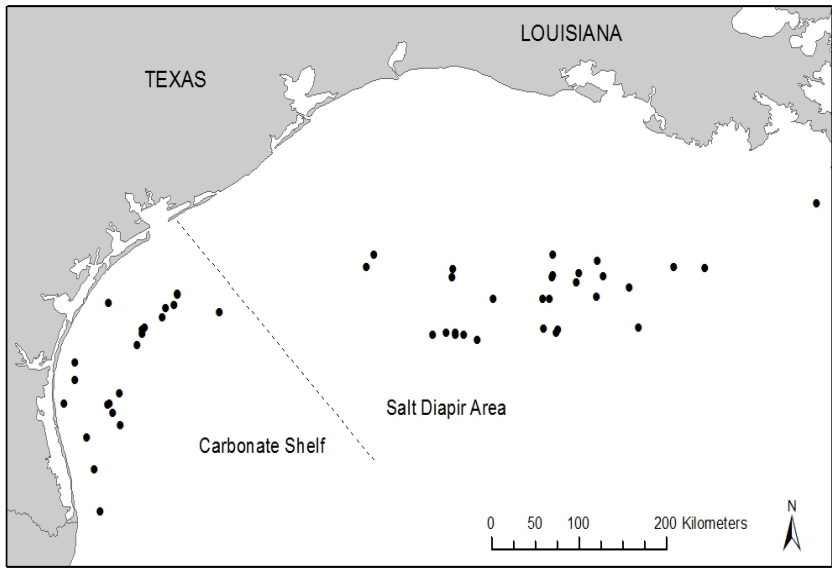


Figure 3. Selected high-biodiversity sites in the northwestern GMx

Table 1. Hard banks and reefs on GMx continental shelf in Federal waters

Geographic group	Number of known sites	Location
Northwestern reefs & banks	34	Off Texas & Louisiana
Northeastern reefs & banks	9	Off Mississippi, Alabama, & northern and mid Florida
Southwestern Florida shelf	3	Off southern Florida
Northwestern Cuban reefs	4	Between Punta Hicacos & Cabo de San Antonio (Cuba)
Campeche Bank reefs	15	Off western Yucatan
Veracruz reef system	25	Off City of Veracruz
Tuxpan reef system	6	Off City of Tuxpan and Cabo Rojo
South Texas banks	20+	Off Texas south of Matagorda Bay

Sources : Rezak , Bright, and McGrail, 1985; Tunnell, 2007b

4. Network design

From a spatial-planning perspective, several existing hard-substrate banks and reefs on the shelf of the GMx LME would translate well into an international network of MPAs. Additional habitat sites, such as slope sites and artificial habitats, may supplement the connectivity provided by the hard banks and reefs. Some of the

many intermediate delivery cold seeps on the continental slope have developed diverse communities that may offer connectivity to some of the hard-bottom habitats as well. Evidence exists of biological connectivity between hard banks and reefs and oil and gas platforms (Lugo-Fernandez *et al.*, 2001; Fenner and Banks, 2004). While including platforms with relatively short lifespans in an MPA network may not be warranted, decommissioned platforms that are toppled to the bottom in the Rigs-to-Reefs program or decommissioned platforms that are left in place without toppling might be appropriate for inclusion in an MPA network (Hoffman, 2011). Regardless, network management design should include features to incorporate flexibility to modify existing features and add future components and adaptability to accommodate temporal and spatial ecological shifts resulting from long-term dynamics, such as climate change, as well as episodic events, such as natural or anthropogenic disasters. An MPA network would facilitate ecological recovery following such destabilizing events. For example, if a hurricane destroys one habitat area and its subpopulation of a fish species, another habitat area might serve as a stepping stone in the restoration process as it supplies or receives larvae transported by currents.

Because larval dispersal is a fundamental, albeit poorly understood, concept on which connectivity is based, MPA network design benefits from the many studies of larval retention and dispersal. Successful larval dispersal and juvenile recruitment vary according to numerous factors, including species-specific behavior, pelagic larval duration, geographic location, food availability, predator presence, and oceanographic conditions. While protecting connectivity can inherently protect biodiversity concurrently to some extent, trade-offs between the two objectives likely persist. For example, to maximize connectivity through larval dispersal, optimal inter-MPA spacing would likely be much smaller than the optimal spacing for maintaining biodiversity or spreading risk (Almany *et al.*, 2009). Hence, a group of MPAs designed to maintain passive connectivity would be relatively close together while a set of MPAs aimed at preserving many species would site the individual MPAs farther apart from each other.

In combination with information describing larval dispersal and biodiversity, key design factors to consider are span of the network, size and shape of the MPAs, number of MPAs, and placement of MPAs within the network (Lubchenco *et al.*, 2003). Placement could be further divided into two criteria: geographic location of a single MPA and distance between MPAs within the network. Although demographic connectivity patterns are not yet reliably detectable, geographic location and availability of suitable habitat may influence connectivity more than larval duration, reef size, and distance (Jones *et al.*, 2009; Toonen *et al.*, 2011). Network design guidelines include ecological objectives of preserving connectivity and biodiversity (Sala *et al.*, 2002; Lubchenco *et al.*, 2003; Fernandes *et al.*, 2005; Roberts *et al.*,

2006; McCook *et al.*, 2009). The Great Barrier Reef (GBR) Marine Park is the largest network of marine reserves (no-take MPAs) in the world and was rezoned in 2004 following many network design guidelines. The GBR Marine Park rezoning is an excellent example of successful, large-scale marine spatial planning with results that demonstrate substantial contributions to biodiversity protection and ecosystem resilience (McCook *et al.*, 2010).

However, even the successful GBR rezoning marine spatial plan cannot be applied to the GMx region without considering major contextual differences. When compared to the GBR setting, the GMx region has very different biophysical features, ecology, socioeconomics, and policies. For example, the GMx has far fewer coral reefs but is more than four times larger than the GBR, and biodiversity is much higher in the GBR than in the larger GMx. Additionally, the Australian government strongly supported the GBR rezoning project while a network of MPAs in the GMx would require trinational support from countries with different histories, political structures, and cultures. Nonetheless, the GBR rezoning project is an excellent example of systematic marine spatial planning for conservation using an MPA network.

Connectivity and biodiversity parameters in the GMx should be identified and prioritized to support several alternative designs for a trinational MPA network. A gap analysis of physical and biological data describing the GMx's ecological network would identify areas and links in need of protection. Optimization analyses could produce alternative designs for a network of MPAs linking existing and potential new sites based on the connectivity strength of biological parameters, including species diversity. Policy decision-makers could consider the science-based MPA network designs in light of the regional marine policies and governance structures to choose the most politically effective and efficient approach for trinational implementation.

5. Marine policy and law in the Gulf of Mexico

Most waters in the GMx belong to one of the three bordering nations. However, there are two small areas, the Western Gap and the Eastern Gap, that are located beyond the Exclusive Economic Zone (EEZ) of the U.S., Mexico, or Cuba and, therefore, subject only to international law. For practical and geographical purposes, the scope of this analysis is limited to Federal waters in the GMx, thus excluding the Western and Eastern Gaps as well as the state waters along the U.S. Gulf coast. Mexico and Cuba do not have designated state waters; thus, the analysis extends to the coast in Mexican and Cuban waters while the U.S. analysis is focused offshore beyond state waters. Coincidentally, geology and ecology in the GMx region

favor such a demarcated analysis as well.

5.1 Existing marine protected areas in the Gulf of Mexico

The U.S., Mexico, and Cuba each have MPAs in their Gulf waters. However, the three nations do not use a consistent definition of MPA. Much confusion exists regarding the term "marine protected area." Some people confuse MPA with a no-take area or marine reserve. As a result, new terms, such as "marine managed area," are being used to avoid the misconception that an MPA is not a multi-use designation. The IUCN uses seven categorical definitions, which helps alleviate the confusion to some extent by focusing on conservation criteria instead of nomenclature. In the U.S. and elsewhere, MPA examples include Federal parks, sanctuaries, monuments, critical habitats, essential fish habitats, wildlife refuges, and National Estuarine Research Reserves (NERRs); tribal refuges; State and local NERRs (Federal/State joint protection), parks, reserves, and conservation areas; non-governmental set-asides by organizations or other private property owners; and *de facto* MPAs designated for other purposes such as exclusion areas, oil and gas lease blocks, or shipping lanes.

For the sake of consistency in designing an international network of MPAs, this discussion uses the definition asserted in the U.S. President's Executive Order (13158) issued in 2000: "any area of the marine environment that has been preserved by Federal, State, territorial, tribal, or local laws or regulations to provide lasting protection for part of all of the natural and cultural resources therein." Therefore, non-governmental and *de facto* MPAs are excluded. Also, recall that the scope of this discussion is limited to Federal waters in the GMx, which eliminates inclusion of State and local MPAs in the U.S. considering the jurisdictional boundaries within U.S. waters.

5.1.1 United States

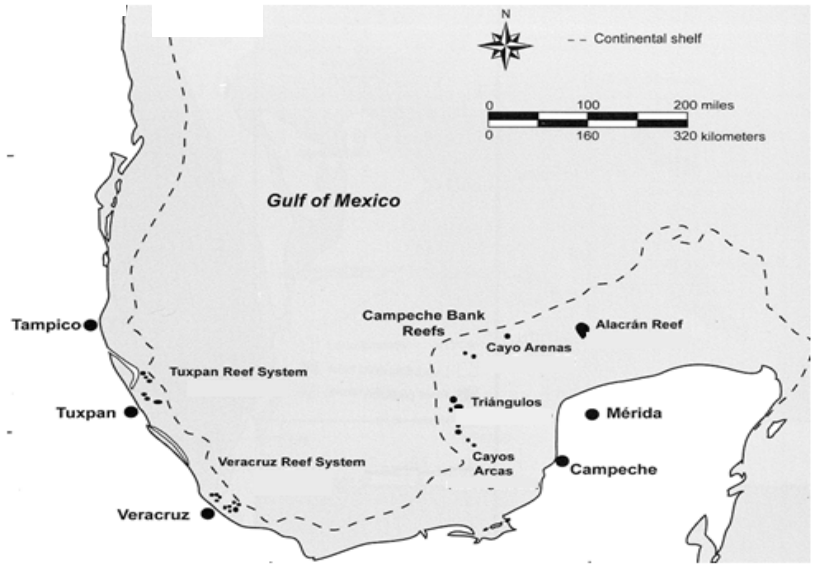
Of all the GMx MPAs in the U.S., 95% by area are in Federal waters (NOAA, 2011); therefore, associating an MPA network with offshore waters of the U.S. Gulf is justified. MPAs cover about 40 percent of the U.S. GMx, and there are 295 MPAs in the U.S. waters of the GMx, which includes small State and local MPAs (NOAA, 2011). Most areal coverage is Federally protected to some extent by the National Marine Fisheries Service (mostly related to fisheries management). Only one percent of the U.S. MPAs in the GMx has a no-take restriction; therefore, almost all GMx MPAs in U.S. waters are designated as multi-use (NOAA, 2011). Domestically, the Rookery Bay National Estuarine Research Reserve is developing a communication framework for existing coastal MPAs to coordinate and cooperate as a

network in the northern Gulf region (Young, 2011). Although such a northern coastal network is beyond the scope of the international offshore network proposed here, merging the coastal and offshore networks could be a future goal once they are both well established.

Legal authorities and managing agencies vary greatly for the U.S. MPAs in Federal waters. However, despite the legislative fragmentation, the NMSP is the Federal agency that is most likely to coordinate an international network of MPAs from the U.S. perspective given that the NMSP's statutory authority stems from the National Marine Sanctuaries Act of 1972, as amended (16 U.S.C. § 1431 *et seq*.), which is focused solely on MPAs. In Federal waters, NMSP manages two GMx MPAs: Florida Keys National Marine Sanctuary located off southwestern Florida and Flower Garden Banks National Marine Sanctuary located about 100 mi off the Texas and Louisiana coasts. For the Flower Gardens site, NMSP issued a Draft Management Plan in October 2010 that includes a proposed expansion to modify existing boundaries and to add six banks with 500-m buffers in the northwestern GMx to the sanctuary (NOAA, 2010). The site selections were based primarily on topography and presence of coral assemblages. If approved, the expanded sanctuary could provide a good policy platform for developing a Gulf-wide network of MPAs.

5.1.2 Mexico

Unlike the U.S., Mexico has a national system of protected areas, which encompasses both terrestrial and aquatic environments. Such a consolidated system minimizes regulatory confusion and redundancy because one Federal agency, *Comisión Nacional de Áreas Naturales Protegidas* (CONANP), manages and regulates the protected areas for the entire nation. The Mexican Gulf hosts several MPAs—two national parks, two protected areas of flora and fauna, and one sanctuary (CONANP, 2011). In the western portion of the southern GMx, CONANP protects the Tuxpan and Veracruz reef systems, and in the eastern portion of the southern GMx, the agency protects the Alacrán reef and a couple of lagoon and beach areas. Mexico protects additional coastal areas, such as sea turtle beaches, that afford protection to the marine environment, but the protected area borders do not extend into the GMx. Coral reefs in the southern GMx (Figure 4), whether existing or prospective Mexican MPAs, are likely candidates for inclusion in an international network.



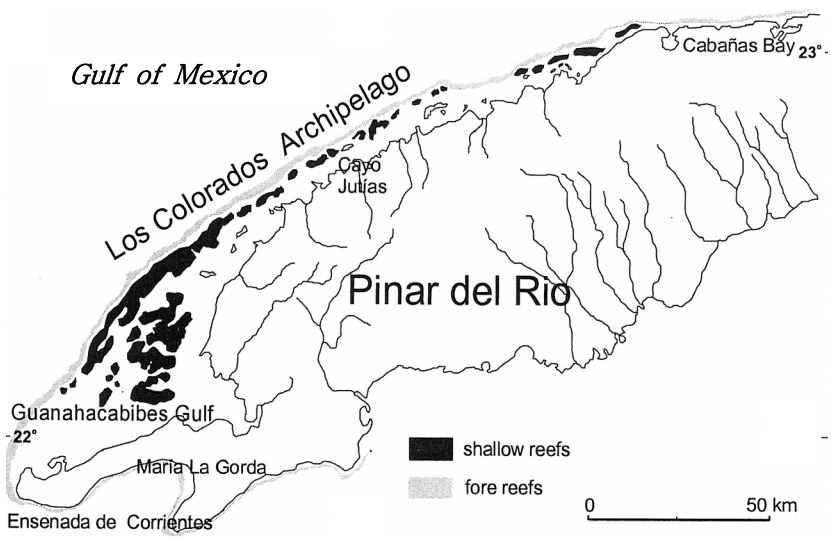
Source : Adapted from Tunnell 2007b

Figure 4. Coral reefs in the southern GMx

5.1.3 Cuba

Like Mexico, Cuba has a national system of protected areas. The *Centro Nacional de Áreas Protegidas* (CNAP) is the centralized agency that manages and regulates Cuba's *Sistema Nacional de Áreas Protegidas* (SNAP), which is a national system for all protected areas and includes an MPA subsystem, *Subsistema de Áreas Marinas Protegidas* (SAMP). SNAP designates eight categories, each of which is aligned with one of the seven IUCN categories describing protected areas. Although Cuba has a much higher percentage of its Federal waters designated as MPAs than either the U.S. or Mexico, very few resources are available for management, monitoring, and enforcement of the existing Cuban MPAs. Also, little protection exists off the northwestern coast that would be within the scope of an international MPA network in the GMx. In addition to the fore reefs that fringe the entire northwestern coast of Cuba, the Los Colorados Archipelago contains many shallow reefs within and to the north of the Guanahacabibes Gulf, which extends west to northern tip of Cabo de San Antonio (Figure 5; Alcolado *et al.*, 2003). The only MPAs near the Los Colorados Archipelago, however, are the Guanahacabibes National Park and the Guanahacabibes Peninsula Protected Area of Managed Resources; these MPAs overlap to some extent and are located on the peninsula south of Guanahacabibes Gulf (SNAP, 2010). Also, the Guanahacabibes Peninsula is recognized as a Biosphere Reserve by UNESCO (United Nations Educational,

Scientific and Cultural Organization) (IUCN and UNEP-WCMC, 2010). The northern coast within the study area (see Figure 1) has five smaller MPAs: Cinco Leguas Wildlife Refuge, Bacunayagua Ecological Reserve, Laguna de Maya Wildlife Refuge, Laguna del Cobre-Itabo Wildlife Refuge, and Rincón de Guanabo Protected Natural Landscape (Estrada Estrada *et al.*, 2004; IUCN and UNEP-WCMC, 2010; SNAP, 2010). Several other MPAs within the study area are recommended or proposed, but they have not yet been designated (Estrada Estrada *et al.*, 2004; IUCN and UNEP-WCMC, 2010; SNAP, 2010).



Source : Adapted from Alcolado et al., 2003

Figure 5. Cuban reefs in the GMx

5.2 Toward an integrated international governance in the Gulf of Mexico

Transboundary species utilize habitats with disregard to political boundaries. Therefore, disconnected national marine policies and various anthropogenic pressures throughout the GMx region affect these species directly. Adverse and beneficial effects on transboundary resources caused by one nation's policies are felt by other nations that value or utilize the same resource. Therefore, objectives of effective trinational governance of living marine resources in the GMx are: (1) to understand the key elements that maintain biological connectivity and biodiversity as mentioned in sections 3.1 and 3.2, respectively; and, (2) agree on international policies and governance mechanisms to seamlessly protect and conserve the LME and to sustainably manage its transboundary living marine resources.

International policy agreement must be flexible enough to apply within the various legal systems that govern management and use of marine resources in the GMx. The U.S., Mexico, and Cuba governments each have different legal systems. The U.S. government operates under the common law system, Mexico is governed by the civil law system, and Cuba has a legal system that is an evolving hybrid of common and civil laws that is based on communism. Despite the lack of similar legislative frameworks in the GMx region, the three nations each have governance mechanisms in place that could support an MPA network as discussed in section 5.1.

Additionally, the GMx is subject to international law, most notably the 1982 United Nations Convention on the Law of the Sea (UNCLOS, 1982). One of the most important designations created by UNCLOS 1982 is the EEZ. The EEZ grants exclusive authority to the coastal nation over all marine resources out to 200 nautical miles. Per Article 56(1), such authority gives coastal nations "sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources" (UNCLOS, 1982). Authority within the EEZ even extends to marine scientific research; Article 245 states that foreign researchers must obtain the coastal nation's consent, which is typically granted when the coastal state is allowed access to data and participation in the research. Beyond the EEZ provisions, UNCLOS 1982 has language that mandates collaborative international marine policy. For example, Article 123 requires international coordination regarding living marine resources of semi-enclosed seas, such as the GMx (Alexander, 1999).

Important differences among the three GMx-bordering nations extend beyond legal systems as evidenced by the tenet that a nation's law is generally compatible with and reflective of the nation's social culture (Licht, Goldschmidt, and Schwartz, 2005). Hence, the scope of international policy analysis includes cultural considerations of history, politics, religion, and socioeconomics as factors that influence legal systems. As an example of different historical biases, the American legal system looks toward the future while Mexican law reflects the past cultural and historical influences (Vargas, 1998). Regardless of culture or legal system, however, undisputed scientific knowledge is widely accepted as factual. Therefore, internationally accepted science provides a strong basis for international policy, which often represents compromise or trade-offs among conflicting interests, such as those regarding social welfare or political agendas (Underdal, 2000).

Historically, few, if any, efforts have been made in the GMx to manage transboundary living marine resources on an international scale through Federal cooperation of the U.S., Mexico, and Cuba (Cruz and McLaughlin, 2008). The design of an ecology-based conservation tool for international marine policy in the GMx region will be strengthened when coupled with a compatibility analysis of existing U.S., Mexican, and Cuban national marine policies and legislation applicable to the

GMx. Such analysis would identify similarities and consistencies, resolvable differences, and impassable divergences among the three nations' legal frameworks and laws while recognizing each nation's cultural values. By focusing on similarities and resolvable differences as well as international law, the three nations may reach an agreement regarding resource management while protecting stakeholder interests, such as fishing practices, cultural resources, and offshore energy production.

Regarding a transboundary MPA network, several implementation mechanisms exist and fall within the scope of marine spatial planning efforts. Continuation of existing trinational collaborations, such as those mentioned in section 1, would certainly support long-term success of the network. Bottom-up coordination through data-sharing portals would connect MPA practitioners throughout the GMx region. In turn, top-down governance strategies would be more successful with strong local support for similar initiatives. International funding opportunities through environmental organizations could encourage investment of national resources into international marine conservation, policy, and governance. Moreover, the creation of a trinational commission or advisory body charged with implementation and management of the international MPA network would emphasize the importance of Gulf-wide, place-based management of shared living marine resources.

6. Connectivity in other transboundary large marine ecosystems

Identifying important high-biodiversity habitats and biological connectivity coupled with a compatibility analysis of existing national marine policies could serve as the foundation for valuable ecosystem-based marine spatial planning tools in other transboundary LMEs. Creating MPAs in semi-enclosed seas and LMEs that are experiencing intense natural and anthropogenic stresses is an important method of supporting and advancing the long-term sustainable use and conservation of these valuable ocean areas. Moreover, the growing body of scientific literature suggests that transboundary MPAs can serve as a catalyst to broader political reconciliation beyond the environmental sphere (Sandwith *et al.*, 2001; Ali, 2007).

A number of transnational initiatives have been developed in marine areas to protect the environment and improve communication and partnerships among scientists and managers. Existing MPAs in the Red Sea between Israel and Jordan and among Mediterranean Sea nations at the Bonifacio Strait have been in place since the 1990s (Crosby *et al.*, 2002; Chevalier, 2007). Newer initiatives between the Philippines and Indonesia in the Coral Triangle and among South Korea, North Korea, and China in the Yellow Sea are moving rapidly forward (Nam, 2007; UNDP, 2011). Active

collaboration between the Chinese and Korean governments on the initiative to restore the environmental health of the Yellow Sea continues despite a bitter maritime boundary dispute between North and South Korea that recently erupted into military conflict (Crook, 2011). Despite the political instability in the region, development of a framework for transboundary environmental cooperation likely would help resolve longstanding tensions between the two nations (Nam, 2007).

Identifying and resolving priority transboundary problems are of prime importance to all of these programs. However, prior to developing strategies to sustainably manage resources in these areas, it is essential that physical and biological connectivity be identified. The kind of ecosystem-based marine spatial planning tool that this article advocates for application in the GMx, i.e., a transboundary MPA network, would be equally well suited for use in other marine areas such as those described above.

7. Conclusions and policy implications

Based on identifiable physical and biological features and phenomena, the GMx would be an ideal location for a large-scale network of MPAs. As a result of past and ongoing trinational efforts, scientists and policy makers from the U.S., Mexico, and Cuba have identified strategies and continue to work together to ensure success of international management of shared living marine resources. An ecology-based spatial planning tool would enhance the understanding of connectivity elements and processes, identify specific sites with high biodiversity, minimize political discontinuity, and maximize coordinated protection while managing transboundary living marine resources based on biological requirements. Connectivity strengths, biodiversity conservation needs, and national policies and priorities would drive the design of several scenarios for international management of an MPA network in the GMx. Also, a network design would include features to incorporate flexibility to add future components and adaptability to accommodate temporal and spatial ecological shifts resulting from episodic events, such as natural or anthropogenic disasters, as well as long-term dynamics, such as climate change. An MPA network would facilitate ecological recovery following such destabilizing events. Proposed and alternative network designs, along with metrics for measuring success, would be presented to the trinational group as the first step in the international policy decision-making process to protect and conserve transboundary living marine resources in the GMx. Successive steps should include socioeconomic analyses and stakeholder participation opportunities.

Although the GBR rezoning success is a superb example, many regions in the world, including the GMx region, may not fit the GBR model scenario closely enough to duplicate the process for reasons stated in section 4. Much planning and international collaboration in the GMx could provide a second global example for creation of a large-scale MPA network, which, in this case, would also have a prominent international marine policy component. Simplification of such a decision support tool could be considered to apply the modeling concept to other international water bodies with similar characteristics.

Given the focusing event of the Deepwater Horizon oil spill in April 2010, implementation of an international MPA network in the GMx is timely. In 2010, the U.S. President issued an Executive Order (13547), which focused on issues including, but not limited to, marine biodiversity protection, improving resilience of marine ecosystems, development of coastal and marine spatial plans, and international cooperation. In response to the disaster and to the Executive Order, the U.S. Federal government created task forces, planning bodies, funding vehicles, and goals to enable clean-up and recovery efforts to succeed in the GMx. With the heightened incentive for collaboration among the three GMx-bordering nations, effective and efficient conservation and management of transboundary living marine resources could become a reality. The existing ecologically connected habitat sites throughout the continental shelf and slope of U.S., Mexican, and Cuban waters provide an opportunity for innovative international marine policy at a regional scale. Although a toolbox full of sectoral management options exists, an international MPA network would unify regional management strategies for sustainable transboundary living marine resources in the GMx LME.

The ecological principles discussed here provide a solid foundation for designing an international network of MPAs in the GMx or in other transboundary LMEs. Next steps in this research include spatial designs and policy analyses for creation of a transboundary MPA network. Successful implementation, however, would require socioeconomic research to address the region's human ecology, including valuation of ecosystem services and strong stakeholder support. The trifecta of ecology-based spatial design, trinational governance, and socioeconomic incentives would present the U.S., Mexico, and Cuba with the opportunity to form an international MPA network that facilitates sustainable, ecosystem-based management of transboundary living marine resources in the GMx while creating a cooperative environment among nations with historically disparate political and policy objectives.

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Cruise Seaports Networks: Key Relationship Indicators and Information Systems*

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ABSTRACT

The aim of this work is to investigate how information on cruise passenger flows are manged in the seaport system. In particular, the paper aims to understand how in the seaport system, characterized by landlord model, the Port Authority (PA) can play its function of controller and coordinator of the whole cruise relationships network when the cruise activity is contracted out to private operator, like as the cruise terminal concessionary companies. So, the analysis is focused on the relationships among the PA, the cruise terminal concessionary company and the ship agents, that are directly involved in the passengers flows information management process (collection, elaboration and reporting). The knowledge of these information is relevant to assume strategic and operative decisions on the port infrastructure investments in order to be more attractive. The passengers flow is in fact directly connected to the port financial autonomy.

Moreover the paper marks how to different port governance models could match different information systems among the main actors of a seaport system. For this reason we focus on the role played by the information systems, then we identify the mechanisms of coordination and control that govern these relationships.

This is an explorative study conducted through a qualitative approach, using case study methodology. The first results show how the use of key relationship indicators could help the PA to exercise control and coordination functions, assigned by the law.

Key words: relational governance, Port Authorities, cruise terminal concessionaries, ownership structures, key relationship indicators, control and information systems.

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* Although the article is the result of a joint work, sections 2, 3, 4 and 5 are ascribed to Assunta Di Vaio, while sections 1 and 6 are attributed to both authors.

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1. Introduction

Over the last twenty years, despite many industries, including tourism, have been affected by the global economic crisis, the cruise industry does not seem to have registered declines.[1] The capacity of beds offered, the reposition from elite segments to mass markets and the involvement of the cruise companies operating in the maritime stations, as capital shareholders, are some of the factors that have encouraged this growth.

These factors associated with a specific pricing policy have led to the growth of international cruises[2] demand to 93%[3] from 2000 to 2010 and North America still remains the first demanding area, followed by Europe as second.

Mediterranean ports, particularly Barcelona, Civitavecchia, Venice, Palma de Majorca, Piraeus, Naples, Livorno, Savona and Genoa,[4] have played an important role in the traffic distribution.

In this scenario, the guidelines of World Bank[5] and UNCTAD,[6] aimed at improving the efficiency of port infrastructures, brought to a reorganization of functions and responsibilities in the port system. Therefore, considering as variables of analysis, the "ownership" and "management" of the areas and port facilities, it is possible to identify different port models, such as "service ports" and "private ports". The first occurs when the ownership of infrastructures and superstructures, the management of the docks and the decisions about service delivery arrangements are

1 For more on the growth of cruise industry please refer to World Travel & Tourism Council (2010). Progress and Priorities 2009-10. World Travel & Tourism Council Editor, London, pp 6-13. UNWTO (2008), Turismo de Cruceros. Situación actual y tendencias. World Tourism Organization Editor, Madrid; UNWTO (2003). Worldwide Cruise Ship Activity. World Tourism Organization Editor, Madrid; Hobson J. S. P. (1993). Analysis of the US Cruise Line Industry. *Tourism Management*. 14 (4), pp. 453-462; Cartwright, R. and Baird, C. (1999). The development and growth of the cruise Industry. Oxford: Butterworth-Heinemann; Dickinson, B. and Vladimir, A. (2008). Selling the Sea: an inside look at the Cruise Industry (2nd ed.). Hoboken, JohnWiley & Sons Inc, New Jersey.

2 Wild, G.P. and Dearing, J. (2000). Development of and prospects for cruising. *Maritime Policy & Management*, Routledge, London, vol. 27 (4), pp. 315-333.

3 On the development of international demand of cruise see European Cruise Council (2011), Contribution of cruise tourism to the Economies of Europe, G.P. Wild (International) Limited and Business Research & Economic Advisors, p. 8; European Cruise Council (2010). 2010/2011 Report. Grow, develop, innovate, build, protect, health, people, communities, responsible, safe, environment, enjoyment, holidays. Ashcroft & Associates Ltd, London, p. 15.

4 As referenced by European Cruise Council (2010). Contribution of cruise tourism to the Economies of Europe. G.P. Wild (International) Limited and Business Research & Economic Advisors, p. 9.

5 World Bank (2007). Alternative port management structures and ownership models – Module 3 – Port reform toolkit (2nd Edition).

6 UNCTAD (1992). Development and improvement of ports. The principles of modern port management and organization. Report by the UNCTAD secretariat. TD/B/C.4/AC.7/13.

under a public entity's responsibility (such as Ministry, Maritime Authority or Port Authority), while the second occurs when the properties of the structures, as well as the other relevant functions, are contracted out to a private company. Between these two organizational models, as evidenced by some scholars,[7] we can observe hybrid organizational forms, like the "landlord ports" model.[8] In this case the Port Authority (PA) provides the infrastructure, while investments in superstructure (equipment, port facilities and so on) and port operations are contracted out to private operators.[9]

In the "landlord" model, featuring most of the countries, cruise companies have found the possibility to develop a system of relationships with the port institutions. Long-term relationships between port institutions and cruise companies are not strictly related to the acquisition of capital shares. But it is not uncommon to see ports where the management of maritime stations have been contracted out to concessionary companies, whose ownership is shared between cruise companies and the PA, or other cases in which the ownership is completely private, generally the cruise companies. These concession agreements usually contain a clause that binds the parties to increase the traffic flows.

In Italy these public and private partnerships between Port Authorities (PAs) and cruise companies have been favoured by legislator that considers the maritime stations as "services of general interest".[10] The ports reordering law n.84/94, establishing the impossibility for PA to delivery directly the port services led to a significantly growth of those public-private partnerships (PPP), where the PAs have "policy, planning, coordination, promotion, monitoring and control of port operations and commercial and industrial activities" (see Law n.84/94 and the following modifications) and the cruise companies manage the terminal infrastructures.

At the heart of this relationship, the PA is a governmental public authority, whose degree of autonomy is under a long debate, because although its administrative autonomy was established by law since 1994. Nowadays, after about twenty years

7 As referenced by Baird A. (1995). Privatisation of trust ports in the United Kingdom: review and analysis of the first sales. *Transport Policy 2*, pp. 135-143; Liu Z. (1995). Ownership and productive efficiency: the experience of British ports. In J. McConville , J. Sheldrake , *Transport in Transition: Management*, 17 (3), pp. 221-234.

8 As referenced by World Bank (2007). Alternative port management structures and ownership models – Module 3 – Port reform toolkit (2nd Edition).

9 The Port Authority, as indicated in art. 7 (paragraph 2, the Unified Text on Ports 21.12.2010) amending Article. Law 6 of January 28, 1994, n. 84, is a not economic nationally relevant public agency ruled by special laws, with administrative, organizational, financial and budgetary autonomy. The paragraph 1 of article 7 indicates its functions that are: guidance, planning, coordination, regulation, promotion and control of port operations (listed at Article 16, paragraph 1) and other commercial and industrial activities taking place in ports, with powers of regulations and ordinances.

10 Article 6, paragraph 1, letter c) of the Act on January 28 1994, n. 84; Ministerial Decree November 14, 1994, published on G.U. November 24, 1994 n. 275.

and many other laws, the process has been left undone.

The question became more complicated with the involvement of private operators in the port activities management, because PA's decisional autonomy ("subjective") could be reduced by the necessity to share decisions about port organization, strategy and management with the cruise companies, but at the same time the partnership with private operators could increase the efficiency of the port. Moreover the private investments could increase the financial and economic autonomy ("objective") of PA, reducing its dependence by central government financial resources.

If the PA decided to contract out completely the management activities to cruise companies, conflicts of interest, information asymmetries and opportunistic behaviours could arise. In this case the PA could see compromised its function of "promotion"[11] (Art. 6 Law 84/94). The development of cruise traffic flows would be so guided by the interests of cruise companies that are potentially in conflict and could threat the public interest, thereby undermining the necessary conditions for the existence of PAs, including the traffic flows and consequently the financial resources.[12]

In this context, the objective of this work is to investigate the system of relationship that connect the main players involved in the management of information on cruise passengers flows and the way they share information on the cruise traffic flows. In particular, we focus on the information management process, that consist of data collection, elaboration and internal and external reporting. The paper also sets the goal to identify the coordination mechanisms and the possible indicators for monitoring the relationship among the PA, cruise terminal concessionary company and any other entities that contribute to the process of managing information on traffic flows.

In order to achieve this objective we used the case studies methodology. The paper is organized as follows: Section 2 the coordination and control in the relationship between PAs and the cruise terminal companies. The key relationship indicators are discussed in the Section 3. Subsequently, Sections 4 describes sample and data collection. Results and conclusions are drawn in Sections 5 and 6 respectively.

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11 For more on the promotion role played by PAs please refer to Di Vaio, A. and Pisano, S. (2011). The role of Information Systems in the Port Authority's promotion activities. In D'Atri A., Te'eni D., De Marco M. (Editors), *Information Systems: a crossroads for organization, management, accounting and engineering*. itAIS: The Italian Association for Information Systems, Springer, pp. 1-8.

12 The objective autonomy is here intended as the PA's ability to sustain itself with autonomous resources that consist of the revenues that gets from traffic flows, without be dependent by central government financial resources.

2. PAs and cruise terminals: coordination and control in the relationship systems

Within the system of relations, designed by norms on port activities, it seems interesting to focus the analysis on the relationship between the PA and the concessionaires of the cruise terminal.

The management of this relationship in order to improve port traffic flows and performances requires the adoption of different mechanisms of cooperation and control. Indeed, the private parties involved could adopt opportunistic behaviours that contrast with the goals cited above.

The interests of the public authority and the private entity could diverge at public interest expense. Moreover, the fact that the cruise companies are at the same time the end users of port infrastructures and, in some cases, also the owners and the managers of concessionary companies may arouse conflicts of interest.

The autonomy margins of any of them is regulated by contract. The decisions about infrastructures management should be aimed on one hand, at traffic increase, and on the other hand, at the rationalization of available economic resources. Indeed, the legislation lacks into defining how this relationship has to be governed.

The involvement of PA in the ownership of concessionary companies if, on one side, represents a control tool, on the other side, is not enough to guarantee the full control on the relationship.

In addition to the autonomy of the parties and to the clear separation of duties and responsibilities regulated by contract, the relationship between the PA and the cruise concessionary company is characterized by several interdependences related to the management of information about traffic flows.

The relationship between PA and the concessionary company is subjected to a system of constraints. Therefore it's interesting to analyze its assets, links, skills, functions and resources (Antonelli V., 2000: 31).[13]

Obviously the traffic flows, the prevalence of cruise on the ferry traffic and the large number of infrastructures dedicated to cruise industry increase the complexity of interdependencies and the related mechanisms of coordination.

One of the tool used by PAs to exercise its functions of controller and coordinator is the capital share acquisition of the cruise terminal concessionaires. Empirical studies[14] show cases where the cruise terminal concessionary companies'

13 Please refer to Antonelli V. (2000). Le relazioni trasversali tra aziende. Strutture e funzionamento. Giappichelli Ed., Torino.

14 See the following contributions on the cruise terminal development and the ownership structure of

ownership is totally public, other cases where the ownership is mixed (public and private) and other cases where the ownership is in the hands of private companies, generally operating in the cruise industry. In Italy, there are ten port where the cruise infrastructures have been contracted out to private companies by a concession contract, while in five cruise destination ports the PAs directly manage the traffic flows.

The establishment of the concessionaires has been gradual over time and, as illustrated in table 1, we have an orientation to the PPP.

Table 1. Ownership structure of Italian cruise terminal concessionary companies in Italy - at 31/12/2011

	Ownership	
Cruise terminal managed by concessionary companies	Public	Private
ATI Comet Srl Messina (until to June 2011)		100,00%
GSA – Gruppo Servizi Associati (Bari Port)	-	100,00%
Roma Cruise Terminal Srl (Civitavecchia Port)		100,00%
Stazioni Marittime S.p.A. (Genoa Port)	15,22%	84,78%
Porto di Livorno 2000 Srl (Livorno Port)	100,00%	
Terminal Napoli S.p.A. (Naples Port)	5,00%	95,00%
Palacrociere of Savona (Savona Port)		100,0%
Trieste Terminal Passeggeri S.p.A. (Trieste Port)	40,00%	60,00%
Venezia Terminal Passeggeri S.p.A. (Venice Port)	2,60%	97,40%
Ravenna Terminal Passeggeri Srl (Ravenna Port)	4,00%	96,0%
La Spezia Cruise Facility Srl (La Spezia Port)		100,00%
Cruise terminals managed by Port Authorities		
Cagliari	100,00%	
Messina (from July 2011)	100,00%	
Olbia/Golfo Aranci/Porto Torres	100,00%	
Palermo	100,00%	
Piombino and Portoferraio	100,00%	

Source: relaboration by Di Vaio et al. (2011),[15] CCAA at 31/12/2011.

cruise concessionary companies in Italy: Di Vaio A., Medda F. R., Trujillo L. (2011). Public and Private Management and Efficiency Index of Cruise Terminals. *Maritime Transport: Opportunities and Threats in the post-crises world", Proceedings* of the Econship 2011 European Conference on Shipping, Intermodalism & Ports". Topic area: Cruise & Coastal shipping - University of Aegean, Department of shipping trade and transport, Chios, pp. 1-13; Di Vaio A. (2011). Il sistema informativo dei cruise terminal. Metallo C. (edit by) "L'evoluzione dei sistemi informativi: un'analisi nei contesti information-intensive" - Aracne Ed., Roma, pp. 107-127; Di Vaio A., Medda F., Trujillo L. (2011). An Analysis of the Efficiency of Italian Cruise Terminals. *International Journal of Transport Economics*. (18), pp. 29-46.

15 Di Vaio A., Medda F. R., Trujillo L. (2011). Public and Private Management and Efficiency Index of Cruise Terminals. *Maritime Transport: Opportunities and Threats in the post-crises world Proceedings* of the Econship 2011 European Conference on Shipping, Intermodalism & Ports". Topic area: Cruise

In particular,[16] *Stazioni Marittime SpA*, in Genoa was established in 1987. It operates in five terminals, where two of them are dedicated to cruise traffic. In this structure, in addition to the PA (which holds just over 10% of capital share), there are other companies such as *Finporto Genova SpA* (shares over 23%) and *Grandi Navi Veloci* (owns the 32%). A share of 2.44% is owned by *Tirrenia di Navigazione SpA*. *Stazioni Marittime SpA* manages mainly ferry traffic, while cruise traffic is just 14%. Moreover cruise companies are directly and indirectly (i.e. through an ancillary company) the shareholders of the concessionary companies. For instance, *MSC Crociere SpA*, owns through the *Marinvest Srl* 13,23% of the terminal, whereas *Costa Crociere SpA* owns about the 6%.

Venezia Terminal Passeggeri SpA (VTP), in Venice was established in 1997. It manages several infrastructures: terminals n. 103, n. 107/108, n. 117, San Basilio, Isonzo 1, Isonzo 2 and Riva Sette Martiri for cruise traffic and for ferry flows. The concessionaire is a public/private partnership, where the capital of some private companies is held by public companies (for instance *APV Investimenti SpA* is completely owned by Venice Port Authority).

Terminal Napoli SpA (TN) was established in 1999. Initially the ownership of the structure was in the hands of six private companies. Afterwards, in 2001 the concessionary company's capital share was owned by only two private companies. In 2003 the PA of Naples acquired 5% of the capital share. From 2004 to 2010 the concessionary company of TN is owned by the following cruise companies: *Costa Crociere SpA* with 20% of the total share, *Royal Caribbean Ltd* with 20% and *MSC Cruises SpA* with 5%, respectively. MSC also participates with its holding company (*Marinvest Srl*), which owns 20% of the capital. TN manages the maritime station which covers an area of 1100 square meters and 7 berths. The infrastructure is mostly dedicated to cruise traffic.

Bari Porto Mediterraneo srl operate since 2005 and is dedicated to ferry and cruise traffic. The Bari Porto Mediterraneo Srl was created in 2004 by the PA of Bari, which was the only shareholder of the concessionary company. Since 2005 the concessionary company is owned 35% by public shareholders (including the PA of Bari) and 65% by private shareholders. However, the concessionaire has been

& Coastal shipping - University of Aegean, Department of shipping trade and transport, Chios, pp. 1-13.

16 Please refer to Di Vaio A. (2011). Il sistema informativo dei cruise terminal. Metallo C. (edit by) "L'evoluzione dei sistemi informativi: un'analisi nei contesti information-intensive" - Aracne Ed., Roma, pp. 107-127.

declared unconstitutional by the State Council on 30th July 2009. The management of San Vito's (ferries terminal) and the Cruise Terminal's maritime stations has been contracted out by concession to another private firm (GSA – Group Services Associates).

Trieste Terminal Passeggeri SpA in the past was completely owned by the PA of Trieste, that in 2010 sold the 60% of its shares to a consortium constituted by Unicredit Corporate Banking, Assicurazioni Generali, Costa Crociere Spa, Giuliana Bunkeraggi and Reguardia.

In 2004 in Port of Ravenna, although the terminal infrastructures were still not present, ferries and cruise traffic flows started to be managed by a new company, *T. & C. - Traghetti e Crociere s.u.r.l.*till 2008. In 2009, through a public and private partnership, *Ravenna Terminal Passeggeri SpA* (RTP) was established to manage the Ravenna port. Among the shareholders there are a cruise company (*Royal Caribbean Ltd*) and a cruise concessionary company (VTP).

Roma Cruise Terminal Srl was established in 2004, but it started to run his business in 2007. The ownership structure of the concessionary company is in the hands of three private companies. In particular, *Costa Crociere SpA* and *Royal Caribbean* hold 33.33% of the share equity, respectively, and *Marinvest Ltd* (the financial holding of *MSC Crociere SpA*) owns the remaining part of the equity.

Then there are cases in which the concessionary company is in the hands of public players.

Porto di Livorno 2000 srl started to operate in 1997 under the control of PA of Livorno (73%) and the Chamber of Commerce of Livorno, as shareholders. The concessionaire manages several terminals and berths. The infrastructure is mainly dedicated to the ferry traffic; since 2009 the port has a dedicated infrastructure to accommodate cruise traffic for boarding and disembarking. In this port the cruise flow, although in recent years showing an upward trend, appears to be fairly low in relation to handled passengers.

Finally, in 2004-2006 other concessionaires took place as *La Spezia Cruise Facility srl* and *ATI Comet srl* in Messina, whose concession expired in July 2011 is now managed by the PA.

As shown in Table 2 the role of companies in the cruise terminal management is significant. In particular, we can observe that *Costa Crociere SpA*, as well as *MSC Cruises*, controls many terminals located on the Tyrrhenian Sea. While

MSC Crociere SpA exercises its control directly or indirectly (through its holding company) in Naples, Genoa and Civitavecchia ports, *Costa Crociere* is in the ownership structure of Savona, Civitavecchia, Naples and Genoa ports.

Table 2. Controlling shares of the cruise companies in the Italian cruise concessionary companies' equity – 31/12/2011

	CRUISE COMPANIES		
	Costa Crociere SpA	MSC Crociere SpA	Royal Caribbean Ltd
EQUITY SHARES OWNED	Palacrociere in Savona (100,00%)		
	Roma Cruise Terminal Srl in Civitavecchia (33,33%)	Roma Cruise Terminal Srl in Civitavecchia (33,33%)	Roma Cruise Terminal Srl in Civitavecchia (33,33%)
	Terminal Napoli SpA in Naples (20,00%)	Terminal Napoli SpA in Naples (5,00%), (20,00% by Marinvest srl)	Terminal Napoli SpA in Naples (20,00%)
	Stazioni Marittime SpA in Genoa (5,91%)	Stazioni Marittime SpA in Genoa (13,23% by Marinvest Srl)	
	Trieste Terminal Passeggeri SpA in Trieste (29,00%)		Ravenna Terminal Passeggeri srl (24,00%)

Source: Chamber of Commerce at 31/12/2011 of the concessionary companies.

In this way, if on one side the cruise companies, as shareholders of the concessionary companies, guarantee traffic flows to ports, on the other side they control the traffic flows.

Moreover, the competition among the major players in the cruise market increase a lot, in particular if we considered the acquisition of terminal companies' capital shares. At the same time, potential conflicts of interest related to their role as shareholders can arise.

So, the management of cruise terminal could create potential conflicts of interest between public and private entities, so if on one hand it's necessary to implement engineering controls to protect the public interest, on the other there is a need of rationalization of terminal[17] activities.

In this perspective, the study on Italian cruise ports has showed that the PAs have traditional forms of control on the concessionary companies.

According to *Contribution of cruise tourism to the Economies of Europe* (2010),[18] Naples e Livorno are the main transit port in the Mediterranean area, while

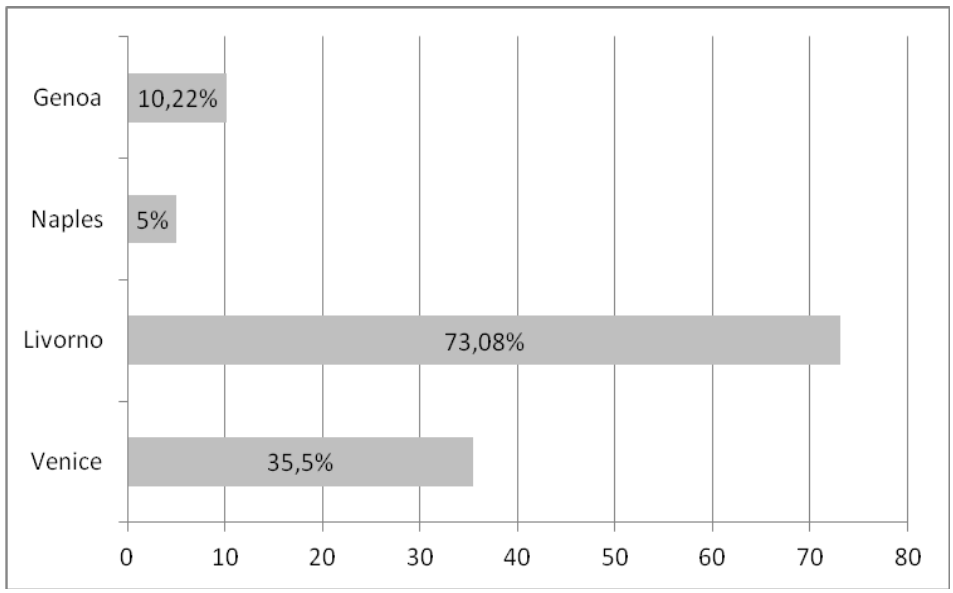
17 For more on the possible conflicts arising from separation between property and control please refer to Fama and Jensen (1983); Gedajlovic (1993).

18 European Cruise Council (2010). Contribution of cruise tourism to the Economies of Europe. G.P.

Venice and Civitavecchia are the main home ports. In these ports there are different kinds of control by PAs.

The figure 1 illustrates that the Naples Port Authority owns only the 5% of the equity in the concessionary company and the 95% is owned by private operators, where three of them are cruise companies (see table 2).

In the concessionary companies of Livorno and Venice there is the direct and indirect participation to equity by PAs.



Source: Chamber of Commerce at 31/12/2011.

Figure 1. The PAs' shares in the concessionary companies - at 31/12/2011

These forms of control appear to be "weak" for the timeliness and reliability of the information management on cruise flows data.

Therefore, it would be possible to use process indicators of the cruise relationship system, that could allow to PA to control information on cruise passengers flows, that is essential to play the "promotion" function and in general to adopt strategy on port development.

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3. Key relationship indicators in the cruise passenger flows management

The governance functions of the relationship between PA and concessionary company should strive to respect the guide line of the concession contract. However, although there is a contract regulating the relationship between "public" subject (PA) and "private" subject (concessionary company), some conditions can threat the good functioning of this relationship (e.g. information asymmetries, that affect particularly the cruise flows information management process).

Moreover, in this process it's important to consider also the relationship between the concessionaire and the ship agent, that is the first subject to manage information. In fact, he collects data related with passengers and ships, then transfers them to the cruise terminal concessionary company. The accuracy in these activities is essential to avoid information asymmetries and mistakes.[19]

According to several organizational studies, the contract is the main regulation tool within the relational systems and induces firms to behave correctly in order to improve performance.

However, in these cases it is not enough to govern the relationship among the players, but needs to be supported by other coordination and control tools.

In our study we can observe a critical variable of the partnership: the internal and external reporting of cruise passenger flows data, after these have been elaborated.

So the knowledge of some elements (i.e. information, language codes, the software) becomes a critical factor of the relationship (Mancini D., 2010: 53, 67 and 69).[20]

According to Choe "the exchange of information [become] to ensure coordination and control of activities [among] firms"[21] it's important to understand "if and how" the control mechanism are useful to create a long relationship system.[22] According to Dekker (2004: 29-32)[23] the control into *Inter Organizational Relationship*

19 For more on information systems please refer to Marchi L. (1993). I sistemi informativi aziendali. Giuffré Ed. Milano.

20 Mancini D. (2010). Il sistema informativo e di controllo relazionale per il governo della rete di relazioni collaborative d'azienda. Giuffrè Ed. Milano.

21 Choe, J.M. (2008). Inter-organizational relationships and the flow of information through value chains. *Information & Management*. No. 45, pp. 444–450.

22 Mouritsen J., Hansen, A., Hansen C. (2001). Inter-organizational competencies: episodes around target cost management/functional analysis and open-book accounting. *Management accounting research*. Vol. 12 (2), pp. 221-244.

23 Dekker, H. C. (2004). Control of inter-organizational relationships: evidence on appropriation concerns and coordination requirements. *Accounting. Organizations and Society*. Vol. 29 (1), pp. 27-49.

has the role to motivate the partners to assume "performance oriented" behaviors and to coordinate the input-output information process within the relationship.

In this context the control system should motivate the partners to assume behaviors oriented to increase the traffic flows.

The focus is on the management of the cruise passenger information flows within the partnership.

Therefore, regarding the behaviors (control dimension) we analyze the control/coordination mechanisms. In particular, we consider the rules, the operation standard praxis, scheduling (ex-ante control mechanisms) and reporting tools (ex-post control mechanisms).[24]

Besides contract and trust, we investigate also the *information and communication system* that should allow to partners (PAs, concessionary companies and ship agents) to access and manage information on cruise passengers flows. Among them we find traditional tools, like telephone, fax, letters, meeting and innovative tools such as email, blog, video-conference, intra-net, internet.

However these tools are not enough to control the relationships and it could be useful to identify a "key relationship indicators map". These *indicators* allow us to identify the determinants of the cost process. In this way, we can analyze the control "into" relationship and not the control "of the" relationship and its reflection on performance, which is outside our field of inquiry.

Therefore, the main dimension of the "efficiency relationship process" is the compliance of the transfer times among partners and the its knowledge gives to *cruise port management* information about reliability of the partners.

It's necessary divided the cruise passengers flows management in three steps:

1. data capture;
2. processing:
3. reporting.

In the first phase, the cruise terminal's concessionary company collects data on passengers and ships flows from ship agent; then, in the second step the data are processed and finally the information are transferred to board of the concessionary company (*internal reporting*) and to PA (*external reporting*).

In this process it is possible to identify two relationships: the relationship between the cruise terminal concessionary company and ship agent (or directly the ship-owner) and the relationship between the concessionaire and the PA (Fig. 2). In

24 On the relationship between control process and its tools see Mancini D. (2010). Il sistema informativo e di controllo relazionale per il governo della rete di relazioni collaborative d'azienda. Giuffrè Ed. Milano; Smith K. G., Carroll S. J., Ashford S. J. (1995). Intra-and interorganizational cooperation: toward a research agenda. *Academy of Management Journal*. Vol 38, n. 1, pp. 7-23.

particular, within the first relationship, the ship agent sends the traffic data to concessionary company and directly to PA, when the berths are managed directly by PA. In the second phase, the concessionaire elaborates the traffic data that became information to support the internal and external decisions, so they're transferred to the board of the concessionary company (internal reporting) and to PA (external reporting).

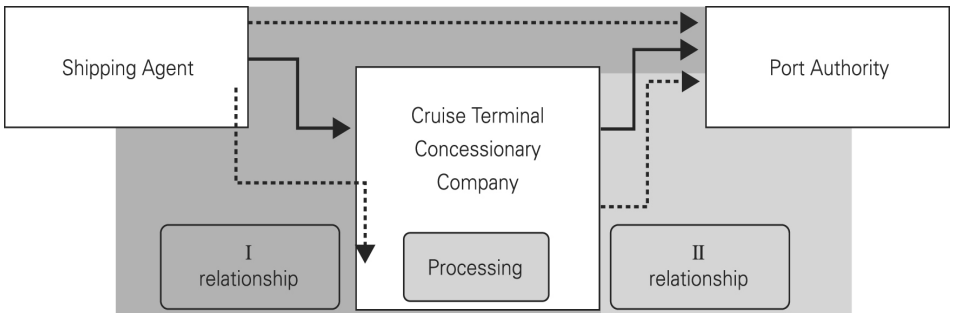

Figure 2. Relationships System of the information passengers flows management

Relationship key:

——————— Direct relations to send data traffic

..... Direct relations to urge data traffic

In the relationships system we observe the sequential interdependencies for which the appropriate coordination mechanisms are the time planning and the standardized processes (Grandori A., 1999: 324 and 325).[25]

However, without a technical integration of the information system used among the players, like as a software shared, we can consider the "direct contacts" among the actors as horizontal links and coordination tools.[26]

The table 3 illustrates the *key relationship indicators* of the relationship system.

25 Grandori A. (1999). *Organizzazione e comportamento economico*. Il Mulino Ed. Milano.

26 Bensaou, M. and Venkatraman, N. (1995). Configurations of Interorganizational Relationships: A Comparison between U.S. and Japanese Automakers. *Management Science*. Vol. 41 (9), pp. 1471-1492.

Table 3. Key relationship indicator among Ship Agent, Cruise Concessionary Company and PA

Key relationship indicators	The relationship	Meaning
[1] No. traffic notices in delay/Total number of the month berths	Between cruise terminal concessionary company and ship agent	The indicator measures the reliability of the ship agent's communications to cruise concessionary company
[2] No. traffic notices in delay/ Total number of traffic at t_1	Between cruise terminal concessionary company and PA	The indicator measures the reliability of the cruise terminal with respect to the information transfer time established in the concession contract
[3] No. traffic notices to get back/No. work time to get back information at t_1	Between cruise terminal concessionary company and ship agent	The index measures the risk relationship, that is the possibility that the ship agent behavior, like as the theft of information, may adversely affect the reciprocity condition between the two players.
	Between cruise terminal concessionary company and PA	The index measures the risk relationship, that is the possibility that the concessionary company behavior, like as the theft of information, may adversely affect the reciprocity condition between the two players.
[4] No. of information managed in delay/Hours number of repair service on shared software	Among cruise terminal concessionary company, ship agent and PA	The index measures the availability of information in the system of relations.

As shown in table 3, the key indicator no. [1] notes the speed of the ship agent in carrying out his communication obliges on the effective number of passengers and ships.[27]

The value of the key indicator may vary from 0 to 1. If it is less than 1, it signs the unreliability of the ship agent, otherwise a value greater than 1 may indicate an inaccuracy in the berth plan of the concessionary company.

It is possible to associate this indicator to the dispersion cost of resources, such as hours of work used to get the information.

However, this indicator should be integrated with timing indicators, such as the "average response time" and the "reminders percentage".

Furthermore, we can change the denominator of no. [1] indicator in order to obtain information on the relationship between cruise terminal concessionary company and PA. Therefore, we have the [2] no. notices in traffic delay /Total number of traffic at t_1.

This key indicator must be equal to 1. As to [1], when the indicator is different from 1 it signs a distortion in the process of data management.

27 On the relationship between trust and uncertainty see Axelrod, R. (1984). The Evolution of Cooperation. Basic, New York; Ouchi, W. (1980). Markets, Bureaucracies, and Clans. *Administrative Science Quarterly*. Vol. 25, pp 129-141.

In particular, if the PA contract out only some berths to the concessionary company, the indicator does not allow to have an integral, complete and immediate vision of the cruise passenger flows handled in that moment and to account them.

Finally, the [1] and the [2] could be supported by information resulting from the indicator [3].

This indicator measures the efficiency of data collection process that is the number of information retrieved in a well-defined time. This index is related to the number of traffic notices in delay.

Obviously the number and the type of indicators may vary according to the research questions.

The key relationship are particularly useful to manage information within networks when an technical "integrated" information system, such as shared software,[28] has been not implemented.

In this case, it is possible to use other key relationship indicators that measures the efficiency of the technical integrated information system. Indeed, as the table 3 shows, the index [4] measures the availability of information.

Any inefficiency in solving technical problems will be reflected on the cost of server service.

4. Sample and data collection

The research has been conducted through the case study methodology.

The study has been focused on the Italian territory, where, since 1994 ports started a process of infrastructures specialization towards cruise or container industry. However only from 2005 we assist, particularly in cruise industry, to the growth of the number of concessions agreements on behalf of private firms.

The criteria that have been followed for the selection of case studies are:

1. the relevance of passengers flows handled by concessionary cruise terminal company;
2. the ownership structure of companies to which the management of infrastructure has been contracted out;
3. the stability of ownership structure.

The concessionary companies selected were:

- *Venezia Terminal Passeggeri SpA* (VTP) and *Porto di Livorno 2000 Srl* (Livorno 2000), home and transit ports respectively, whose ownership can be

28 Bensaou M. and Venkatraman N. (1996). Inter-organizational relationship and information technology: A conceptual synthesis and a research framework. *European Journal of Information Systems*. Vol. 5, pp 84-91.

assimilated to a *Public governance model*. In particular, from the ownership structure analysis results that these companies though their juridical status is private, they are mostly or completely owned by public entities. For example, one of the shareholders of VTP is *APV Investimenti SpA*, that is completely owned by the Venice Port Authority while the other private companies are owned by public subjects. The PA of Livorno is the main shareholder of Livorno 2000, while the remaining equity is owned by the Chamber of Commerce of Livorno, another public entity. The ownership structures of VTP and Livorno 2000 identify different organizational models according to the (direct or indirect) participation of PA to the ownership structure of cruise terminal companies.

- *Terminal Napoli SpA* (TN) and *Roma Cruise Terminal Srl* (RCT), *transit* and *home* ports respectively, whose ownership structure configures a *PRIVATE/public governance model* for TN and a *Private governance model* for RCT. TN is almost completely private owned (95%). The 45% of its equity is in the hand of cruise companies (*Costa Crociere SpA*, *MSC Crociere SpA* and *Royal Caribbean Ltd*) and the 20% is owned by *Marinvest Srl* (it is the financial holding of *MSC Crociere SpA*).The ownership of RCT, instead, is equally shared among two cruise companies (*Costa Crociere SpA* and *Royal Caribbean Ltd*) and *Marinvest Srl.*

To collect data for our study we conducted interviews and submitted semi-structured questionnaires to managers that handle and use data on passengers flows (accounting manager, commercial managers, general directors and the board).

The questionnaire was articulated in three sections, one for each phase of information management process (collection, elaboration and internal/external reporting). The questions were aimed at investigate the following aspects: the actors involved and the function they play; the nature and quantity of data elaborated; technologies used; the procedures employed; the frequency and timing of operations; the integration degree of information exchanged between the concessionary company and PA). The questionnaire has been submitted by phone to accounting and sales managers, while some CEO members have been face to face interviewed.

5. Results

VTP and Livorno 2000, whose ownership and management is “completely” public, present different degrees of automation of the several steps that characterize the passenger flow data management function.

VTP’s infrastructures are employed only for cruise flows, while the Livorno

2000's infrastructures are also used for ferries flows, operated by the same concessionary company.

In the first phase (I) VTP passengers flow data are collected by clients (ship agents or cruise companies) with the support of a general accounting software platform, named AS400 (IBM), in which the agent periodically leads the passengers flow data. The software interface enables the ship agent to enter data about services demand, number of transit passengers, number of home passengers (embark and disembark passengers) and other information related to the docking of ships (i.e. number of affected, name of ship, vessel size and so on). The data collected are used by VTP for invoicing (passengers, berths and so on) the services supplied to clients.

In the Livorno 2000 instead these data are received via email or fax and reported by employees in a software for management accounting. This program is used by the terminal company to invoice and apply the fares to the ship agent or cruise companies.

Then these collected data are elaborated. In this second phase (II) the software used by VTP allows a multi-access from its departments (administrative, technical, sales & marketing, operational, security). The software is also useful for statistical analysis concerning the flows of passengers and ships, however it is not able to link the data collected, relating to the passengers flow, to each VTP infrastructure (i.e. terminals n. 103, no. 107/108, no. 117, San Basilio 1 Isonzo and Riva Sette Martiri quay). As a result, this negatively impacts on the usefulness of these data for the support of VTP management decisional processes, because they are not able to measure the "performance" of each infrastructure. The software for management accounting of Livorno 2000 allows to extract some useful information, such as trends during time, incidences, average values and so on. In both terminal companies the collected data are substantially quantitative. After their elaboration, data on cruise passenger flows are transferred to cruise company management (internal reporting) and PA (external reporting) (phase III).

In VTP the internal reports are automatically generated and all information are transferred electronically. In Livorno 2000 instead managers export data from the software into excel sheets that transfer to the head office. Regarding the external reporting to the PA the two companies instead have a different degree of automation of their information systems. VTP transfers its data to Venice Port Authority through an integrated information system named Logis (Logistics Information System). The software is based on a document workflow system implemented by the PA that allows the transfer of statistics in real time and to have information on passengers flows any time the users need and without mistakes or incongruities. The system is also able to collect information on other sectors of the maritime industry. It is a

web-based application that, by using standard internet browser such as Internet Explorer and Mozilla Firefox allows accredited users (shipping agency, terminal operators, etc.) to send data online to all requiring offices (PAs, Police Offices and so on).To sum up, the implementation of this system allowed the informatization of all material data exchange processes between the PA and the other actors of the port, improving the quality of information flows and creating an integrated "seaport system". Livorno 2000 instead monthly transfers its reports on excel spreadsheets via email or fax to PA. The data transferred are then aggregated to measure the total flow of cruise passengers in the seaport of Livorno. Unlike the VTP, Livorno 2000 has not implemented a program of integrated information system.

The information and communication processes, organizational and operational procedures and planning and control systems of TN and RCT, whose management is mostly or exclusively private, instead, have an almost similar level of automation.

TN's infrastructures and RCT's infrastructures are employed only for cruise flows.

In the first phase (data collection) the procedures and the degree of automation are mostly the same of the two previous cases.

In the second phase the data are processed and in RCT they are elaborated by an accounting software, while in TN the data are elaborated by the commercial department though excel spreadsheets.

In the third phase, the two cruise terminal concessionary companies follow different procedures. The TN commercial department transfers every month (via email) statistics reports to the General Director, the General Coordinator and the administrative manager, that subsequently transfer them to the Board. In RCT the General Director receives, monthly and through e mail, the statistics reports from accounting department. After the transfer of data on passenger flow, TN Board may assume only operative decisions on the optimization of cruise flows. The strategic decision on the traffic increase are assumed by other authorities (regions, municipalities) and the PA. RCT board instead is able to decide how to increase passenger flows and the productive capacity of the terminal.

With reference to data transfer to PA, both the concessionary companies employ the same procedures and the same automation tools. TN transfers (every month and via e mail) the statistic reports to the PA that aggregates data elaborated by the berths managed directly by the PA. These two terminals periodically transfer to PA's administration also a list of values billed and payments received for the security rights. TN sends to PA also the accounting schedules.

We can observe that the information system on cruise passengers flow for these two cases is automatized, but it is not integrated.

6. Conclusions

This paper gives a contribution to existing literature on the cruise industry investigating and relating variables that other studies on these topic have still not enquire, as the control tools and coordination mechanisms into relational governance in the seaport systems. In particular, on the role that these play into the relationship among the main actors to cruise passenger flows information management.

The paper shows how to different *governance models* of the cruise terminal concessionary companies is associated a dissimilar degree of data technical integration among the players to manage the cruise passengers information.

In particular, when the concessionary company shareholders are mainly cruise companies, whose main interest is the growth of their own traffic, integrated information systems, that could allow data sharing between PA and cruise companies, seem to be not so indispensable. So if contracting out the cruise terminal infrastructures to cruise companies, on one side, guarantees to the ports certain embarking and disembarking passenger flows, that are more lucrative than transit passenger flows, on the other side, this choice can favor opportunistic behavioral assumptions from the private party to public party expenses. Of course, this phenomena, if it's not controlled by the public authority with specific tools, could have negative effects on the PA's financial autonomy. This could happen because the knowledge on traffic flows is a critical variable to assume decisions about the improvement of seaport system facilities in order to increase port traffic flows. The PA's revenues are in fact strictly related to passenger flows.

Moreover, the results of this analysis evidences how, through the participation as major shareholder to the concessionary company capital equity, like in VTP case, the PA can rationalize operational processes and adopt solutions that allow the control of information. In this way, the PA seems to perform better its function of public interest safeguard, avoiding to be captured by cruise companies or ship agents, as it happens in Naples and Civitavecchia ports. These situations can threat the independence of PAs, that is strictly related to the financial autonomy of PA.

However, this study shows also that the control and coordination tools used, like the participation to the concessionary companies' equity, are not sufficient to assure the relation governance. So, in this paper we suggested some key relationship indicators, that can help to govern these kind of relationships, because offer a measure of the relationship efficiency. In particular, the key relationship indicators may be helpful to PA to have a complete prospective of the cruise seaport system.

The implementation of a key relationship indicators system could facilitate PA in its controlling and coordinating activities.

Nevertheless, the share equity participation seems to be the strategic tool

used by PA to control the traffic flows, in order to link them to the territory rather than to one or more cruise companies' routes. PAs, in this way, can play better to their institutional role, creating network with public and private subjects without losing the control. It follows that the increase of traffic flows in this way would be not dependent by cruise companies strategies, that changing their routes could move their customers from a port to another, reducing the port revenues and consequently its financial autonomy.

Finally, these consideration are limited to the four cases investigated, and therefore cannot be extended to the whole universe or be considered as best practices. Future empirical developments will be extended to other Italian terminals and could have as aim the implementation of the key relationship indicators, here proposed, in the main seaport systems like Venice, Civitavecchia, Naples and Livorno.

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Malaysian Port Policy: Concentration or Dispersion?

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1. Introduction

What kind of policies has the Malaysian government been undertaking with regards to port development? Has there been one unified national port policy or an assortment of policies? This study investigates whether the Malaysian port policy has been one of concentration, i.e. discriminately promoting one port only, or at most two ports, or dispersion, i.e. supporting a large number of ports equably. Another possibility is that port policies have been a bit of both, depending on the forces influencing decision making, hence, appearing to be multifaceted or ambiguous. This paper will first present the relevant data that show the emergence of two major hub ports in the Malaysian Peninsula. This will be followed by an assessment of the policies and instruments used to implement port policies and evaluation of whether there has been a conscious port concentration policy or not. Finally, this paper will end with some suggestions for similar countries in terms of port policy through Malaysia's experience.

This study interviewed a fair number of important personnel who have been directly involved in port development and decision making at the federal government as well as local port authority level. Additional information and perspectives were also gathered from logistics players, shipping lines as well as shipping agents operating around the key ports, namely, Port Klang, Port of Tanjung Pelepas (PTP), Kuantan Port, Penang Port and Sabah ports. Field trips were made to these localities to get first-hand accounts of the feelings of the community of players around this port about federal port policies. In addition, discussions were made with officials in the MOT (ministry of Transport). Due to the need to maintain confidentiality, this paper will not reveal the identities of the people interviewed. Other information and data were obtained from published sources and relevant websites.

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Research questions:

There are several questions related to the central theme of port concentration versus port dispersion. For example:

- Should a small nation like Malaysia promote only one mega hub and load centre port or a few number of small hubs and load centres dispersed throughout different parts of the country to cater to different cargo hinterlands?
- What kind of policy instruments are effective for either strategy?
- To what extent should the government be involved or would it be better to leave it to market forces and private sector players?

In addressing the main theme, this study hopes to discuss and shed some light on these questions using the case of port development in Malaysia.

2. Distribution of Malaysian Ports

2.1 Outline

The Malaysian coastline has around 30 sizeable ports as can be seen from figure 1 and table 1 below. Some are small ports and jetties serving local markets; some are specialised ports serving particular commodity outputs of the immediate hinterland such as oil, gas, petrochemical products, marine products or timber products. Many are multi-purpose ports with facilities for containers and bulk cargo. The main ports are Port Klang which consists of Northport and Westport, Port of Tanjung Pelepas (PTP), Penang Port and Johor Port at Pasir Gudang. Bintulu Port in East Malaysia is a large port serving mainly the oil and gas industry.

Source: http://www.portsworld.com/main/ports.htm

Figure 1: Location of Malaysian Ports

2.2 Port Throughputs and Size

It can be seen from the statistics on container throughput (tables 1) that the dominant port till the end of the 1990s was Port Klang, and port activities and throughputs for most of this period were concentrated in the Northport terminal. Traffic at Northport grew as a result of economic development and industrialisation in the Klang Valley, a metropolitan area which consists of the capital city of Kuala Lumpur and its suburbs. This forms the immediate cargo hinterland for Port Klang. A second container terminal called Westport was created in the 1990s to cater to the growth in cargo traffic at Port Klang when Northport faced severe congestion.

Table 1. Container Throughput and distribution rate by Port, 1992-2009

Unit: ' 000TEU, (%)

Category	1992	1995	2000	2005	2006	2007	2008	2009
Port Klang	678(57.9)	1,134(57.0)	3,207(66.8)	5,544(46.0)	6,326(47.0)	7,119(46.9)	7,974(49.0)	7,310(31.3)
Northport	(0.0)	(0.0)	2,180(68.0)	2,632(47.5)	2,661(42.1)	2,806(39.4)	3,007(37.7)	2,858(39.1)
Westport	(0.0)	(0.0)	1,027(32.0)	2,911(52.5)	3,665(57.9)	4,313(60.6)	4,967(62.3)	4,451(60.9)
PTP	(0.0)	(0.0)	38(0.8)	4,177(34,7)	4,637(34.3)	5,298(34.9)	5,466(33.6)	6,017(25.8)
Penang Port	303(25.9)	434(21.8)	636(13.2)	795(6.6)	850(6.3)	926(6.1)	918(5.6)	959(4.1)
Johor Port	129(11.0)	303(15.2)	659(13.7)	842(7.0)	881(6.5)	927(6.1)	935(5.7)	845(3.6)
Kuantan Port	7(0.6)	23(1.1)	63(1.3)	119(1.0)	125(0.9)	128(0.8)	127(0.8)	132(0.6)
Bintulu Port	14(1.2)	25(1.1)	48(1.0)	148(1.2)	200(1.5)	252(1.7)	290(1.8)	248(1.1)
Kuching Port	41(3.5)	71(3.6)	111(2.3)	143(1.2)	152(1.1)	163(1.1)	172(1.1)	161(0.7)
Miri Port	(0.0)	(0.0)	6(0.1)	15(0.1)	17(0.1)	21(0.1)	28(0.2)	25(0.1)
Rajang Port	(0.0)	(0.0)	37(0.8)	54(0.5)	54(0.4)	66(0.4)	74(0.5)	66(0.3)
Sabah Ports	(0.0)	(0.0)	n.a	209(1.7)	227(17)	272(1.8)	293(1.8)	278(1.2)
Total (sum of above ports)	1,171	1,988	4,803	12,046	13,469	15,171	16,276	23,350

Note: This study was not able to obtain published 2001 data for PTP.

Source: Ministry of Transport and Port Authorities, 2010

It was only with the establishment of Westport, which came into operation in the mid-1990s which the cargo share of Northport began to decline. Still, Westport and Northport which together form Port Klang continued to command about 50% of the national container throughput by 2009 (table 1). Earlier, at its peak in 2001, Northport and Westport collectively held about 70% of the container throughput in the country, suggesting that there was only one main port or load centre catering to the exports and imports of the country. Even though Northport and Westport are regarded as two terminals of Port Klang they in many ways practise as two separate ports competing actively with one another for ship calls and cargo.

It can be seen from table 2 that Westport grew at a rapid rate beginning in the late 1990s, surpassing Northport's share after 2005 (table 1). From 2000 to 2008, the average annual growth rate of container throughput at Northport was 4.1% compared to 21.8% at Westport. Westport was a new port terminal created in the early 1990s, equipped with new facilities and capacities to cater to large ships. Northport, on the other hand, has to make do with expansion and upgrading of existing capacities. This phenomenon suggests that greenfield development of ports or terminals will lead to faster cargo growths than expansion of old capacities. However, this is often undertaken at a much higher cost involving investment in brand new facilities. In 2008, Northport moved about three million TEUs whereas Westport was moving close to five million TEUs. The two terminals together, which form Port Klang, moved about eight million TEUs in 2008.

Table 2. Annual Growth Rates of Container Throughput by Port, 1992-2008

Classification	1992	1995	2000	2005	2008	2000-2008
Port Klang	11.5%	20.1%	25.7%	5.7%	12.0%	12.1%
Northport			27.4%	-2.1%	7.1%	4.1%
Westport			22.4%	13.9%	15.2%	21.8%
PTP				8.9%	3.2%	86.4%
Penang Port		12.2%	12.2%	3.0%	-0.9%	4.7%
Johor Port		28.5%	18.1%	4.5%	0.8%	4.5%
Kuantan Port		85.3%	19.9%	-3.0%	-0.4%	9.2%
Bintulu Port		17.1%	30.7%	2.8%	15.2%	25.3%
Kuching Port		15.4%	13.9%	1.3%	5.3%	5.7%
Miri Port			117.2%	2.9%	32.7%	22.5%
Rajang Port			-0.3%	1.2%	12.8%	9.1%
Sabah Ports				0.2%	7.8%	
Total (sum of above ports)		19.8%	20.5%	6.2%	7.3%	16.5%

Source: Ministry of Transport and Port Authorities, 2010

Even though a large portion of the cargo going through Port Klang have for many years been locally generated exports and imports for the domestic market, over the years, transhipment cargo became more and more important, especially after the establishment of Westport. This meant that Port Klang was no longer just the national load centre and gateway port for Malaysian exports and imports. It has also become a transhipment hub for regional cargo, as can be seen from the proportion of transhipment cargo in the total cargo throughput, especially after the creation of Westport (see table 3). By 2008, transhipment container cargo at Port Klang constituted close to 60% of total container throughput. It is widely known that Westport accounted for the majority of the transhipment cargo while Northport has been responsible for the movement of local cargo. According to one published source, in 2006, 73% of the transhipment cargo went through Westport and 27% through Northport (see tables 4 and 5).

Table 3. Port Klang Container Throughput by Type, 2004-2008 (TEU)

	2004	2005	2006	2007	2008
Total	5,243,593	5,543,527	6,326,295	7,118,714	7,973,579
Import	1,294,269	1,342,901	1,403,946	1,527,893	1,629,977
Export	1,234,229	1,276,661	1,367,625	1,474,193	1,598,544
Transhipment	2,715,095	2,923,965	3,554,724	4,116,628	4,745,058
% Share					
Total	100.0%	100.0%	100.0%	100.0%	100.0%
Import	24.7%	24.2%	22.2%	21.5%	20.4%
Export	23.5%	23.0%	21.6%	20.7%	20.0%
Transhipment	51.8%	52.7%	56.2%	57.8%	59.5%

Table 4. Distribution of Type of Container Cargo between Northport and Westport

Container Type	Northport	Westport
Laden	63%	37%
Empty	54%	46%
Transshipment	27%	73%
Overall	42%	48%

Source: Malaysian Business Magazine, May 16 - 31, 2007; Leong and Khairuddin, 2008.

Table 5. Proportion of Cargo by Type for Northport and Westport, 2006

Local/ Transshipment	Northport	Westport
Local Cargo	64%	29%
Transshipment Cargo	36%	71%

Source: Malaysian Business Magazine, May 16 - 31, 2007; Leong and Khairuddin, 2008

A notable change in national port throughputs was the phenomenal rise in movement of containers through the Port of Tanjung Pelepas (PTP) after it came into operation in 2000 (see tables 1 and 2). PTP's throughput jumped from virtually nothing to 2,668,512 TEUs in 2002. Its average annual growth rate from 2000 to 2008 was 86.4% (table 2). Almost immediately after its launched, PTP had a throughput larger than either Northport or Westport. Since then it has accounted for about one-third of the national container throughput.

The rise of PTP was due to its tie-up with Maersk Line which brought in mostly transhipment cargo. Maersk effectively moved much of its activities from Singapore Port to PTP during this time. It can be seen from tables 6 and 7 that, for years where data are available, around 95% of PTP cargo has been transhipment cargo. Compared to PTP, the share of transhipment cargo in Port Klang was between 50% and 60% since 2004. The share of transhipment cargo was much smaller for Penang Port, Johor Port and Kuantan Port which are ports catering to local indigenous cargo. Both PTP and Port Klang can be considered transhipment hub ports given the high percentage of transhipment cargo. Of the two, PTP is a specialised transhipment port whereas Port Klang has a nearly equal balance of indigenous and transhipment container cargo. The growth of the two ports in the first decade of 2000 has come from regional transhipment cargo. In 2008, PTP handled more than 5 million TEUs of which 95% was for transhipment. Port Klang handled about 8 million TEUs of which around 5 million were transhipment boxes.

Table 6. Container Throughput by Type, 2003-2008 (TEUs)

Classification		2003	2004	2005	2006	2007	2008
Port Klang	Total		5,243,593	5,543,527	6,326,295	7,118,714	7,973,579
	Laden		NA	4,382,497	5,002,032	5,701,608	6,376,832
	Empty		NA	1,161,030	1,324,263	1,417,106	1,596,747
	Import		1,294,269	1,342,901	1,403,946	1,527,893	1,629,977
	Export		1,234,229	1,276,661	1,367,625	1,474,193	1,598,544
	Transhipment		2,715,095	2,923,965	3,554,724	4,116,628	4,745,058
PTP	Total	3,316,954	3,835,970	4,177,123	4,637,418	5,297,631	5,466,191
	Laden	NA	NA	NA	NA	NA	NA
	Empty	NA	NA	NA	NA	NA	NA
	Import	43,594	42,194	40,457	44,528	51,574	97,383
	Export	104,658	125,615	151,202	161,878	173,759	214,404
	Transhipment	3,168,702	3,668,161	3,985,464	4,431,013	5,072,298	5,154,404
Penang Port	Total			795,289	849,730	925,991	917,631
	Laden			NA	NA	NA	NA
	Empty			NA	NA	NA	NA
	Import			357,213	406,492	410,282	401,727
	Export			372,576	422,216	488,254	487,049
	Transhipment			65,500	21,022	27,455	28,855
Johor Port	Total			842,303	880,611	927,284	934,767
	Laden			NA	NA	NA	NA
	Empty			NA	NA	NA	NA
	Import			323,331	335,335	363,672	374,281
	Export			382,675	410,422	421,045	400,849
	Transhipment			136,297	134,854	142,567	159,637
Kuantan Port	Total		122,745	119,067	124,834	127,600	127,061
	Laden		NA	NA	NA	NA	NA
	Empty		NA	NA	NA	NA	NA
	Import		59,760	55,975	59,581	61,892	61,936
	Export		62,072	61,842	64,167	65,577	64,545
	Transhipment		913	1,250	1,086	131	580
Bintulu Port	Total	145,661	143,783	147,820	199,704	251,800	290,167
	Laden	NA	NA	NA	NA	NA	NA
	Empty	NA	NA	NA	NA	NA	NA
	Import	18,648	27,380	29,688	37,398	50,050	72,839
	Export	22,913	31,240	34,241	44,366	62,320	78,645
	Transhipment	104,100	85,163	83,891	117,940	139,430	138,683
Kuching Port	Total		141,227	143,096	152,394	163,338	171,943
	Laden		NA	NA	NA	NA	NA
	Empty		NA	NA	NA	NA	NA
	Import		71,720	73,703	78,022	84,143	87,836
	Export		68,509	68,799	73,524	78,325	82,235
	Transhipment		998	594	848	870	1,872

Source: Ministry of Transport and Port Authorities, 2010

Table 7. Proportion of Container Throughput by Type, 2003-2008 (%)

Classification		2003	2004	2005	2006	2007	2008
Port Klang	Total		100.0%	100.0%	100.0%	100.0%	100.0%
	Import		24.7%	24.2%	22.2%	21.5%	20.4%
	Export		23.5%	23.0%	21.6%	20.7%	20.0%
	Transhipment		51.8%	52.7%	56.2%	57.8%	59.5%
PTP	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Import	1.3%	1.1%	1.0%	1.0%	1.0%	1.8%
	Export	3.2%	3.3%	3.6%	3.5%	3.3%	3.9%
	Transhipment	95.5%	95.6%	95.4%	95.5%	95.7%	94.3%
Penang Port	Total			100.0%	100.0%	100.0%	100.0%
	Import			44.9%	47.8%	44.3%	43.8%
	Export			46.8%	49.7%	52.7%	53.1%
	Transhipment			8.2%	2.5%	3.0%	3.1%
Johor Port	Total			100.0%	100.0%	100.0%	100.0%
	Import			38.4%	38.1%	39.2%	40.0%
	Export			45.4%	46.6%	45.4%	42.9%
	Transhipment			16.2%	15.3%	15.4%	17.1%
Kuantan Port	Total		100.0%	100.0%	100.0%	100.0%	100.0%
	Import		48.7%	47.0%	47.7%	48.5%	48.7%
	Export		50.6%	51.9%	51.4%	51.4%	50.8%
	Transhipment		0.7%	1.0%	0.9%	0.1%	0.5%
Bintulu Port	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Import	12.8%	19.0%	20.1%	18.7%	19.9%	25.1%
	Export	15.7%	21.7%	23.2%	22.2%	24.7%	27.1%
	Transhipment	71.5%	59.2%	56.8%	59.1%	55.4%	47.8%
Kuching Port	Total		100.0%	100.0%	100.0%	100.0%	100.0%
	Import		50.8%	51.5%	51.2%	51.5%	51.1%
	Export		48.5%	48.1%	48.2%	48.0%	47.8%
	Transhipment		0.7%	0.4%	0.6%	0.5%	1.1%

Source: Ministry of Transport and Port Authorities, 2010

From 2004 to 2008, 80% of Port Klang's containers have been laden, suggesting that it has been also functioning effectively as the nation's gateway port besides being a regional transhipment hub (table 7). Based on the data, one can characterise Port Klang as a dual function port, i.e. a gateway port for international and domestic cargo as well as transhipment hub for regional cargo, whereas PTP has been single-mindedly a regional container transhipment and repositioning hub port.

The situation with the smaller ports was symptomatic of the rise of PTP and the continuous growth of Port Klang in the 1990s till the present. Looking at the data in tables 1 and 2, it is clear that the share of national container cargo of the smaller ports have either been dropping or stagnating at a low level. The two bigger second tier ports, Penang Port and Johor Port, have seen their share of national container throughput dropped to around 5% by 2008. The two ports did experience moderate growth higher in the 1990s and lower in the 2000s (table 2). However, their average growth rates of close to 5% a year could not match that of Port Klang and PTP. Most of their container cargoes have been imports and exports for their immediate hinterland (tables 6 and 7). The growth of these ports, hence, has been tied to the rate of growth of economic activities in the immediate surrounding areas. PTP and Port Klang could grow faster than these ports by serving a larger regional hinterland through their transhipment activities.

The lack of cargo growth in Kuantan Port on the east coast of Peninsular Malaysia reflects the slower growth of economic activities there. Furthermore, with good road infrastructures, cargo from the Kuantan Port area could be trucked to Port Klang. The situation was the same for ports in Sabah and Sarawak. The slow economic growth there, especially the lack of industrial activities, explains why these ports remain relatively insignificant (see table 1). Transhipment cargo has been insignificant in these ports.

It can be seen from table 8 that corresponding to the high throughputs Port Klang far outnumbered the other ports in terms of container ship calls, hence, the larger volume of container throughput. It is surprising to note that PTP has a disproportionately low number of ship calls given that the port handled as much containers as Port Klang. There could be several reasons for this. One is that very large container ships called at PTP, loading and discharging large numbers of containers per call. Another reason could be double counting of containers (which happens at all ports) as well as a large amount of container restowing and repositioning by a few top shipping lines at the port, namely Maersk and Evergreen. This issue is difficult to verify. The much lower container throughput in the other ports corresponded with the lower number of container ship calls.

Table 8. Container Ship Calls in Selected Ports, 2006-2008

Classification	2006	2007	2008
Port Klang	11,543	12,019	11,675
PTP	3,367	3,747	3,280
Penang Port	1,456	1,402	541
Johor Port	2,975	2,895	1,752
Kuantan Port	518	421	412
Bintulu Port	1,023	933	481
Kuching Port	890	910	150

Source: Ministry of Transport and Port Authorities, 2010

3. Key Port Policies

The analysis of port statistics above reveals that there are two principal container ports in the country, namely, Port Klang, which consists of Northport and Westport, and PTP. This section will examine Malaysian policies and see to what extent the pattern of port development corresponds to these policies. Some of these policies were directly aimed at influencing port development while others were general policies on economic and infrastructural development, such as privatisation, trade and investment promotion policies. Of the policies directly aimed at influencing port development, the most frequently mentioned is the National Load Centre policy which promotes Port Klang as the load centre for the shipment of import and export cargo. Malaysian shipping lines have been encouraged to use Port Klang for international shipments, feedering cargo from the smaller ports to Port Klang. The other important policies are the port privatisation and transhipment policies.

Port infrastructure development plans are outlined in every five-year plan and these plans have guided government investments in port facilities. Most investments were on upgrading and expansion of federal ports. At the same time, the privatisation policy called for private sector participation, and almost all the major federal ports have been privatised as a result. Following privatisation, the government, instead of directly investing in port development, provided assistance to the private sector. This approach of developing privatised ports by giving assistance to the private sector can be risky, as it can lead to abuse. The scandal surrounding the development of the Port Klang Free Zone (PKFZ) is related to the way the government got involved in supporting the private sector in port development.

3.1 Load Centre Policy

The load centre policy was initiated in 1993 as an attempt to boost Port Klang's role as the principal gateway for imports into and exports from the country as well as making it a regional hub port that could compete with the Port of Singapore. Before then, Singapore was the only transhipment hub for the Southeast Asian region, and much of Malaysia's cargo was also going through it. Due to proximity to Singapore, cargo from several Malaysian ports, especially those in East Malaysia and the eastern seaboard of Peninsular Malaysia, were feedered to Singapore port using feeder vessels. These ports are actually closer to Singapore than Port Klang. A considerable amount of cargo from Penang Port, which is closer to Port Klang, was also going to Singapore Port because of the higher number and frequency of ship calls and connectivity at Singapore. At that time, it was thought that in order to compete with Singapore Port, Malaysia has to concentrate cargo at, and enhance the strength of, one single port instead of developing a large number of small and medium-sized ports (Interview with Datuk Rajasingam, former General Manager of Port Klang Authority). Hence, a policy called the load centre policy was concocted.

It was explicitly stated in the Seventh Malaysia Plan (1996-2000) that cargo from other Malaysian ports would be consolidated where possible through Port Klang (See Wong 2003). According to the government (Wong, 2002 and 2003), the load centring strategy for Port Klang included:

- Establishment of close linkages with regional ports, as well as other ports in Sabah and Sarawak through provision of feeder services at competitive rates.
- Restructuring of rebates and other incentives.
- Maximum back-up facilities, including simplification of custom procedures.
- Volume discount.
- Foreign equity participation in the Terminal Dedicated Berth Scheme.
- Supply of efficient facilities and the gazetting of a free commercial zone at Port Klang.

The meaning of a national load centre itself is multifarious. First, Port Klang would be the principal gateway for cargo into and out of the country. Hence, it would serve as a domestic transhipment hub for cargo to and from other domestic ports. Cargo from Malaysian ports would feeder to Port Klang instead of Singapore

Port, given the national load centre policy. At the same time, Port Klang would also serve as a transhipment hub for regional cargo, and this was conveniently included as an adjunct to being a national load centre port. Based on feedback from industry players, a large proportion of Port Klang's transhipment cargo has been regional cargo from as far away as the Indian sub-continent and not just domestic cargo from domestic ports. There were also cargo from China and the Far East transhipped at Port Klang to ports in the region. Any policy instruments aimed at boosting Port Klang as the national load centre for domestic transhipment and gateway cargo would automatically helped it function as a regional transhipment hub port.

The decision in 1993 to select Port Klang as the national load centre was because it was the biggest domestic port at the time and had the best infrastructure. It was the only port with the harbour depth to receive large vessels. The government provided support to develop port infrastructures, especially capital expenditure on dredging the harbour. Government support for port development has largely been supply-driven (See Wong 2002 and UNESCAP). In order to help realise Port Klang as the national load centre the government helped expand its facilities. A year earlier, Port Klang has begun developing Westport as part of its expansion.

While the government supported infrastructural development in Port Klang as part of the national load centre policy much of the policy was indicative, i.e. a statement of goals, with the hope that industry players, such as freight forwarders, shippers and shipping lines, would use Port Klang as the load centre. Needless to say, industry players were driven by their own economic and profit rationality so that their use of Port Klang was as much a result of the growth in cargo around the port as the government's designation of Port Klang as the national load centre. The indicative nature of the policy was clear in that players were not forced to use the port. The port of choice was left to the decision of players. Tariffs like terminal handling charges however were kept low by the government to attract shipping lines to call at the port, often to the unhappiness of port operators. Port operators have requested for upward revision of the tariffs, but the MOT and the Port Authority have consistently resisted this.

Besides the federal government undertaking dredging works for the port, there were also other subsidies such as the subsidy on charges on inter-terminal transfers by road and rail. Haulage charges were subsidised by the Port Klang Authority and paid directly to KTM Bhd to facilitate transhipment activities between Northport and Westport terminals (http://www.portsworld.com/news/pw1may28_07.htm).

This inter-terminal transfer subsidy was important as Westport is located about 30 km away from Northport, without which the full inter-terminal charges would be borne by shipping lines.

3.2 Privatisation with Competition Policy

Another important policy which has a direct impact on port development is the privatisation policy. When Mahathir took office as Prime Minister in the early 1980s he initiated a full-scale privatisation drive, privatising many services hitherto operated by government departments and government statutory bodies. The first port activity to be privatised was Klang Port Authority's container terminal. A private company, Kelang Container Terminal Sdn Bhd, took over the running of the container terminal in 1986 (Klang Port Authority, Dec. 1992). The other port services remained under the Klang Port Authority. Three years later, on 1 December 1992, the whole of Northport was privatised, taken over by a new port operator, Kelang Port Management (KPM). The services and facilities privatised included "stevedoring and related wharfside operations, the second container terminal, the dry bulk terminal, liquid bulk terminal, pilotage, engineering, security, fire services and all other support services" (Klang Port Authority, Dec. 1992, p.9). Around the same time, a brand new terminal, Westport, was being built as a privatised port, and this was expected to compete with Northport. The policy was privatisation with competition and not monopolistic privatisation. How this squares with the centralisation theme of the load centre policy is an issue that continues till today?

With privatisation, Klang Port Authority (later called Port Klang Authority) was essentially reduced to being a port regulator and trade facilitator. Northport and Westport became private entities beginning 1992. This set in motion a wave of privatisation which spread to other federal ports. Over a short period, all the major ports, Johor Port, Kuantan Port, Kemaman Port and Bintulu Port, were privatised, and Penang Port was corporatised. The justification for privatisation was to infuse commercial principles into port operations, make port operations more efficient, and encourage market competition between ports and terminals. There might have been other political agenda behind port privatisation as it is important to note here that Klang Port Authority was not a loss-making operation at the time of privatisation. In fact, it was cash rich (Interviews with former port personnel).

According to Rajasingam who was the General Manager at the time of privatisation, the reason why Klang Port Authority could not operate like a private

sector organisation on commercial principles was its lost of autonomy in the 1970s as a statutory body. Following the Harun Salary Commission report on statutory bodies and local government, employment condition at Port Klang was made similar to government departments. It lost its autonomy and independence in hiring and firing. Stevedoring services which were contracted out were taken back. The quality of port services began to decline and inefficiencies beset the port. To correct this, the government under Mahathir privatised the port. It is difficult to speculate whether Port Klang could have performed equally well as an autonomous statutory body rather than a privatised port. As a privatised entity, earnings and profits go to the private operator.

Port privatisation was introduced at the same time as the load centre policy. These two policies shaped the government's attitude towards Northport and Westport. Government investments and support as well as ad hoc measures were often framed under either of these policies. As privatised ports, Northport was expected to compete with Westport on equal ground. Competition between the two would make Port Klang as a whole efficient and attractive to shipping lines and shippers. Competition would force both operators to perform productively. As both are parts of a load centre port, the government would encourage main lines and feeder lines to call at either port. In principle, there would be no favouritism. Both Northport and Westport would receive similar administrative treatment, notwithstanding the economic rivalry between the two. How the two compete with one another as one port has been the story of Northport and Westport since the inception of the dual policies of load centre and privatisation with competition.

At the time of the privatisation of Northport in 1992, it was thought that Westport, which was being constructed, would be run by Klang Port Authority. However, Westport was also privatised shortly after. This decision was made at the highest level of government. A privately-run Westport would provide healthy competition to a privately-run Northport. This in a way prevented the creation of a private monopoly in one port.

The creation of the brand new Westport terminal, 30 km away from Northport, was a supply-driven strategy. According to Rajasingam (interview), with increase in traffic, ships were waiting to berth at Northport. The construction of Westport would help turn things around so that berths would wait for ships. Westport essentially had to undertake intensive marketing to attract ship calls and cargo. Shippers and freight forwarders had to be convinced to relocate at Westport given

that most of their facilities would be in the vicinity of the older Northport terminal. Westport ended up competing aggressively with Northport for cargo and ship calls. Main lines would choose to call only at one of the two whereas feeder lines may call at both. It was truly a situation of privatisation with competition. The question is whether the competition went beyond what was envisaged or desired. According to Rajasingam (interview), Westport and Northport should have competed on services. Instead these two port terminals gave discounts and rebates to shipping lines to woo them to their respective terminals, hence, benefiting the lines. The bargaining power of the main shipping lines was enhanced as a result of the rivalry between Westport and Northport. Main shipping lines have occasionally shifted from one port terminal to the other. Revenues aside, the intense competition nevertheless succeeded in boosting throughputs for Port Klang as a whole throughout the 1990s and 2000s.

Both port terminals continuously expanded their facilities. In 2000, Westport got a global terminal operator, Hutchinson Port Holdings (HPH), to take up 30% stake in the port. Both positioned themselves as a load centre port. Both also positioned themselves as regional transhipment hubs. As shown in a study by Leong and Khairuddin, facilities in both port terminals are comparable. Overtime, some degree of market differentiation developed between the two in terms of the geographical regions that were better served by one then the other. This was also reflected in the slightly different routes and frequencies of the lines calling at the two port terminals. One port terminal would be slightly more oriented towards say West Asia while the other towards the USA. Nevertheless, there were still a considerable amount of overlap in their markets. One thing that needs to be pointed out here is that the two collectively never developed into a threat to Singapore Port. It was obvious that Port Klang did not succeed in totally wooing back the Malaysian cargo that was going through Singapore Port. Malaysian cargo continued to go through Singapore Port even as cargo volume in Northport and Westport grew.

3.3 PTP and Regional Transhipment Hub

Towards the end of the 1990s the government embarked on another national level port agenda. This time it was to establish a major transhipment hub port along the same trade route as Port Klang and Singapore. This agenda was not formulated as a national policy unlike the national load centre policy. Nevertheless, it is undeniable that the setting up of the Port of Tanjung Pelepas (PTP) was a high-level policy decision made with the primary purpose of competing with the Port of Singapore as a regional transhipment hub (See Leong and Khairuddin, 2008, and

Wong, 2002). PTP was designed to capture the transhipment business of Singapore Port, especially at a time when main shipping lines were getting frustrated with the high charges and monopolistic attitude of the Singapore. The cargo generated in the Johor hinterland at the time would not be able to support such an ambitious port. PTP would compete directly with Singapore Port for regional transhipment traffic in a way that the combined force of Northport and Westport could not do. Given the existing privatisation with competition policy, the privately-operated PTP would not only be competing with Singapore Port but also Northport and Westport. This national transhipment hub policy in effect added one more major hub port to the East Asian region.

Another reason for the setting up of PTP was the perceived "leakage" of Malaysian cargo to Singapore Port. Even after the promotion of Port Klang as the national load centre, it was reported in the late 1990s that about 60% of Malaysian trade continued to pass through Singapore (Leong and Khairuddin, 2008). Perhaps, this time, PTP could get back the Malaysian cargo from Singapore, a large proportion of which would have been from the state of Johor which neighbours Singapore.

PTP is located at the south-western tip of Johor and right next to Singapore. It was launched in 1997, and effective operations began in 2000, with astounding container throughputs by 2002 (see earlier tables). PTP, despite being a privatised port, received a great deal of support from the government, justified in part by the fact that its principal rival, Singapore Port, also receives government support.

The assistance given to PTP has been documented in Leong and Khairuddin (2008). They represent the policy instruments used to assist PTP which included:

- Financial support from the government or institutions controlled by the government. For instance, in the Asian financial crisis of 1997-98 when PTP was facing financial difficulty, Khazanah Nasional, an investment arm of the government, came to its rescue and invested in PTP. The government also encouraged a syndicate of Malaysian banks to provide RM2 billion loan.
- Construction of road and rail infrastructures. The government built a 6 km stretch of road linking PTP to the North-South Highway and the Second Link Expressway crossing to Singapore. Through the national rail company, Keretapi Tanah Melayu Berhad (KTMB), the government constructed a

30.5 km rail link from PTP to Kempas to connect it to the national rail network at an estimated cost of RM476 million.

- Granting of Free Zone status. The government granted Free Zone status to PTP so that it could develop its land reserve for district park and logistics activities.
- Approval of port tariff structures. PTP received the support of the MOT to establish a competitive and attractive tariff structure which could compete with Singapore Port for main shipping lines. Port tariffs are regulated by the Ministry and port authorities.
- Exemption on truck levy. In January 2001, the Ministry of Finance removed a levy on container trucks bringing containers from the PTP to Singapore and vice versa, to encourage Singapore exporters and importers to go through PTP. This levy was introduced in the 1990s to discourage Malaysian trucks from moving cargo to Singapore Port. The removal of this levy for PTP only meant that truck operators saved RM200 per trip on laden containers if they brought cargo from Singapore to PTP of from PTP to Singapore.

The above list of government support was the policy instruments introduced to support PTP and the regional transhipment hub agenda. The policy instruments used to develop and promote PTP were by and large similar in kind as those which the other major ports, including Northport and Westport, received albeit on different quanta. The main policy instruments extended to the various federal ports to assist their development were financial support, easy land lease payments, infrastructure development, and the granting of Free Zone status. Development expenditures for ports were normally outlined in the five-year plans. On these, some ports received more than others. It was widely known in port circles, for instance, that the private operator of Westport received large amounts of soft loans from the government for its development. PTP also received comparable financial support while other ports did not.

Federal ports receive federal government support whether they are privatised or corporatised. One would have thought that the privatisation and market competition policy would make favouring one port over another difficult. Favouritism was nonetheless practised in accordance with expediency and how the government and political leadership view the strategic importance of the port to the nation. Most government assistance has therefore gone to the strategic ports of Port Klang and PTP. Whatever assistance has been given to Northport and Westport, PTP would also

like to receive. For example, PTP asked for the relaxation of cabotage policy that was granted to Port Klang to facilitate Port Klang's load centre and transhipment activities between Malaysian ports.

This section has discussed the three overarching policies influencing port development, namely, the load centre policy, privatisation with competition, and the national agenda to set up and promote PTP as a regional transhipment hub to rival Singapore Port. In addition to these, where the cabotage policy was felt to hamper the objectives of these policies, the restrictions were lifted. In a way, port development has been regarded as more important than protecting domestic shipping. Likewise, the levy on container trucks crossing into Singapore and back was also lifted for PTP cargo.

4. Evaluation of Policies and Policy Instruments

The government did not interfere in the competition between PTP, Northport and Westport. The privatisation of Westport itself and the subsequent competition between Westport and Northport was antithetical to the concept of a load centre (interview with Datuk Rajasingam, former General Manager of Port Klang.). Rajasingam believed that given the size of the domestic cargo there should be only one mega hub port that could compete with Singapore. Another problem was the way Westport and Northport competed for line calls and cargo. Instead of competing on performance and services, the ports resorted to giving discounts and rebates on the official tariffs to attract shipping lines. Price cutting was certainly not the intention of the load centre policy. The lower tariffs would force terminal operators to cut cost, and this might lead to port terminals compromising on services. Overall, it would not be good for the nation. The only beneficiaries were the shipping lines.

There are now essentially four hub ports competing in the Southeast Asian market, namely, Northport, Westport, PTP and Singapore Port. The extent of competition can be seen in lines switching between Northport, Westport and PTP. PTP also grew as a result of Maersk Sealand and Evergreen switching the bulk of their operations from Singapore to PTP. Other main lines have also switched from one port to the other.

Despite the denting of the national load centre policy as a result of the privatisation and development of Westport and PTP, the load centre policy continued to be mentioned as the thrust of the government's port policy in practically every five-year plan since it was started. Designating Port Klang as the national load centre justified plans and projects aimed at expanding Port Klang. For example, the development of the controversial, and by now scandalous, Port Klang Free Zone (PKFZ) using public funds could be justified as an effort to boost the national load centre. An important question to ask is whether Port Klang grew as a result of the government's load centre policy or other circumstances which were outside the purview of the policy?

It is important to note that the general economic growth in the country has contributed to the growth of Port Klang throughout the 1980s, 1990s and 2000s. Port Klang is located next to the capital city of Kuala Lumpur. There was rapid industrial and commercial development in the hinterland of Port Klang, known as the Klang Valley, giving rise to huge imports and exports to serve the growing population and industries. All transport infrastructures – highways, rail and air - converge in the Klang Valley, connecting the Klang Valley and Port Klang to all parts of the country so that goods could be conveniently moved by trucks or rail to Port Klang. The construction and growth of the Kuala Lumpur International Airport (KLIA) also generated economic growth and some amount of sea-air multimodal cargo for Port Klang through the I-Port concept promoted by MasKargo.

In other words, whether there was a load centre policy or not indigenous base cargo was growing around Port Klang. In conjunction with this, there was a large community of freight forwarders and logistics operators around Port Klang, providing efficient services to shippers using Northport and Westport. This vibrant private sector together with the large domestic and foreign investments pouring into the Klang Valley throughout the 1980s and 1990s would have by itself spurred growth in Northport and Westport. The government policies and policy instruments ensured that supply of port services matched the growing needs of manufacturers, exporters and importers. Port policy instruments were therefore supply-driven while demand for port services has been due to the private sector and general economic growth.

In this regard, the government's investment promotion and industrialisation policies played an equally important role in assisting the growth of not only Port Klang but also the other Malaysian ports. It can be seen that where investments and

economic growth have been slow the ports serving the area have also not grown. This was the case of Kuantan Port and ports in Sabah and Sarawak. Infrastructural development policies were also important. Throughout the 1980s and 1990s, infrastructural development was concentrated along the west coast of Peninsular Malaysia, converging in the Klang Valley. Port Klang therefore has practically all the multimodal connections needed by any major port. Road and rail infrastructures on the east coast of Peninsular Malaysia, Sabah and Sarawak were poorly developed. Links to their ports were therefore either poor or non-existent. This together with the general lack of economic activities explain why they have not grown as much as Port Klang. Most of the long-haul international shipments from these places have to go through Port Klang or Singapore Port. Going through Port Klang validated the load centre policy even though it was for commercial reasons.

An effect of the port privatisation policy was that private ports were free to invest in developing themselves into hub ports. However, investments tended to be so huge that no private port operators had on their own done so. Most would request for government financial support to undertake major investments of a strategic nature. So all ports ended up seeking help from the federal government for major expansion works. It was felt in the smaller ports that in order for them to become large-scale major ports they would have to be a transhipment hub, acknowledging the fact that local cargo alone could not support any major port expansion plan. To become a transhipment hub, ports would have to attract main lines, meaning large ocean-going vessels. To do that, ports would have to undertake expensive dredging which they could not afford. So all ports ended up seeking federal government assistance for major development plans, whether they were privatised, corporatised or controlled by state governments. So while there has been some uniformity in federal government assistance to all ports, major developments required special treatments not given to all ports. This was clearly the case for PTP.

The support for PTP to become a competitive transhipment hub underscored the use of case-specific policy instruments. PTP was regarded as a special case given its strategic purpose. In the 1990s, a levy was imposed on trucks crossing the Johor Causeway to deter cargo from going through Singapore Port. This was supposed to aid the load centre policy, but for PTP it worked against its transhipment objective, especially in capturing Singapore cargo. The levy was RM200 per truck entering Singapore and RM100 per truck returning from Singapore. This levy was waived for container trucks going to and from PTP to Singapore to enable PTP to lure Singapore cargo. The use of case-specific policy instruments was based on expediency. The subsidy on inter-terminal transfers by road and rail between

Northport and Westport was also deemed necessary given the distance between the two and the goal of promoting transhipment activities at both ports. Whenever necessary the government would craft policy instruments to help promote specific port activities.

As mentioned earlier, port promotion and marketing, assistance on capital dredging, and setting up of conductive administrative procedures were uniformly extended to all federal ports although to different degrees. The streamlining of bureaucratic procedures and systems improvements at ports were very powerful policy instruments that helped to quicken the movement of cargo, hence, the productivity of the port. These were within the power of the MOT to administer. Much delay have been due to administrative procedures rather than physical movements inside the port. The MOT together with respective port authorities has successfully gotten several ports to operate 24 hours a day. In order to do this, the Ministry has to get all relevant government agencies, such as customs, immigration, quarantine, health, etc., to work 24 hours a day. Another important change, beginning at Port Klang, was getting customs to conduct 5% checks instead of 95% (interview with MOT officials). The setting up of one-stop agencies, gathering all agencies in one place, to facilitate approvals of applications from customers has helped port customers, such as shipping lines, warehouse operators, importers and exporters, and custom brokers, expedite their business transactions. The MOT was also able to get ports to accept a shorter notice for ship arrival (Interview with MOT officials).

Beyond this set of MOT assistance to ports, the federal government could extend discretionary assistance depending on the status of the port. According to the MOT, administrative decisions on which port to be given greater support were based on the potential of the port, such as its geographical location, cargo hinterland, existing physical attributes and ability to attract lines (interview with MOT officials). Even here, there were exceptions to the rule. PTP was developed as a green field port. There were few noticeable attributes to judge the potential of this port, yet it received substantial government support. Government assistance to ports was anything but uniform and across-the-board. There were also questionable government involvements in port-related activities which were either unproductive or disastrous. The construction of inland ports at Segamat and Ipoh has not helped ports. Likewise, the Port Klang Free Zone (PKFZ) project was a waste of public resources.

5. Port Concentration or Dispersion Policy?

The above analysis of Malaysian port policies and port development can help answer the question of whether Malaysian port policy has been one of port concentration or dispersion. Ports are fairly well dispersed across the Malaysian coastline. The major ports on the western seaboard of Peninsular Malaysia are Penang Port and Port Klang. On the eastern seaboard are Kuantan Port and Kemaman Port. In the south are Johor Port and PTP. In East Malaysia, the major ports on the Sabah coastline are Tawau Port, Sandakan Port and Kota Kinabalu Port. In Sarawak, the major ports are Kuching Port, Bintulu Port, Miri Port and Sibu Port. These ports serve their respective hinterland. Penang Port is primarily a feeder port to Port Klang and Singapore Port with some mother vessels calling directly.

The size of the ports reflects the extent of economic development in their hinterland. As export-led industrialisation and general economic development have been concentrated in the western part of Peninsular Malaysia, mainly in the Kuala Lumpur and the states of Selangor, Penang and Johor, Port Klang, Penang Port and Johor Port became the larger ports. Kuantan Port and Kemaman Port serve the oil and gas and petrochemical industries nearby. However, with the development of good road infrastructures connecting the eastern part of Peninsular Malaysia to the west, especially Port Klang, cargo from the east could be trucked to Port Klang. Kuantan Port has hardly grown as a result.

Ports are important in Sabah and Sarawak because the road infrastructures are poorly developed. Shipping in some cases is the only viable mode of cargo transport. However, ports in these two states remained small, except for the oil and gas portion of Bintulu Port. The area surrounding Bintulu Port is a major natural gas producing area. All in all, there are ports dispersed fairly evenly across the coastline. The ports are however of different sizes, with Port Klang and PTP far surpassing the other ports in terms of cargo throughput.

As explained earlier, the growth of Port Klang is derived from the economic growth in its surrounding hinterland. As a result, the government has given more attention to Port Klang than the other ports. PTP is the only anomaly. It was created by policy to be a transhipment hub for the region. So for Port Klang and PTP, one sees a port concentration policy. A host of supporting policy instruments ranging from federal government financing and infrastructural development to regulatory

policies, such as the relaxation of cabotage and levies, were used to assist the development of these two ports into major hub ports.

To sum up, one can say that Malaysian port policies have been concentrated on developing Port Klang and PTP into major hub ports. Port Klang is designated the national load centre and by this the government has hoped Malaysian cargo would go through Port Klang instead of Singapore Port. The load centre policy however is mostly indicative as shippers and shipping lines are not forced to use Port Klang. The privatisation of Port Klang into two port terminals, Northport and Westport, led to intense competition between the two. The competition in turn pushed both to be aggressive at marketing and invest heavily on facilities to attract customers. So the policy of port privatisation with competition also played a role in lifting Port Klang into a major international port.

For PTP, the competition with Singapore Port and also with Northport and Westport forces it to be equally aggressive in getting customers. While the government heavily supported both PTP and Port Klang it maintained a policy of letting them compete. Following the example of PTP and Port Klang, many of the other ports, such as Bintulu Port, Kota Kinabalu, Penang Port and Kuantan Port also harboured thoughts of becoming transhipment hub ports. However, the federal government has so far not made any overtures to support them to the level of Port Klang and PTP. There is a plan by Sabah to make Kota Kinabalu Port the load centre for East Malaysia but concrete support from the federal government is still wanting. Until another port receives the same kind of treatment that has been granted to Port Klang and PTP, the Malaysian government will continue to focus its resource more towards these two hub ports than the other ports. Expansion and upgrading works in the smaller ports are mostly undertaken to help them accommodate anticipated cargo growth in their hinterlands than to turn them into regional hubs of international standing (Lee and Kim, 2009). The case of Malaysia may give some suggestions to some countries which have the similar situation in port policy.

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The Legal Basis of the Advisory Function of the International Tribunal for the Law of the Sea as A Full Court: An Unresolved Issue

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ABSTRACT

Under the present provisions of the LOS Convention and the ITLOS Statute, there is no legal basis for the advisory function of the ITLOS as a full court. And the subsequent practice and implied powers doctrine can not provide legal basis for the ITLOS in this respect either. The ITLOS may acquire the advisory function through the amendment of its Statute by the states parties to the LOS Convention. Furthermore, the advisory jurisdiction provided for in article 138 of the ITLOS Rules is not appropriate, for it can be used by states to request opinions as regards the controversy or even disputes between them.

Keywords: advisory jurisdiction, ITLOS, Convention on the Law of the Sea

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1. Introduction

The 1982 United Nations Convention on the Law of the Sea (LOS Convention) and the Statute of the International Tribunal for the Law of the Sea (ITLOS Statute)[1] do not provide advisory function for the International Tribunal for the Law of the Sea (ITLOS) as a full court. And "[t]here is no authority for states parties to the LOS Convention or any institution created by the LOS Convention to request from the ITLOS an advisory opinion on a legal matter" either.[2] In the two instances where the LOS Convention mentions the advisory opinions, the competent organ to give an advisory opinion is the Seabed Disputes Chamber of the ITLOS (Chamber), and the entitled entities to request an advisory opinion from the Chamber are the Assembly and/or the Council of the Authority of the "Area".[3] On the other hand, article 138(1) of the ITLOS Rules provides that "[t]he Tribunal may give an advisory opinion on a legal question if an international agreement related to the purposes of the Convention specifically provides for the submission to the Tribunal of a request for such an opinion."[4] And the ITLOS shall apply *mutatis mutandis* the rules that the Chamber shall apply in the exercise of its functions relating to advisory opinions.[5] So, in the view of the ITLOS, it also has advisory jurisdiction as a full court.

However, it is clear that the ITLOS Rules *per se* can not constitute the legal basis for the advisory function of the ITLOS. As a judicial body "established in accordance with Annex VI" of the LOS Convention,[6] the ITLOS "shall function in

1 Opened for signature on 10 December 1982 and entered into force on 16 November 1994, in The Law of the Sea: United Nations Convention on the Law of the Sea with Index and Final Act of the Third United Nations Conference on the Law of the Sea (United Nations 1983).

2 Ki-Jun You, Advisory Opinions of the International Tribunal for the Law of the Sea: Article 138 of the Rules of the Tribunal, Revisited, 39 Ocean Development and International Law (2008), 360.

3 Article 191 of the LOS Convention provides that "The Seabed Disputes Chamber shall give advisory opinions at the request of the Assembly or the Council on legal questions arising within the scope of their activities. Such opinions shall be given as a matter of urgency." Article 159(10) provides that "Upon a written request addressed to the President and sponsored by at least one fourth of the members of the Authority for an advisory opinion on the conformity with this Convention of a proposal before the Assembly on any matter, the Assembly shall request the Seabed Disputes Chamber of the International Tribunal for the Law of the Sea to give an advisory opinion thereon and shall defer voting on that proposal pending receipt of the advisory opinion by the Chamber. If the advisory opinion is not received before the final week of the session in which it is requested, the Assembly shall decide when it will meet to vote upon the deferred proposal."

4 The Rules of the International Tribunal for the Law of the Sea, adopted on 28 October 1997 and amended on 15 March and 21 September 2001 and on 17 March 2009 (www.itlos.org/index.php?id=12 (last visited on 15 December 2011)).

5 ITLOS Rules, art. 138 (3). That is, articles 130 to 137 of the ITLOS Rules and "the provisions of the Statute and of these Rules applicable in contentious cases" "to the extent to which it recognizes them to be applicable". Ibid., art. 130(1).

6 LOS Convention, art. 287 (1)(a).

accordance with the provisions of this Convention and this Statute".[7] Thus, the answer to the question what function the ITLOS possesses shall depend on the provisions of the LOS Convention and the ITLOS Statute. The ITLOS Rules are framed by the ITLOS itself "for carrying out its functions" assigned by the LOS Convention and the ITLOS Statute, and in particular, contain "rules of procedure".[8] Although the ITLOS Rules may constitute "the principal source" as regards the interpretation of its Statute,[9] it shall not depart from the provisions of the LOS Convention and the ITLOS Statute. Therefore, where the LOS Convention and the ITLOS Statute do not confer the advisory function upon the ITLOS, the ITLOS Rules cannot validly create such a function for the ITLOS either. Otherwise an international judicial body would have a power to assign itself whatever function it prefers by means of its Rules, and any international tribunal may be tempted to try to extend its jurisdiction as far as possible.[10] For the International Court of Justice (ICJ), article 96 of the UN Charter and articles 65-68 of the ICJ Statute expressly provide the advisory function for the ICJ.[11] For the Permanent Court of International Justice (PCIJ), before the amendment of 1929, its Statute did not expressly provide for giving advisory opinions,[12] but its Rules contained four articles on advisory opinions.[13] Thus, the situation is somewhat similar to the present ITLOS. However, article 14 of the Covenant of the League of Nations,[14] upon which the PCIJ was established,[15] expressly provides that "[t]he Court may also give an advisory opinion upon any dispute or question referred to it by the Council or by the Assembly". This provision, referred to by article 1 of the Statute of the PCIJ, was considered to grant the PCIJ the authority to give an advisory opinion.

Besides, articles 280 and 288(4) of the LOS Convention do not resolve the issue either. Article 280 provides that "[n]othing in this Part impairs the right of any States Parties to agree at any time to settle a dispute between them concerning the interpretation or application of this Convention by any peaceful means of their own choice." In the view

7 ITLOS Statute, art. 1.

8 Ibid., art. 16.

9 See Shabtai Rosenne, The Law and Practice of the International Court, 1920−1996 (Martinus Nijhoff 1997), 86.

10 Ki-Jun You, above n. 2, 368.

11 Both the UN Charter and the Statute of the ICJ are available at www.icj-cij.org/documents/index.php?p1=4 (last visited on 15 December 2011).

12 See the Statute of the PCIJ, adopted on 16 December 1920, PCIJ Series D, No. 1. After the amendment of 1929, articles 65-68 contain the provisions about the advisory opinions.

13 See the Rules of the PCIJ, adopted on 24 March 1922, PCIJ Series D, No. 1, arts. 71-74.

14 Adopted on 28 June 1919 and entered in force on 10 January 1920 (http://avalon.law.yale.edu/20th_century/leagcov.asp (last visited on 1 December 2011)).

15 Article 14 of the Covenant of the League of Nations provides that "The Council shall formulate and submit to the Members of the League for adoption plans for the establishment of a Permanent Court of International Justice." And article 1 of the Statute of the PCIJ provides that "A Permanent Court of International Justice is hereby established, in accordance with Article 14 of the Covenant of the League of Nations."

of some scholars, "Therefore, there is no reason to deny to the states parties to the LOS Convention the right to conclude an agreement that 'specifically provides for the submission to the Tribunal of a request for such an opinion' as set out in Article 138 of the ITLOS Rules";[16] and "[t]aking on the agreement path as a basis for conferring advisory jurisdiction to the Tribunal is a more effective route than seeking a legal basis that does not exist in the Convention or the Statute."[17] But the key issue here is not the freedom or rights of the disputant states to choose any peaceful means of their own to "settle a dispute between them", but the powers or functions of an international tribunal. When considering the jurisdiction issue of an international tribunal, we need to examine two aspects: whether the tribunal possesses such a function, and who has the capacity to bring the matter before the tribunal. For example, according to article 292 of the LOS Convention, the application for prompt release of detained vessel or its crew may be submitted to the ICJ, if the parties agreed on it or the detaining state has chosen the ICJ under article 287.[18] However, it is obvious that the ICJ has no competence to deal with such an application because its Statute does not assign this function to the Court.

As regards article 288(4) of the LOS Convention, it provides that "[i]n the event of a dispute as to whether a court or tribunal has jurisdiction, the matter shall be settled by decision of that court or tribunal." This provision reflects a general principle in international adjudication,[19] but it can not be used to argue that the controversy over the legal basis of the advisory function of the ITLOS has been resolved.[20] The principle in article 288(4) is subject to a more fundamental principle in this area, that is, states are free to settle the disputes to which they are parties "by any peaceful means of their own choice"[21] and therefore have options of whether to accept the jurisdiction of an international tribunal.[22] In this context, the PCIJ has

16 Ki-Jun You, above n. 2, 363-364.

17 Tafsir Malick Ndiaye, The Advisory Function of the International Tribunal for the Law of the Sea, 9 Chinese Journal of International Law (2010), 581-582.

18 Article 292 provides that "Where the authorities of a State Party have detained a vessel flying the flag of another State Party and it is alleged that the detaining State has not complied with the provisions of this Convention for the prompt release of the vessel or its crew upon the posting of a reasonable bond or other financial security, the question of release from detention may be submitted to any court or tribunal agreed upon by the parties or, failing such agreement within 10 days from the time of detention, to a court or tribunal accepted by the detaining State under article 287 or to the International Tribunal for the Law of the Sea, unless the parties otherwise agree."

19 See also the Statute of the ICJ, art. 36(6).

20 According to Beckman, "If a body were to request an advisory opinion pursuant to article 138 (1), it would be difficult for any State to challenge the authority of the Tribunal to give an Advisory Opinion. In any case, even if such a challenge could be made, article 288(4) of UNCLOS provides in the event of a dispute as to whether a court or tribunal has jurisdiction, the matter shall be settled by decision of that court or tribunal. Therefore, it would be up to the Tribunal itself to determine whether it has the authority it has vested in itself under its Rules." Robert Beckman, China, UNCLOS and the South China Sea, paper submitted for the Third Biennial Conference of the Asian Society of International Law, Beijing, 27-28 August 2011, 25-26.

21 See LOS Convention, art. 280.

declared that "as a general rule, any body *possessing jurisdictional powers* has the right in the first place itself to determine the extent of its jurisdiction".[23] Here, the PCIJ mentioned two kinds of power or right: "jurisdictional powers" and "the right […] to determine the extent of its jurisdiction". In the view of the PCIJ, once a tribunal possesses the "jurisdictional powers", it will have "the right […] to determine the extent of its jurisdiction". Meanwhile, in order to have "the right […] to determine the extent of its jurisdiction", the tribunal should possess the "jurisdictional powers" in the first place. It is under these conditions that the LOS Convention empowers the tribunal and court under article 287 to make decisions on the matter of their jurisdiction.[24] So, if states parties have opted to accept the jurisdiction of the ITLOS, article 288(4) will apply in the event of a dispute as to whether the ITLOS has jurisdiction in a particular case. However, where the disputant states have not accepted the jurisdiction of the ITLOS, article 288(4) can not be used to establish its jurisdiction in a given case. As far as the advisory jurisdiction of the ITLOS is concerned, the core issue is whether the tribunal possesses the "jurisdictional powers" to give advisory opinions in general, not "the right […] to determine the extent of its jurisdiction" in a given case. Since the LOS Convention and the ITLOS Statute do not provide the advisory function for the ITLOS in their text, it is difficult to argue that as long as a state joins the LOS Convention, it should be considered to have accepted the advisory jurisdiction of the ITLOS. Thus, unless the legal basis of the advisory function of the ITLOS as a full court has been found, article 288(4) will not be applicable with respect to the challenge concerning the authority of the ITLOS to give an advisory opinion.

So, the legal basis of the advisory function of the ITLOS as a full court remains an unresolved issue. This issue involves at least two aspects. First, in view of the absence of the provision regarding the advisory jurisdiction with respect to the ITLOS *per se* in the LOS Convention and the ITLOS Statute, what is the legal ground to say that the ITLOS has advisory jurisdiction as a full court? Second, even if the ITLOS has some kind of advisory function, why should the ITLOS have such an advisory jurisdiction as provided for in article 138 of its Rules?

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22 Ibid., art. 287(1).

23 Interpretation of the Greco-Turkish Agreement of December 1st, 1926 (Final Protocol, article IV), Advisory Opinions of 28 August 1928, PCIJ Series B, No. 16, 20 (emphasis added).

24 As for the ICJ, see Sugihara Takane, Kokusai Shiho Saiban Seido (in Japanese)(Yuhikaku Publishing Co. 1996), translated into Chinese by Wang Zhi'an & Yi Ping, International Judicial System (China University of Political Science and Law Press 2006), 224.

2. The Alleged Basis for the Advisory Function of the ITLOS

Until now, article 288(2) of the LOS Convention and article 21 of the ITLOS Statute have been alleged to provide the basis for the advisory function of the ITLOS as a full court.[25] Indeed, the expression of "an international agreement related to the purposes of the Convention" in article 138(1) of the ITLOS Rules repeats article 288(2) of the LOS Convention, while the term of "specifically provides for" apparently comes from the latter part of article 21 of the ITLOS Statute. Besides, the subsequent practice doctrine has also been resorted to, for it is said that there is a positive reaction to the ITLOS exercising the advisory function.

2.1 Article 288 (2) of the LOS Convention

Article 288, paragraph 2 of the LOS Convention provides that "[a] court or tribunal referred to in article 287 shall also have jurisdiction over any dispute concerning the interpretation or application of an international agreement related to the purposes of this Convention, which is submitted to it in accordance with the agreement." In light of the context of this paragraph, article 288(2) seems the legal basis only for the ITLOS's consensual jurisdiction instead of the advisory jurisdiction. According to Ki-Jun You, if article 288(2) extends to an advisory jurisdiction, it would be difficult to address the following two questions:

> "First, Article 288(2) of the LOS Convention provides that not only the ITLOS, but also the International Court of Justice (ICJ) or an arbitral tribunal as provided for in Article 287 of the Convention, may have jurisdiction. Accordingly, the question arises as to why it should be assumed that Article 288(2) grants only the ITLOS advisory jurisdiction and not also the International Court. Second, Article 288(2) is in the section called 'Compulsory Procedures Entailing Binding Decisions'. Article 296 provides for the finality and binding force of '[a]ny decision rendered by a court or tribunal having jurisdiction under this section.' In view of this provision, it seems that Article 288(2) cannot serve as the legal basis for an advisory jurisdiction since it is fundamental to advisory opinions that they are not legally binding."[26]

25 See for example, P. Chandrasekhara Rao & Ph. Gautier (eds.), The Rules of the International Tribunal for the Law of the Sea: A Commentary (Martinus Nijhoff Publishers 2006), 393-394.

26 Ki-Jun You, above n. 2, 361-362. See also Tafsir Malick Ndiaye, above n. 17, 581.

2.2 Article 21 of the ITLOS Statute

Compared with article 288(2), the interpretation of article 21 of the ITLOS Statute is subject to more serious debate.[27] This article provides that "[t]he jurisdiction of the Tribunal comprises all disputes and all applications submitted to it in accordance with this Convention and all matters specifically provided for in any other agreement which confers jurisdiction on the Tribunal." Accordingly, the jurisdiction of the ITLOS consists of two kinds: 1) disputes and applications submitted to it "in accordance with this Convention", including article 288(1) and (2); and 2) "matters specifically provided for in any other agreement which confers jurisdiction on the Tribunal". Thus, article 21 of the ITLOS Statute endows a broader jurisdiction to the ITLOS than the provision of article 288 of the LOS Convention. Particularly, the second kind of jurisdiction of the ITLOS refers to "matters", a word with broader meaning than "disputes".[28] So it has been argued that the latter part of article 21 "is broad enough to provide a legal basis for the Tribunal's jurisdiction to entertain advisory opinions conferred upon it by international agreements. Article 138 of the Rules seems to be a legitimate interpretation of article 21 of the Statute".[29]

However, article 21 cannot provide a legal basis on which the ITLOS may render advisory opinions either. According to the 1969 Vienna Convention on the Law of Treaties (VCLT), "A treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose."[30] Besides, one may resort to "the preparatory work of the treaty and the circumstances of its conclusion", as supplementary means of interpretation.[31] First, the text of article 21 does not provide that the ITLOS has an advisory function. Some scholars try to argue that while not explicitly providing for an advisory jurisdiction of the ITLOS as a full court, there is nothing in its Statute to exclude such jurisdiction, therefore "it is possible for an organ with a judicial role such as the Tribunal to render an opinion on a point of law."[32] But it is

27 For example, Judge Vukas of the ITLOS said that article 21 of the ITLOS Statute is the "only" possibility for seeking an advisory opinion from the ITLOS. Budislav Vukas, The Law of the Sea-Selected Writings (Martinus Nijhoff Publishers 2004), 309.

28 John E. Noyes, Judicial and Arbitral Proceedings and the Outer Limits of the Continental Shelf, 42 Vanderbilt Journal of Transnational Law (2009), 1259.

29 P. Chandrasekhara Rao & Ph. Gautier, above n. 25, 394. Budislav Vukas, The International Tribunal for the Law of the Sea: Some Features of the New International Judicial Institution, in P. Chandrasekhara Rao & Rahmatullah Khan (eds.), The International Tribunal for the Law of the Sea: Law and Practice (Kluwer Law International 2001), 67.

30 Vienna Convention on the Law of Treaties, 23 May 1969, in 1155 UNTS 331, art. 31(1).

31 Ibid., art. 32.

32 Tafsir Malick Ndiaye, above n. 17, 581. See also P. Chandrasekhara Rao & Ph. Gautier, above n. 25, 393; Budislav Vukas, above n. 27, 309.

obvious that the function of the ITLOS shall depend upon the positive empowerment of its Statute instead of the negative non-exclusion. Otherwise, the function of the ITLOS will become limitless. Furthermore, the key issue here is not whether the ITLOS possess the capacity to render an advisory opinion although it of course has such a capacity, but whether the ITLOS has been invested with such a function by the states which created it. Indeed, as some experts pointed out, there are many similarities between article 21 of the ITLOS Statute and article 36(1) of the Statute of the ICJ, which provides that "[t]he jurisdiction of the Court comprises all cases which the parties refer to it and all matters specially provided for in the Charter of the United Nations or in treaties and conventions in force", but "Article 36(1) of the ICJ Statute has not been interpreted as endowing the International Court with the jurisdiction to render advisory opinions other than those explicitly provided for in Article 65(1) of the Statute".[33] Second, as regards the "context" of article 21, while article 40(2) of the ITLOS Statute provides that "[i]n the exercise of its functions relating to advisory opinions, the Chamber shall be guided by the provisions of this Annex relating to procedure before the Tribunal to the extent to which it recognizes them to be applicable", there is no similar provision in respect of the exercise of advisory functions by the ITLOS. As is known to all, in order to maintain its judicial character in advisory proceedings, international tribunal will apply the rules in contentious cases to the extent that it recognizes them to be applicable. And the statute of international tribunal will make a specific provision for that purpose, such as article 68 of the Statute of the ICJ[34] and article 40(2) of the ITLOS Statute as regards the Chamber.[35] So the absence of such a provision in the ITLOS Statute with respect to the ITLOS as a full court indicates that the ITLOS is not expected to exercise any advisory function at all. Third, as far as the *travaux preparatoires* are concerned, the question of endowing the ITLOS to be established with advisory jurisdiction was already raised during the early stages of the Third United Nations Conference on the Law of the Sea (Third Conference). In the working paper on the settlement of law of the sea disputes submitted by the United States et al in 1974, article 9 provides that "[i]f a court of a Contracting Party has been authorized by the domestic law of that Party to request the Law of the Sea Tribunal to give an advisory opinion [a ruling] on any question relating to the interpretation or application of this Convention, the Law of the Sea Tribunal may [shall] give such an opinion [ruling]".[36] And the representative of Germany in 1976 also mentioned that an

33 Ki-Jun You, above n. 2, 362.

34 Article 68 of the ICJ Statute provides that "In the exercise of its advisory functions the Court shall further be guided by the provisions of the present Statute which apply in contentious cases to the extent to which it recognizes them to be applicable."

35 See also ITLOS Rules, art. 130(1).

36 The working paper on the settlement of law of the sea disputes, 27 August 1974, Third United Nations

arbitral tribunal would be empowered to request an advisory opinion of the law of the sea tribunal where questions of general international law or general interpretation of the law of the sea convention might have to be decided on, in order to maintain the desirable continuity of jurisprudence in law of the sea matters.[37] However, since the Informal Single Negotiating Text (ISNT) of 1975, the Chamber has been determined as the body eligible to render advisory opinions, and the Authority has been determined as the organ eligible to request advisory opinions.[38] Thus, the ITLOS as a full court has never been assigned with the function to render advisory opinions, though some states on the Third Conference expressed clear suggestions in this regard. It means that the absence of the provisions concerning the advisory function of the ITLOS in both the LOS Convention and its Statute was due to the intention of the states on the Third Conference instead of their negligence.

Since there was little discussion on the question of advisory opinions on the Third Conference,[39] it is difficult to figure out the considerations behind the choice of states. However, according to some scholars, empowerment of advisory function to the Chamber seems to be due to the close relationship between it and the Authority. Indeed, the Chamber had been designed to be one of the principal organs of the Authority to be created.[40] Without actually being an organ of the Authority, the Chamber is nevertheless closely linked to it.[41] This explanation has also been accepted by the Chamber. It states that its "advisory jurisdiction is connected with the activities of the Assembly and the Council, the two principal organs of the Authority. The Authority is the international organization established by the Convention […]. In order to exercise its functions properly in accordance with the Convention, the Authority may require the assistance of an independent and impartial judicial body. This is the underlying reason for the advisory jurisdiction of the Chamber."[42] In this

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Conference on the Law of the Sea, 1973-82, volume III, Documents of the Conference, Second Session, A/CONF.62/L.7, 91. These states include Australia, Belgium, Bolivia, Colombia, El Salvador, Luxembourg, Netherlands, Singapore and the US.

37 Third United Nations Conference on the Law of the Sea, 1973-82, volume V, Summary Records of the Plenary, Fourth Session: 58th meeting, A/CONF.62/SR. 58, 5 April 1976, 12. See also the statements of the representative of Venezuela of 7 April 1976, Third United Nations Conference on the Law of the Sea, 1973-82, volume V, Summary Records of the Plenary, Fourth Session: 62th meeting, A/CONF.62/SR. 62, 42.

38 See document A/CONF.62/WP.8, arts. 33 and 62.

39 See Report of the Chairman of the group of legal experts on the settlement of disputes relating to part XI of the informal composite negotiating text, 26 April and 23 May 1979, Third United Nations Conference on the Law of the Sea, 1973-82, volume XI, Documents of the Conference, Eighth Session, A/CONF.62/C.1/L.25 AND ADD.1, 110.

40 See L. Dolliver M. Nelson, The International Tribunal for the Law of the Sea: Some Issues, in P. Chandrasekhara Rao & Rahmatullah Khan, above n. 29, 51.

41 Tafsir Malick Ndiaye, above n. 17, 569.

42 Responsibilities and Obligations of States Sponsoring Persons and Entities with respect to Activities in the Area, Chamber, Advisory Opinion, 1 February 2011(www. itlos.org/start3_en.html(last visited on 1 March

context, it is worth noting that the advisory jurisdiction of the Chamber provided for in article 191 of the LOS Convention is somewhat special compared with the advisory jurisdiction of, for example, the ICJ. First, while article 65, paragraph 1, of the Statute of the ICJ states that the Court "may give" an advisory opinion,[43] the Chamber "shall give" advisory opinions at the request of the Assembly or the Council on legal questions arising within the scope of their activities. It seems that once the Chamber has established its jurisdiction, the rendering of an advisory opinion may be considered a duty.[44] So, contrary to the discretionary powers of the ICJ, the Chamber has no discretion to decline a request for an advisory opinion on grounds of non-admissibility.[45] Second, according to article 191, the Chamber shall give its opinions "as a matter of urgency", but there is no similar provision as regards the advisory jurisdiction of the ICJ. The reasons behind these provisions are the close connection between the Chamber and the activities of the Authority. By contrast, the ITLOS is neither an organ of an international organization like the ICJ nor has it been conceived like the Chamber as a legal advisor to such an organization as the Authority.

2.3 Subsequent practice

The VCLT provides that when interpreting a treaty, "any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation" shall be taken into account, together with the context.[46] Some scholars argue that the ITLOS has asserted its jurisdiction to render advisory opinions on a number of occasions, but there appears to have been little or no resistance by the international community to the assertion; furthermore, there were several positive

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2011)), para. 26.

43 See also article 1(1) of Protocol No. 2 to the European Convention for the Protection of Human Rights and Fundamental Freedoms, adopted on 6 May 1963 and entered into force on 21 Sep. 1970(www.unhcr.org/refworld/docid/3ae6b3b04.html (last visited on 1 August 2012)), which provides that "The Court may, at the request of the Committee of Ministers, give advisory opinions on legal questions concerning the interpretation of the Convention and the Protocols thereto." Article 47 of Protocol No. 11 to the European Convention for the Protection of Human Rights and Fundamental Freedoms, adopted on 11 May 1994 and entered into force on 1 Nov. 1998(www.unhcr.org/refworld/docid/3ae6b3b04.html (last visited on 1 August 2012)), provides that "The Court may, at the request of the Committee of Ministers, give advisory opinions on legal questions concerning the interpretation of the Convention and the protocols thereto."

44 See Satya N. Nadan et al. (vol. ed.), United Nations Convention on the Law of the Sea 1982: A Commentary, Vol. VI (Martinus Nijhoff Publishers 2002), 641.

45 See Responsibilities and Obligations of the Sponsor States, above n.42, para. 47. While noting the difference between the wording of article 191 of the LOS Convention and article 65 of the Statute of the ICJ, the Chamber did not consider it necessary to pronounce on the consequences of that difference with respect to admissibility in the case. Ibid., para. 48.

46 VCLT, art. 31(3)(b).

reactions and expressions of support from the states parties to the LOS Convention. In their view, "It can be argued that a positive view of the 'creeping' jurisdiction of the ITLOS is emerging, which can be seen as the 'subsequent practice' as provided for in Article 31(3) of the VCLT."[47]

However, according to the provision of article 31(3) of the VCLT, in order to be taken into account, the subsequent practice should satisfy two conditions: a) the practice occurs in the application of the treaty; b) the practice has established the agreement of the parties regarding the interpretation of the treaty. Until now, no request for advisory opinions has been submitted to the ITLOS as a full court, so states parties to the LOS Convention have no motives to express their views on this issue. It is doubtful whether the silence of the states parties by now could be construed as establishing some "agreement of the parties regarding the interpretation" of the LOS Convention, as required by article 31(3) of the VCLT.

2.4 Implied powers

Finally, the so-called implied powers doctrine still needs to be examined. According to this doctrine, "[u]nder international law the organization must be deemed to have those powers which, though not expressly provided in the charter, are conferred upon it by necessary implication as being essential to the performance of its duties."[48] The test of validity for such powers is that they are deemed necessary for fulfillment of the functions of the particular organization.[49] As far as an international judicial body is concerned, the ICJ has held that it

> "possesses an inherent jurisdiction enabling it to take such action as may be required, on the one hand to ensure that the exercise of its jurisdiction over the merits, if and when established, shall not be frustrated, and on the other, to provide for the orderly settlement of all matters in dispute, to ensure the observance of the 'inherent limitations on the exercise of the judicial function' of the Court, and to 'maintain its judicial character' […]. Such inherent jurisdiction […] derives from the mere existence of the Court as a judicial organ established by the consent of States, and is conferred upon it in order that its basic judicial functions may be safeguarded".[50]

47 See Ki-Jun You, above n. 2, 363.

48 Reparation for Injuries Suffered in the Service of the United Nations, Advisory Opinion, ICJ Reports 1949, 174, 182.

49 Malcolm N. Shaw, International Law, 5 edition (Cambridge University Press 2003), 1307.

50 Nuclear Tests (New Zealand v. France), Judgment, ICJ Reports 1974, 457, para. 23.

However, to argue that the ITLOS could derive an advisory function from the implied powers doctrine will go too far, for such an argument means that the advisory function is deemed necessary for the fulfillment of its functions. But it is not the case for the international judicial body in general or for the ITLOS in particular. For example, the International Criminal Court has not been considered to have any advisory jurisdiction.[51]

In conclusion, at present, there is no legal basis for the exercise of advisory function by the ITLOS as a full court. However, it is possible to amend the ITLOS Statute to contain such provisions that can assign the ITLOS with this function. According to article 41 of the ITLOS Statute, the amendments to the Statute may be adopted in accordance with article 313 of the LOS Convention[52] or by consensus at a conference convened in accordance with the LOS Convention,[53] and the ITLOS may propose such amendments as it may consider necessary to the states parties for their consideration. In this context, it is worth noting that the states parties postponed in 1995 the election of judges to the ITLOS, thus amending the provisions of article 4, paragraph 3, of the Statute.[54]

51 See Rome Statute of the International Criminal Court, adopted on 17 July 1998, as corrected by the procés-verbaux of 10 November 1998 and 12 July 1999, entered into force on 1 July 2002 (www.icc-cpi-.int/Menus/ICC/Legal+Texts+and+Tools/Official+Journal/Rome+Statute.htm (last visited on 1 December 2011)).

52 Article 313 "Amendment by simplified procedure" provides that "1. A State Party may, by written communication addressed to the Secretary-General of the United Nations, propose an amendment to this Convention, other than an amendment relating to activities in the Area, to be adopted by the simplified procedure set forth in this article without convening a conference. The Secretary-General shall circulate the communication to all States Parties. 2. If, within a period of 12 months from the date of the circulation of the communication, a State Party objects to the proposed amendment or to the proposal for its adoption by the simplified procedure, the amendment shall be considered rejected. The Secretary-General shall immediately notify all States Parties accordingly. 3. If, 12 months from the date of the circulation of the communication, no State Party has objected to the proposed amendment or to the proposal for its adoption by the simplified procedure, the proposed amendment shall be considered adopted. The Secretary-General shall notify all States Parties that the proposed amendment has been adopted."

53 Article 319, para. 2(e) of the LOS Convention provides that, in addition to being the depositary of the LOS Convention, the Secretary General of the United Nations shall "convene necessary meetings of States Parties in accordance with this Convention".

54 See SPLOS/4, Report of the second meeting (15-19 May 1995) (http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N95/222/69/PDF/N9522269.pdf?OpenElement (last visited on 1 December 2011)), para. 38. Article 4(3) of the ITLOS Statute provides that "The first election shall be held within six months of the date of entry into force of this Convention." See also SPLOS/201 of 26 June 2009, which decides the arrangement for the allocation of seats on the ITLOS (www.un.org/Depts/los/meeting_states_parties/nineteenthmeetingstatesparties.htm (last visited on 1 December 2011)).

3. The Advisory Jurisdiction in Article 138 of the ITLOS Rules

The second aspect as regards the advisory function of the ITLOS is what the legal basis for the provisions of article 138 of the ITLOS Rules is. In other words, even if the ITLOS as a full court may come to have some kind of advisory function through the amendment of the ITLOS Statute, why should the ITLOS possess such an advisory jurisdiction as provided for in article 138?

3.1 Interpretation of article 138

According to article 138(1) of the ITLOS Rules, the advisory jurisdiction of the ITLOS depends on "an international agreement", which has to satisfy two conditions: "relate[s] to the purposes of the Convention" and "specifically provides for the submission to the Tribunal of a request for [advisory] opinion". Within the context of the LOS Convention, the term "international agreement" means treaty in international law. But the exact meaning of the term in article 138 of the ITLOS Rules may be up to the determination of the legal basis for the advisory function of the ITLOS in the first place. If the term "international agreement" is considered as repeating the counterpart of article 288(2) of the LOS Convention- in fact, the expression of "an international agreement related to the purposes of the Convention" in article 138 comes from the provision of article 288(2), then the following consequences will be produced. First, the term "an international agreement" means "a treaty within the meaning of" the VCLT,[55] that is, the agreement between states, "because Article 288 had to be phrased restrictively to accommodate the more limited jurisdiction of the International Court of Justice, for only states may be parties in contentious cases before the Court."[56] Second, the provision of article 288(2), especially "the interpretation or application of an international agreement related to the purposes of this Convention" indicates that the international agreements in question should be "substantive agreements related to the law of the sea",[57] and therefore do not include the special agreements whereby the parties simply agreed to ask for advisory opinions. Third, in such a case, the "legal question" on which the ITLOS could render advisory opinions according to article 138 should concern the interpretation or application of the international agreement upon which the states request advisory opinions.[58] Forth, it also follows that states cannot request advisory opinions

55 Tafsir Malick Ndiaye, above n. 17, 585.
56 John E. Noyes, above n. 28, 1260, note 241.
57 Ibid., 1260.
58 See also Ki-Jun You, above n. 2, 368.

concerning the application or interpretation of the LOS Convention, for the "international agreement" here does not include the LOS Convention because article 138 (1) mentions them side by side, and the LOS Convention itself does not "specifically [provide] for the submission to the Tribunal of a request for such an opinion". However, if article 21 of the ITLOS Statute is argued as the basis of the advisory function of the ITLOS, then the above restrictions would no longer exist. First, the term "international agreement" may encompass interstate agreements as well as agreements between states and international organizations,[59] because article 21 uses the term "any other agreements," a term that could even encompass private party agreements or mixed, state-private party agreements.[60] Second, while it can be agued that the special agreement could be said to be related to the LOS Convention, but it may be hard to say that it is related to "the purposes of the Convention". However, it remain possible to interpret the term "related to the purposes of the Convention" in such a way as to include the special agreement into the scope of the international agreement in the sense of article 138. Third, the scope of the "legal question" on which the ITLOS could render advisory opinions will therefore depend on the specific provisions of the international agreement in question. However, taking the specialized character of the ITLOS into account, the relevant legal question should relate to the law of the sea.[61]

Pursuant to article 138(2) of the ITLOS Rules, the request for an advisory opinion "shall be transmitted to the Tribunal by whatever body is authorized by or in accordance with the agreement to make the request to the Tribunal". First of all, there is no qualification concerning the nature of the "body" in article 138(2), so it seems groundless to argue that the term "body" should be interpreted to mean an international organization or an organ of an international organization.[62] The situation is therefore different from that of the ICJ. As regards the ICJ, article 65(1) of the Statute of the ICJ provides that the Court may give an advisory opinion on any legal question at the request of "whatever body may be authorized by or in accordance with the Charter of the United Nations to make such a request". The "body" in article 65(1) means an international organization because according to article 96 of the UN Charter, only organs of the UN and specialized agencies authorized by the

59 P. Chandrasekhara Rao & Ph. Gautier, above n. 25, 394.

60 John E. Noyes, above n. 28, 1259-1260. However, in order to authorize private party to request advisory opinions from the ITLOS, the ITLOS would have to revise article 138 to allow advisory opinion requests pursuant to "agreements" rather than "international agreements." Ibid., 1260.

61 According to article 2 of the ITLOS Statute, the judges of the ITLOS shall be "of recognized competence in the field of the law of the sea".

62 For the opposite view, see Tullio Treves, Advisory Opinions under the Law of the Sea Convention, in Myron H. Nordquist & John Norton Moore (eds.), Current Marine Environmental Issues and the International Tribunal for the Law of the Sea (Martinus Nijhoff Publishers 2001), 92.

General Assembly may request advisory opinions. So, article 65(1) of the Statute of the ICJ cannot be used to argue that the term "body" should always mean an organization or an entity other than a state. Indeed, the scope of the "body" in article 138 is determined by the provisions of the international agreement in paragraph 1, and "whatever body is authorized by or in accordance with" the international agreement is entitled to transmit the request to the ITLOS. Thus, "it appears that any organ, entity, institution, organization or State that is indicated in such an international agreement as being empowered to request, on behalf of the parties concerned, an advisory opinion of the Tribunal, in accordance with the terms of the agreement, would be a 'body' within the meaning of article 138, paragraph 2, of the Rules".[63] Second, even if the word "body" does not include states, this condition can hardly constitute a threshold which blocks states from requesting options as long as the states concerned have the political will to do so. Therefore, for those scholars who argue that the body must be an organ of an international organization, they also admit that "[t]his does not mean that States will never be able to institute advisory proceedings before the Tribunal, but that they will have to find and use the appropriate procedure".[64]

Thus, under the current mechanism laid down by article 138 of the ITLOS Rules, it is possible for states to request advisory opinions on legal questions from the ITLOS on the basis of an international agreement, though the scope of the legal questions may vary according to the meaning of the "international agreement". In the view of Shunji Yanai, the President of the ITLOS, the "advisory proceedings before the Tribunal may prove an attractive alternative for States seeking an opinion on a disputed point of law."[65]

3.2 The question of states' requesting advisory opinions

Considering the international judicial practice, the advisory jurisdiction prescribed by article 138 for the ITLOS as a full tribunal is "unusual"[66] or an "innovation".[67] Generally speaking, there are mainly two kinds of advisory jurisdiction in international judicial procedures. The typical one is represented by the PCIJ and the ICJ, which is open to international organizations only[68] and "depends on requests

63 P. Chandrasekhara Rao & Ph. Gautier, above n. 25, 394

64 Tafsir Malick Ndiaye, above n. 17, 584.

65 Judge Shunji Yanai addressed the General Assembly of the United Nations on the occasion of its annual consideration of the agenda item "Oceans and the Law of the Sea" on 6 December 2011 (www.itlos.org/index.php?id=2&L=0 (last visited on 15 December 2011)), para. 9.

66 John E. Noyes, above n. 28, 1259.

67 Rosenne S., International Tribunal for the Law of the Sea: 1996-97 Survey, 13 International Journal of Marine and Coastal Law (1998), 507.

from an international organization".[69] The other one is open to individual member states or the municipal courts of member states of an international organization, with the view to maintain the integrity of the relevant legal system. For example, the 1969 American Convention on Human Rights provides that, at the request of a member state of the Organization of American States, the Inter-American Court on Human Rights "may provide that state with opinions regarding the compatibility of any of its domestic laws with the aforesaid international instruments."[70] And according to the Treaty Establishing the European Economic Community, where the court of one of the member states is confronted with the question concerning the interpretation of the Treaty, it may request the European Court of Justice to give a preliminary ruling thereon.[71] When the US and the other states suggested on the Third Conference that the ITLOS should be endowed with the advisory function, what they proposed was the second kind of advisory jurisdiction. Clearly what article 138 of the ITLOS Rules created for the ITLOS as a full court is an advisory jurisdiction different from both of the advisory jurisdiction mentioned above.

Notably, the question whether states should be permitted to request advisory opinions from the international courts has always been a controversial issue. During the discussion prior to the establishment of the PCIJ, Argentina proposed that states should be entitled to request advisory opinions from the court, but this proposal was refused.[72] Consequently, although article 14 of the Covenant of the League of Nations permitted the PCIJ to render advisory opinions upon "question" as well as "dispute", according to the PCIJ, its competence to *arbitrage consultatif* should be based on two conditions. First, the request for such opinions must be referred to it "by the Council or by the Assembly" of the League of Nations,[73] whose decision on this

68 Tafsir Malick Ndiaye, above n. 17, 565.

69 John E. Noyes, above n. 28, 1259.

70 American Convention on Human Rights, adopted on 22 November 1969 and entered into force on 18 July 1978, 1144 UNTS 123, article 64 (2). See also Article 4(1) of Protocol to the African Charter on Human and Peoples' Rights on the Establishment of an African Court on Human and Peoples' rights, adopted on 10 June 1998 and entered into force on 25 January 2004 (www.au.int/en/treaties (last visited on 1 December 2011)), provides that "At the request of a Member State of the OAU, the OAU, any of its organs, or any African organization recognized by the OAU, the Court may provide an opinion on any legal matter relating to the Charter or any other relevant human rights instruments, provided that the subject matter of the opinion is not related to a matter being examined by the Commission."

71 Treaty Establishing the European Economic Community, signed on 25 March 1957 and entered into force on 1 January 1958, 298 UNTS 11, art. 177. Besides the interpretation of the Treaty, the questions that the European Court shall have jurisdiction to give rulings include: the validity and interpretation of measures taken by the institutions of the Community; and the interpretation of the statutes of bodies set up by a formal measure of the Council, where those statutes so provide. Ibid.

72 League of Nations, Records of the First Assembly, Meetings of the Committee, I, 401, cited in Sugihara Takane, above n. 24, 329.

73 Article 14 of the Covenant of the League of Nations, article 65 of the Statute of the PCIJ, and article 72 of the Rules of the PCIJ.

matter "shall require the agreement of all the Members of the League represented at the meeting".[74] Second, where the questions for an advisory opinion are related to matters which form the subject of a pending actual dispute between states, the court shall not render any advisory opinion without the consent of the interested states. In other words, the consent of the interested states was taken as one prerequisite for giving advisory opinions by the PCIJ. This is the so-called Eastern Carelia Principle. For under these circumstances, "Answering the question would be substantially equivalent to deciding the dispute between the parties. The Court, being a Court of Justice, cannot, even in giving advisory opinions, depart from the essential rules guiding their activity as a Court."[75] During the discussion concerning the advisory jurisdiction of the ICJ in 1943, the informal Inter-Allied Committee suggested that states should be permitted to request advisory opinions under certain conditions.[76] But this proposal was not accepted once again. According to the UN Charter, the object of the advisory opinion is restricted to the "legal question" submitted by qualified organs of the UN and specialized agencies,[77] and the "legal disputes should as a general rule be referred by the parties to the International Court of Justice".[78] In the recent years, during the talks about broadening the advisory jurisdiction of the ICJ, a similar proposal was put forward again.[79] However, the proposal still has not been welcomed by states. By contrast, some opposite practices arose. For example, according to the 1998 Protocol to the African Charter on Human and Peoples' Rights, the African Court on Human and Peoples' Rights may give an advisory opinion at the request of, *inter alia*, "a Member State of the OAU" upon "any legal matter relating to the Charter or any other relevant human rights instruments",[80] but this provision disappeared in the 2008 Protocol on the Statute of the African Court of Justice and Human Rights, which replaced the 1998 Protocol.[81] According to the 2008 Protocol, the African Court of Justice and Human Rights may give an advisory opinion on any legal question at the request of the organs of the African Union.[82]

74 Covenant of the League of Nations, art. 5.

75 Status of Eastern Carelia, Advisory Opinion of 23 July 1923, PCIJ Series B, No. 5, 27-29.

76 See United Nation: Report of the Informal Inter-Allied Committee on the Future of the Permanent Court of International Justice, 10 Feb. 1944, 39 AJIL 1945(Supplement: Official Documents), 1-56, paras. 64-75.

77 See UN Charter, art. 96.

78 Ibid., art. 36(3).

79 See Louis B. Sohn, Broadening the Advisory Jurisdiction of the International Court of Justice, 77 AJIL (1983), 125.

80 Protocol to the African Charter on Human and Peoples' Rights on the Establishment of the African Court on Human and Peoples' Rights, art. 4.

81 Protocol on the Statute of the African Court of Justice and Human Rights, adopted on 1 July 2008 and has not entered into force by 15 December 2011 (www.au.int/en/treaties), art. 1.

82 Article 53(1) of the Protocol on the Statute of the African Court of Justice and Human Rights provides that "The Court may give an advisory opinion on any legal question at the request of the Assembly, the Parliament, the Executive Council, the Peace and Security Council, the Economic, Social and Cultural Council (ECOSOCC), the Financial Institutions or any other organ of the Union as may be authorized by the

One important reason why states were reluctantly permitted to directly request advisory opinions from the international tribunal is that advisory opinions "usually concern directly or indirectly with matters of inter-state controversy" or even "relate to legal disputes between states",[83] so the advisory proceeding may be abused by the requesting states to "[circumvent] the principle that a State is not obliged to allow its disputes to be submitted to judicial settlement without its consent."[84] Although in principle the advisory opinions are not binding, "[t]here is little distinction between judgments and opinions in terms of their doctrinal authority."[85] Besides, "it would discredit the international tribunal if states were free to treat as only advisory an opinion that they had voluntarily solicited".[86] Obviously, the advisory jurisdiction provided for in article 138 of the ITLOS Rules does not eliminate these concerns. Furthermore, article 138 is not open to the Commission on the Limits of the Continental Shelf (CLCS) due to the absence of "an international agreement", and as mentioned above, it cannot be used to request advisory opinions as regards the provisions of the LOS Convention where the term "international agreement" has the same meaning as in article 288(2) of the LOS Convention. In light of these, it is reasonable to argue that even if the ITLOS as a full court has advisory function, it is deeply doubtful whether the tribunal should have such an advisory jurisdiction as article 138 provides for.

4. Conclusion and suggestions

The functions of the ITLOS should come from the positive assignment of its Statute and the LOS Convention. However, under the present provisions of the LOS Convention and the ITLOS Statute, there is no legal basis for the advisory function of the ITLOS as a full court. Article 288(2) of the LOS Convention and article 21 of the ITLOS Statute concern the consensual jurisdiction instead of the advisory jurisdiction, and the subsequent practice and implied powers doctrine can not provide

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Assembly".

83 J.G. Merrills, International Dispute Settlement, 4th ed. (Cambridge University Press 2005), 146.

84 Western Sahara, Advisoty Opinion, ICJ Reports 1975, 12, para. 33. And the ICJ emphasizes that "one of the fundamental principles of its Statute is that it cannot decide a dispute between States without the consent of those States to its jurisdiction". East Timor (Portugal v. Australia), Judgment, ICJ Reports 1995, 90, para.26; see also Maritime Delimitation and Territorial Questions between Qatar and Bahrain, Jurisdiction and Admissibility, Judgment, ICJ Reports 1995, 6, para. 43.

85 Charles de Visscher, Aspects récents du droit procédural de la Cour internationale de justice (Pédone, Paris 1966), 195, cited in Tafsir Malick Ndiaye, above n. 17, 579, note 52.

86 Louis B. Sohn, above n. 79, 125.

legal basis for the ITLOS in this respect either. In fact, in view of the circumstances on the Third Conference, it may be argued that the states intended not to invest the ITLOS as a full court with such a function, though the tribunal possesses the capacity to render an advisory opinion. Furthermore, even if the ITLOS is endowed with the advisory function in the future through the amendments of its Statute by the states parties, the advisory jurisdiction provided for in article 138 of its Rules may be inappropriate. The international community has always been cautious about allowing states to directly request advisory opinions from international tribunals, because the requesting states may abuse the advisory proceeding to evade the fundamental principle in the area of international disputes settlement, that is, a state is not obliged to submit its disputes to judicial settlement without its consent. However, under the present provisions of article 138, it is possible that states can submit disputes involving other states before the ITLOS for its opinions on the relevant legal questions with or without the consent of the other states concerned.

As is known to all, one of the reasons behind the creation of the ITLOS was to safeguard the integrity of the provisions of the LOS Convention, therefore the legal questions upon which the ITLOS may render an advisory opinion should include those concerning the interpretation or application of the LOS Convention. According to Part XV of the LOS Convention, "Subject to section 3, any dispute concerning the interpretation or application of this Convention shall, where no settlement has been reached by recourse to section 1, be submitted at the request of any party to the dispute" to the compulsory procedures entailing binding decisions under section 2.[87] Thus it seems no necessary to endow the states parties with the right to request advisory opinions from the ITLOS. On the other hand, although the ITLOS is not an organ of an international organization, many provisions of the LOS Convention mention the functions of international organizations, whether subregional, regional or global,[88] so the works of these organizations have much to do with "the purposes of the Convention". Besides, the practice of the CLCS until now shows that it will face some legal questions in the fulfillment of its functions assigned by the LOS Convention. Given the technical nature of the CLCS, it would be very helpful if the commission can obtain necessary legal opinions from the ITLOS.[89] In light of these

87 LOS Convention, art. 286.

88 For example, as regards the sea lanes and traffic separation schemes, article 22(3), article 41(4) and (5), article 53; as regards artificial islands, installations and structures in the exclusive economic zone, article 60 (3) and (5); as regards conservation of the living resources, article 61(2) and (5), articles 63-66, articles 118-119; as regards the protection of marine environment, many provisions in Part XII; as regards ships flying the flag of international organizations, article 93; as regards the constitution of the special arbitral tribunal, Annex VIII, articles 2-3.

89 Note that in the twenty-first Meeting of States Parties of 2011, some delegation raised the question whether the CLCS had the ability to refer the matter to the ITLOS for an advisory opinion and, if not, whether it should be given that ability. On the other hand, converse view was expressed. SPLOS/231, Report of the

considerations as well as the practice of the ICJ,[90] when amending the ITLOS Statute, the advisory jurisdiction of the ITLOS as a full court may be phrased as follows:

> Tribunal may give advisory opinions at the request of the CLCS and the international organizations mentioned in this Convention on legal questions related to the purposes of this Convention and arising within the scope of their activities.

twenty-first Meeting of States Parties (13-17 June 2011) (http://daccess-dds-ny.un.org/doc/ UNDOC/GEN/N11 /393/68/PDF/N1139368.pdf?OpenElement (last visited on 1 December 2011)), paras. 88-89. Meanwhile, on its twenty-eighth session held from August-9 September 2011, the CLCS discussed the matter as regards the "[m]echanism to seek advice on matters of interpretation of certain provisions of the Convention other than those contained in its article 76, and annex II, as well as in the Statement of Understanding adopted on 29 August 1980 by the Third United Nations Conference on the Law of the Sea", and decided to continue considering the item in the next session. CLCS/72, Statement by the Chairperson of the CLCS on the Progress of work in the CLCS- Twenty-seventh Session (16 Sep. 2011) (www.un.org/Depts/los/clcs_new/commission_ home.htm (last visited on 1 December 2011)), paras. 37-40.

90 Particularly, article 96 (2) of the UN Charter provides that "Other organs of the United Nations and specialized agencies [···] may also request advisory opinions of the Court on legal questions arising within the scope of their activities."

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Revisiting Changing Patterns of North Korea's Fisheries Production: 1990s-2000s

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ABSTRACT

Unprecedented economic crisis in 1990s led North Korea's fisheries sector severely stricken to a degree of “collapse”. In response to the crisis, and especially since Kim Jong Il's ascendence to supreme leadership in 1998, North Korea made much efforts to address the challenge mainly by rapid growth of fresh-water aquaculture and coastal mariculture, while abandoning traditionally acclaimed fishing industry. As a result, most fisheries production organizations and agencies have experienced fundamental change of their natures and functions. On the one hand, state-owned fisheries companies, which had led North Korea's fishing industry, have been transformed from fishing bases to “growing bases”, while many fresh-water aquaculture companies and coastal mariculture companies have been constructed or reconstructed by Kim Jong Il's directions. On the other hand, in the name of “solving food problem by oneself”, and under the banner of the “Military-first” politics, prerogative organs from the Party and the military have been monopolizing the bulk of fisheries production sector, isolating it from North Korea's “people's economy”. These two aspects of Kim Jong Il's legacy left behind North Korea's fisheries sector seem to be continued in the Kim Jong Un's era, which was started with the senior Kim's death in December 2011.

Key Words: Military-first politics, fisheries company, fish farming company, coastal mariculture, Joint Corporation, the 3rd Seven-Year Plan, Self-reliance economy, On-spot Guidance, trade companies, foreign currency earnings

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1. Introduction

With the ending of Kim Jong Il era caused by his death in December 2011, the Democratic People's Republic of Korea (DPRK, hereinafter 'North Korea') embarked on the leadership of Kim Jong Eun, Kim Jong II's son and his heir apparent. What of legacies did the Kim Jong Il leave to his son, especially in North Korea's fisheries sector?

From the perspective that the new leadership began its life on the basis of accumulation of long-time ruling practices of Kim Jong Il leadership rather than from a historical vacuum, and that no leadership be free of its predecessor's legacy, it would be meaningful to distinguish between darkness (*Yin)* and brightness (*Yang)* that have composed Kim Jong Il's fisheries policies, and evaluate its limitedness objectively--especially in such transformative period as this day, and in terms of future inter-Korean fisheries cooperation possibilities.

Predicated on this purpose, this paper attempts to reconstruct briefly the past two decades of North Korea's fisheries transformation, which have profoundly changed the seascape of North Korean fishery practices, while prospecting its future course based on some evaluation. Section 2 traces the formidably destructive collapse course of North Korea's fisheries sector occurred in the 1990s, focusing on not only its background and ramifications but also the outcomes created by such an event . Section 3 and 4 examines how the Kim Jong Il leadership--officially emerged in September 1998, but effectively in 1994-- responded to such an unparalleled event in North Korean fisheries history except for the Korean War period (1950-1953). While Section 3 examines the responses in terms of fisheries production sectors such as marine fishing, fish farming (sea and inland), and coastal mariculture with respective production facilities, Section 4 puts more attention on North Korea's fishery (production) management governance.

In final section (Section 5), the paper attempts to draw some implications on the issue of inter-Korean fishery cooperation, providing some predictions about future course of fisheries policy, which would be in the realm of Kim Jong Un leadership.

2. Fisheries Collapse and North Korea's Response in 1990s

2.1. North Korea's Economic Hardship and Background of its Fisheries Collapse

The 1990s of North Korea has been well known to international community

for its severest economic hardship and destructive food shortage.[1] Already foreboded in the latter half of 1980s, food shortage rapidly worsened reaching at the worst level even before the mid-1990s--for example, in 1993 to a degree that crippled North Korea's Public Distribution System (PDS), which was, as Haggard and Noland put it, “a powerful tool of social control”, marking record-high shortage of 2.1 mil. tons. Kim Il Sung's death in 1994 combined with following years of floods and droughts snowballed North Korea's economic hardship, destroying ordinary lives of its people, even claiming several hundreds of thousands of people by hunger and mal-nutrition. The tragedy was a result of some combinations of external and internal factors: For external, the collapse of Cold War structure, and sudden curtails of aids from the former Soviet Union (Russia) and China; for internal, misperformance of its self-reliance (“*Juche”*) economy, and some strategic choices including nuclear defiance to international community.

The economic misfortune dealt serious blows on North Korea's fisheries sector as well. The damages appeared, at first, as sharp fall of fisheries production (Table 1). Even in the mid-1980s, North Korea's fisheries production competed with its Southern rival--for instance, in 1985, the total fisheries production of South and North Korea recorded respectively 27.93 million tons and 27.0 million tons. When launching the 3rd Seven-Year Plan (1987-1993), North Korea set up its fisheries production target by 11 million tons. In 1993, however, only one-tenth of production target was met by production of 1.09 million tons--far left behind the earlier target.[2]

The depression of fisheries production was caused by collapse of fishing industry, which has occupied an overwhelming portion in North Korea's fisheries production by the turn of the 1980s.

Table 1. North Korea's Fisheries Production

(Unit: 10,000 M/T)

1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010
46	77.3	93.1	130.4	170.0	178.1	145.5	105.2	70	91	63

Note : From 1960 to 1995, Ministry of Unification, Ministry of Marine and Fisheries, Republic of Korea.
From 2000 to 2010, Statistics, Korea

Combination of several factors led the fisheries collapse. The first one is related with over-fishing. In the golden age of its fishing industry, Kosong, one of (Northern) Kangwon Province's coastal counties, was able to catch 20-thousand and

1 For a vivid description and thorough analysis on this subject, see to Hazel Smith (2005), *Hungry for Peace: International Security, Humanitarian Assistance and Social Change in North Korea*.

2 Rhee and Suh. (2007) *A New North Korean Economy*, p. 81.

30-thousand tons of Alaskan Pollock per day in its winter season off the coast of East Sea. Over-exploitation of fish has already been felt in the late 1980s. In a speech delivered in March 1989, Kim II Sung urged to his cadres in the economic sector, to make scientific calculation for appropriate annual pollock catch, apprehending sharp reduction of pollock catch by indiscriminate over-fishing at the time.[3] In a report published in 1998, Food and Agriculture Organization of United Nations (FAO) attributed the pollock catch reduction to North Korean over-fishing.[4] In the early 2000s, fishermen in Tongchon Fisheries Company, Kangwon Province, had no choice but change their jobs mainly because of disappearance of pollock and sardine, their two traditional main staples in the East Sea.[5]

Changes of North Korea's economic policy priority and external relations in the 1990s did also have direct impacts on the fisheries. In his address at the 21st Plenum of the Korean Workers' Party (KWP) Sixth Central Committee in December 8, 1993, Kim Il Sung admitted the failure of the 3rd Seven-Year Plan, while, at the same time, putting a great emphasis on the “three great revolutionary economic strategies”, which was consisted of: agriculture-first, light industry-first, and external trade-first.[6] This policy change deprived time and money from “fishing vessels modernization”, contrasting with his earlier words that obsolete fishing boat was a factor bogging fisheries development down.[7]

Many literature including Kang et. al (2006), and Hong and Lim (2002) point out that fuel oil shortage and lack of materiel for fishing industry had directly impact on North Korea's fisheries sector. By the early 1990s, sailing rate of North Korean fishing vessels reduced at less than 30 percent. As a result, there emerged a new phenomenon that fishing vessels under supervision of the General Bureau of Distant Water Fishing (*Monbada Oopch'ongkuk*) in the East Sea had to supply fuel oil for operation or even fishing vessels from Japan, and then, returned their fees in kind such as hauled pollock.[8] According to Valencia (1996), in 1994, North Korean

3 Kim II Sung. (1989). “Regarding More Development of Fisheries Industries and More Production of Salt”, in *Regarding the Management Issues of Socialist Economy (7)*(1997), p. 160. The book is selection of Kim Il Sung' addresses regarding North Korea's economic issues, begun to published annually by North Korea's Workers' Party after Kim Il Sung's death.

4 For details, see to FAO. (1998). “Democratic People's Republic of Korea: Report of the Fisheries Development Programming Mission”, Working Paper6.

5 Tongil News (2002. 6. 4). “North Korea, Kangwon Province's Coastal Fishing, Damaged by Change of Fish Species”.

6 Kim Il Sung. (1993. 12. 8). “Regarding the Direction of Socialist Economic Construction We Face”, in *Regarding the Management Issues of Socialist Economy (7).* Shortly after this speech, Kim put a three-year grace period for fulfillment of the Plan, but that has never been realized later. For details, see to Research Bureau, Bank of Korea (2000). *Present Condition and Prospective of North Korean Economy*, p. 1.

7 Kim II Sung, “Regarding More Development of Fisheries Industries and More Production of Salt”,

8 Yonhap News. (1993. 8. 7). “The North, Urging Production Growth of Fisheries for Solving Food Shortage”.

sales of crabs and other seafood to Japan downed by 50 percent of 1994 sales mainly due to running out of fuel for fishing vessels.

Table 2. Number of Mechanized Fishing Boats of North Korea

Displacement tonnage	Gross tons	Length(m)	HP of the engine	Number
3,750	2,759	83	2,250	8
485	267	39	400	1,545
270	150	33	400	
140	77	23-25	200	
84	44	20-23	200	
30	18	16-18	30	

Source: FAO(1998), DPRK Report of the Fisheries Development Programming Mission

At the time, North Korea relied absolute volume of oil consumption on imports from China and Soviet Union. After suspension of oil import from Soviet Union in 1991, however, North Korea had no other way than faced worst oil supply situation.[9]

If fuel oil shortage problem was limited to deep-sea fishing, lack of materiel was the one sweeping across the entire range of North Korean fisheries sector. Worsening of North Korea's external relations with neighboring countries--especially with Japan--made it impossible to import fishing gears and nets from neighboring countries, which had accounted for 80 percent of total supplies.[10]

2.2. "Military-first" Politics and "Strong and Prosperous Nation"

For three years since his father's death, Kim Jong Il addressed the economic catastrophes and unprecedented famine with three-year "mourning period" and so called "Ruling by (senior Kim's) Instructions", while consolidating his power base, searching for exit from the crisis. In 1998 when escaping from worst condition, Kim Jong Il did eventually ascend to the supreme leader of North Korea, ending three-year's Ruling by Instruction.

When seizing absolute power as the Chairman of the National Defense Commission (NDC), the junior Kim instituted the "Military-first" (*Son'gun*) politics

9 Russia's converting of trade practice from liquidation system to hard currency payment caused that suspension, mainly because North Korea had no ability to pay. For a brief description, see to Cho Myongchol, (1997). *State and Prospects of North Korea-China Economic Relations,* pp. 19-20.

10 For more details, see Hong Seonggul et al (2010), *A Study on Japan's North Korea Policy and Japan-North Korea Fisheries Cooperation*, Korea Maritime Institute, 2010.

and “Strong and prosperous Nation”(*Kangsongdaekuk*) as his principle of governance. Military-first politics was the means to build strong and prosperous nation declared by junior Kim.[11] In a political context, the term, military-first politics, meant literally that the military should be ahead of any social sector (even the party) as a vehicle for managing all aspects of North Korean society.[12]

As a logical consequence, military-first politics contained aspects of economic policy, which can be summarized by securing “priority on defense industry” simultaneously with light industry and agriculture. The phrase, “securing priority on defense industry”, according to North Korean official interpretation, meant that “not only put the state investments primarily on securing defense industry, but also provide facilities, materiel, electricity, and labour force with best condition and without problem”.[13] The actual effect of the military-first politics, thus, resulted in almost concentration of all rights of exploitation and distribution for available resources on military sector in North Korea.

When resources are scarce, priorities granted to the military sector are highly likely to be privileged rights. In this context, “simultaneous development of light industry and agriculture”, the other side of coin in the military-first politics, has no way to be materialized, especially without overhaul of resource distribution system. In the process of implementing the military-first politics, each sector in North Korea's “people's economy” (*Inmin Kyongje*) was kicked out of the center to back seat.

3. Changing North Korean Fisheries Sector: Production Patterns

Up to the early 1990s, production structure in North Korea's fisheries sector, has been largely consisted of three sub-sectors: marine fishing industry, aquaculture/coastal mariculture, and seafood processing industry. The entire production activities of these industries have been covered largely by state-owned fisheries companies (large and small), and fisheries cooperatives (Table 2). The economic crisis, however, changed the nature of these agencies and the patterns of fisheries production significantly.

11 In North Korean literature, the term “strong” includes four aspects: thought, military, economy, and culture.

12 There have been numerous studies on the Military-First Politics. For a succinct description, see to Dae-Sook, Suh, (2002). “Military-First Politics of Kim Jong Il”, pp. 237-258.

13 Jaeyong, Suh, (2005). *Interpretation on Our Party's Economic Thought in Son'gun Era,* p. 21.

Table 3. Organizational Structure of North Korea's Fisheries Production

Management Type	Organization	Main Characteristics
State	Fisheries Company	commercial fishing, large seafood processing etc.
	Small Fishing Company	largely self-sufficient, partly commercial fishing
	Aquaculture	mainly fresh fish farming
	Coastal Mariculture	commercial marine plants and animals farming
Fisheries Cooperatives	Management Committee	partly self-sufficient, partly commercial
	Individual Cooperatives	partly self-sufficient, partly commercial
Others	Fisheries Work Team (Cooperative Farm)	small-scale subsidiary fisheries activities
	Fisheries Work Team (Factories etc.)	small-scale subsidiary fisheries activities

Note: Reconstructed based on Korean Geography Encyclopedia (Economy), 1990; Hong and Lim (2002), pp. 6-10

3.1. Functional Change of Fisheries Companies

3.1.1. Background

As mentioned above, encountered with economic crisis, North Korea adopted a policy of abandoning deep-sea fishing sector. According to one estimate, by 1998, the number of all operatable North Korean fishing vessels was less than four hundreds.[14] This movement led to functional change of North Korea's fisheries companies, which have constituted one wing of fisheries production institutions with other wing, fisheries cooperatives. By the early 1990s, larger state-owned fisheries companies guided North Korea's commercial fisheries as production bases and distant-water fishing stations, while fisheries cooperatives have focused on small-scale fisheries production using small boats, and with numerous fisheries work teams (*Susan Chakopban*) assuming self-supporting function.

3.1.2. State

Although fisheries companies were established according to "one-county, one-company" principle, but, in the east coast, which accounted for overwhelming portion of the entire fisheries production in North Korea, regardless of such a principle, many fisheries companies were frequently overlapped in a single county.[15]

14 Hong Seonggul and Oh Suntaek, (2001). "State of North Korea's fisheries Industries and Plans for inter-Korean Fisheries Cooperation Promotion". pp. 162-163.

15 By the mid-2000, many studies in South Korea reported that there were 88 state-running fisheries companies and 284 cooperatives.

By the early 1990s, however, state-running Fisheries Companies seem to have transformed their function from fishing bases to coastal aquaculture facilities. This movement of functional change has been underway by two phases.

In the first phase, there have been a series of guidance from the party. For example, an article in *Toilers(Kunroja)* the authoritative journal edited by the KWP Central Committee criticized lack of attention for coastal aquaculture by fisheries companies, saying "they are concentrating their efforts too much on fishing only".[16] In the second phase, large state-owned fisheries companies began to convert their function into coastal mariculture (or "*Chaebae Oop"* in North Korean term). This phenomenon began to emerge in the early 2000, and continues to the present with eastern coastal region at the center.

In early- and mid- 2000s, representative fisheries companies in the east coast including Wonsan (Kwangon), Hongwon (South Hamkyong), Raksan (South Hamkyong) were transformed to bases of aquaculture. In 2004, Yanghwa, a large fisheries company in the east coast, constructed a plant for breeding echinoderms such as sea cucumber, sea urchin.[17] In the same year, Hongwon (Hongwon County, South Hamkyong) did also erected an artificial breeding plant for echinoderms, scallop ("*Papchoge*" in North Korean term), and *Laminaria* (kelp).[18] In August 2008, there was a report read that Soho Fisheries Company (South Hamkyong) built fish farming facilities such as several tens of culture tanks for feeding and spawning mats and hatchery tanks, completing ground working by several hundred ㎡.[19]

North Korean west coast tells a little bit different story. Because the fisheries authority originally developed a division of labor in production, in which the west coast should focus on coastal aquaculture, but the east coast, deep-sea fishing, there was relative stability in terms of functional change in the west sea.[20] Fisheries companies in the west coast, however, have experienced transformation in the same period. The movements were found in many cases. In Kamapo fisheries company (Chungsan County, South Pyongan), fisheries production portion other than in fishing--clam, oyster, short-necked clam (*"Pasuregi"* in North Korean term) became growingly high. Ongjin fisheries company in South Hwanghae Province has also constructed laver processing factory and artificial culture plant, converting its function from fishing base to coastal fish and sea-weed farm.[21]

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16 Kim Hyok, (1989) "Central Tasks for Developing Fisheries Industries at Current Situation", *Kunroja* {Toilers).

17 *Rodong Sinmun*, (2004. 10. 28). "Vigorously for Protecting and Breeding Fisheries Resources with Patriotic Ardor".

18 Ibid..; Yonhap New (2004. 7. 21).

19 NKchannel (2006. 8. 18)

20 By the late 1980s, the east coast accounted for 70 percent of the total fisheries production in North Korea, while the west coast, 30 percent. Pollock and sardine accounted for 70 percent of total production in North Korea's east coast. See to Kukto Tongilwon. (1989). *Overview of North Korea's Economy*, p. 40.

3.2. Large-scale and Nation-wide Acceleration for Fresh-water Fish Farming

3.2.1. Background

Evolution of fish farming sector consisted of fish farms (*Yang'ojaing*) and fish farming companies (*Yang'o Saopso*) shows how North Korea addressed its fisheries collapse. Even before his formal ascendence to the supreme leadership in 1998, Kim Jong Il paid a great attention on fish farming--especially for fresh-water fish species, conducting on-spot guidance or inspection. His activities were followed by various legislational and institutional supports: to name a few, adoption of the Fish Farming Act by North Korea's Supreme People's Assembly in 1998, institutionalization of the Fish Farming Management Bureau under the Ministry of Fisheries, and Fish Farming Science Research Center under the Academy of Fishery Science.

Before his death in December 2011, Kim Jong Il had conducted about 35 inspections and on-spot guidances on fisheries related sector for about 14 years since his first official inspection of Ryonjong Branch Fish Farm (Ryongyon County, South Hwanghae) in June 1997[22] to the last one occurred in November 2011.[23] More than two-thirds of the inspections concentrate fish farming related facilities or institutions.[24] Most of them have occurred in the early 2000s, and the number decreased for years until 2010-2011 that the inspection curve began to reverse.

3.2.2. State

By the 1980s, there has been 60 or more fish farming companies in North Korea's national distribution (e. i., North Pyongan-15, South Pyongan-11, South Hwanghae-12, North Hamgyong-6(or 7), South Hamgyong-9, and Kangwon-6.[25] Large-scale, and nation-wide campaigns of strengthening fish farming capability--construction and modernization--was kindled by Kim Jong Il's famous 1997 on-spot guidance and address, “Regarding Strengthening Fish Farming”. In his speech, Kim emphasized three theses on fish farming: construction of new fish farms, scientification of fish farming[26], and leading of the people's army.[27]

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21 North Korea's KCNA report (2008. 7. 18).

22 In this year, Kim Jong Il was “elected” as KWP's General Secretary (*Ch'ongbiso*), the head of KWP.

23 According to Rodongshinmun dated November 12, 2011, Kim Jong Il's last inspection was on the a fisheries company called “Fish Farming Company Comrade Kim Chonghwan Is Working For”.

24 Statistical analysis is the outcome of the authors' data collection using open sources including Korea Institute of National Unification, (2009). *Trend of On-spot Guidances of Kim Jong Il* and other new media reports.

25 The data is drawn from *North Korean Geography Encyclopedia -Industry* (1989).

26 This has been dubbed “Fish Species Seedling Revolution”[*Mulgogi Chongja Hyokmyong*].

27 Kim Jong Il, (2009. 6). “Regarding Strengthening Fish Farming”, *Chokuk (Fatherland)*, Vol. 546, The *Chokuk* is a pro-North Korean magazine issued by Choch'oryon in Japan.

Fish farming policy of Kim Jong Il's "brand" can be highlighted by several noticeable emphases: catfish farming; diversification of farming species such as sturgeon and snapping turtle; modernization of facilities; and initiatives by the military.

Proliferation of catfish farming in national scale has been widespreadly acclaimed as Kim Jong Il's "great achievement" by North Korean media. Pyongyang Catfish Factory (Nakrang District, Pyongyang), which began its operation in December 2002, is the case. The factory is well known for its "innovative" technology such as recycling spent warm water from a nearby thermoelectric power plant, and the site that Kim Jong Il, at his inspection in September 2010, re-emphasized the importance of raising productivity in fresh-water fish farming and its scientification.[28]

Sturgeon farming has been another field that North Korea has made much efforts to achieve technological advance, and expand it to commercial level for exports. Shortly after technological breakthrough was reportedly achieved at Shinch'ang Fish Farming Company (Unsan County, South Pyongan) in June 2009, Kim Jong Il himself ordered his aids to supply sturgeon produced by the company to Pyongyang Okryukwan--the most famous and largest restraurant--for special dishes.[29] Recently, North Korea expand sturgeon farming to its entire west coast, while making efforts to graft the skill with coastal marine aquaculture.[30]

Along with Sturgeon farming, North Korea has put a lot efforts to construction and operation of Taedong River Snapping Turtle Factory. With the area of 20,000 ㎡, the factory emerged as a showcase of smooth leadership succession when Kim Jong Il and his son and Vice-chairman of KWP's Central Military Committee co-conducted inspections on this newly constructed facility in October 2011.

Another main characteristic of fish farming policy in the Kim Jong Il era is that the campaigns have been initiated by the military. Whenever conducting his on-spot guidances and inspections on fisheries related sites--especially in early years of the NDC chairmanship, almost every players of military power elite group including Ri Yongmu, Hyon Ch'olhae, Pak Jaekyong accompanied him. At the same time, numerous fish farms were constructed by the military or military units such as "1216th Military Unit Fish Farm", "568th Joint Military Unit Catfish Factory".

Although much efforts have been poured into fish farming sector, there is

28 "Visiting Pyongyang Catfish Factory", *Chokuk*,. Vol. 542 (2009. 2).

29 According to *Chokuk,* Okryukwan runs specialized sturgeon restaurant room supplying colorful sturgeon cuisines such as sturgeon sashimi, boiled sturgeon, and steamed sturgeon. For more details, see to "Proud Creation of Son'gun Era, Originator of Korean Food Development, Okryukwan Restaurant", *Chokuk,* Vol. 568(2011. 4).

30 In November 30, 2011, North Korean KCNA broadcasted the news of successful marine sturgeon farming.

rare objective evidence that shows how successfully the work has been done. In July 2007, one South Korean newspaper reported, citing KCNA, that, by the time, artificial fish farming pond units had increased three times for ten years since 1997, and that in the same years, every and each city and county has been furnished with a maximum of 1 million ㎡ of fish farming.[31]

3.3. Growth of Coastal Mariculture

3.3.1. Background

Sharp decline of marine fishing in North Korea let efforts of developing coastal mariculture sector burgeoning. Main factors that led this phenomenon was that while coastal mariculture could be conducted with relatively small investments, its productivity was expected to be higher. According to North Korean fisheries literature, there are three topographic types of coastal mariculture: wild water-type (*Nalbada-hyong,* rugged coastal area with sharp slope), back bay-type (*Naeman-hyong*), and tideland-type (*Kansokchi-hyong*).[32]

The encouragement of coastal mariculture began by Kim Il Sung's instruction in December 1977, when he placed growth of the sector as a major target in fisheries for successful completion of the 2nd Seven-Year Plan (1978-1984). Despite his instruction, however, later performance betrayed Kim's desire, which made him to reiterate it, especially in the late 1980s when North Korea faced more salient signs of food shortage.

Behind this movement did two driving forces affect the North Korean strategy for escaping economic decline. The first one was the task of "solving people's food problem". The other was foreign currency. At the 18th Plenum of the Central Committee of the KWP's 6th Congress in March 1988, North Korea set up three goals--normalization of production with higher level, export-first policy, and agriculture-first policy, while designating mariculture sector as a major policy tool for solving people's food problem and earning foreign currency by export growth. Kim directly said that "This year we should build 10,000 chongbo of coastal mariculture, and then, increase additional 10,000 chongbo every year to total of 60,000 chongbo until completion of the 3rd Seven-Year Plan (1993)".[33]

By the early 1990s, the goal of coastal mariculture growth became more detailed. In a speech in September 1993, Kim Il Sung designated desirable marine

31 Chosun Ilbo, 2007. 7. 23.

32 *Kwangmyong Encyclopedia 18-Fisheries* (2009), pp. 838-839.

33 Kim Il Sung, (1988. 3. 17~11). "Regarding Sticking to the Revolutionary Banner of Juche and Strongly Promoting Socialist Construction." *Regarding the Management Issues of Socialist Economy (7),* p. 100. This speech reflected his sense of crisis on North Korea's dire economic stalemate.

plant and animal species such as kelp (*"Tashima" or* "*Konpo"* in North Korean term), sea mustard, blue mussel (*Sopchogae*), stressing the potential of coastal mariculture growth for compensating for ill-performance of marine fishing. This movement re-emerged with the rise of Kim Jong Il in 1998 despite disappearance of "export-first" fanfare.

3.3.2. State

The East Coast In this region, there are about twenty coastal mariculture companies (*Padaka Yangshik Saopso*)--North Hamkyong-8, South Hamkyong-6, Kangwon-5. Several companies such as Rajin(North Hamkyong), Sinpo, Shinch'ang, Iwon (up to this, South Hamkyong), Munch'on (Kangwon) have a longest history in modern North Korea by being converted and separated from fisheries companies in 1961.[34] Traditionally in the east coast, main marine plant species for mariculture has been *Laminaria*, sea mustard, while, in terms of marine animal, sea urchin, and sea cucumber.

In recent years, Rajin, Raksan, Roch'ang (up to here, North Hamkyong), Iwon, Shinch'ang (South Hamkyong), Much'on (Kangwon) represents coastal mariculture in the east coast. Among them, Rajin is well known for introducing mixed mariculture technology in 1983, and the site that Taeyong, a South Korean company, has attempted to produce scallop in cooperation with its North Korean partner by establishing a joint venture.

A smaller one in its early days, Raksan Coastal mariculture Company (Rajin, North Hamkyong) seems to have grown as major one--especially by the early 2000s when the company built mariculture zone of 400 chongbo off the coast. According to North Korean media, Raksan attempt to produce scallop in large-scale.

In 1998, Shinch'ang (Pukch'on County, South Hamkyong), has released fingerlings of several marine animal species such as sea urchin, sea cucumber, and flatfish, after installing artificial fish shelters under water. The size of the fish shelter is reported to be 100m-length, 1m-width, and 0.5m-height.[35]

Munch'on, the largest coastal mariculture company in Kangwon Province, has been traditionally well known for cultivating Pacific oyster (*Ch'amgul*). Since 1990s, however, Much'on began to expand its mariuculture species to some marine plants.

The West Coast From Chongju in North Pyongan to Ongjin in South Hwanghae, coastal mariculture companies are established along the entire coastal areas

34 Kim Dongjin et al. (1991). *History of Korean Fisheries (3-2)*, p. 124. This was according to Kim's instruction in his on-spot guidance across South Hamkyong Province in 1961.

35 Yonhap News (1998, 12. 14). "North Korea Building Artificial Fish Shelters in East Sea Coastal Fishing Ground".

of the West Sea. Especially, however, South Hwanhae Province is famous for coastal mariculture with Pupo, Kangryong, Ongjin, Pyonghwa, and Ryongyon.

Pupo, traditionally known for kelp growing, seems to have begun sea cucumber farming in the late 2000. In July 2009, Yonhap News, a South Korean news agency, released a clip of sea cucumber farming in April of the same year. Recently, a video clip with about ten-minute length produced by North Korea has been distributed internationally by the Yutube network.[36]

Ongjin, another famous mariculture company, is located in Ongjin County, South Hwanghae, has initially focused on laver farming. This company is reported to have developed namely "horizontal rope cultivation method" for sea mustard and kelp in 1982.[37] Pyonghwa, located in Kangryong County (South Hwanghae), and established in December 1969, is focusing on kelp mariculture.

4. Changing North Korean Fisheries Sector: Management System

4.1. Weakening of Central Control

In the course of change in North Korea's fisheries sector for two decades (1990s and 2000s), the sea change of fisheries management can never be negligible. As shown in the earlier sections, by the early 1990s, North Korea's fisheries sector has long been managed by two institutional tools: On the on hand, State owned fisheries companies have been controled by North Korea's central governmental bodies such as Fisheries Committee or the Ministry of Fisheries under the Administration Council (*Chongmuwon*). On the other hand, small-scale fisheries companies and numerous fisheries cooperatives have been under the control of provincial General Bureau of Fisheries and local Fisheries Committee.

Additionally, from late 1980s, large-scale, and state-running production activities began to be complemented by a nation-wide introduction of the Joint Corporation (JC) System (*Yonhapkiopso Ch'ege*)[38] into fisheries sector, which intended

36 The title of the film is "the Farm Is Running over with Joy of Excellent Harvest".

37 Kim Jungbong, (1993). "Status of North Korean Fisheries Industries and Plans for Inter-Korean Fisheries Cooperation", p. 108.

38 The "Joint Corporation System" is a North Korea's unique industrial management system of central command and planning economy, in which state planning organizations, many production units, and planning cells are directly linked by the joint corporation as a planning unit. This system was initially introduced in 1973. In the early 1990s, the importance of joint corporation system was re-emphasized by North Korean economists. For instance, see Pak Yongkun, "Joint Corporation System is a Superior Corporation Management System Suitable for the Nature of Socialist Planning Economy and Large-scale Industrial Development." *Kunroja*,

to increase management efficiency.[39] The efforts were concentrated in large fisheries companies located in the east coast. In the introducing period, there have been South Hamkyong Distant Water JC (large fisheries companies such as Yanghwa, Hongwon, and Samho were linked), and North Hamkyong Fisheries JC (Chongjin at the center).[40]

When starting his office as the Chairman of the NDC, Kim Jong Il overhauled the administrative structure from the Administration Council system to the Cabinet, while, at the same tim, dismantled JC system, which had proved pretty much problems such as deceased efficiency by organizational swellings, loosened supervision, and confusion of performance report system.[41]

To capture what occurred in the JC system in late 1990s and early 2000s, especially in North Korea's fisheries sector, remains a murkier research area. Nonetheless, as some media reports and official information released by South Korea's Ministry of Unification, reveals, at least by early- and mid-2000s, the JCs such as Kangwon JC, North Hamkyong Fisheres JC, South Hamkyong Distant-water JC, South Hwanghae JC have existed, and JC system and its management practices has kept running.

For example, North Korean *Rodongshinmun* dated January 20, 2003, reads that several coastal mariculture companies including Pupo, Kumipo, Ongjin, Pyonghwa were affiliated to South Hwanghae Fisheries JC, reporting the first harvest of kelp by those companies.[42] On the other hand, the same newspaper dated October 28, 2004, reports that "fisheries companies under South Hamkyong Distant-water JC are producing good outcomes by building their coastal mariculture bases with promising way, and conducting mariculture activities in planned manner."[43]

4.2. Trade-first Policy, Privilege Organs, and Spoiling of Fisheries Sector

One of the spin-offs derived from the early 1990s' emphases on the "trade-first" policy was that almost every organs-- in the Party, the military (the Korean People's Army, KPA), and the Administration Council (later, the Cabinet)--rushed into foreign currency earning efforts, equivalent of "North Korea

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No. 4 (1991).

39 For a brief and clear discussion on the evolution of North Korea's Joint Corporation System, see Nakagawa Masahiko, (2003). "Formation of North Korean Joint Corporation", *Pukhankyongje Review* [North Korean Economy Review] KDI.

40 Apart from these JCs, Shinpo JC was established in 1981, Nampo JC, in 1989.

41 For a brief introduction, see Rhee Jaegi and Suh Jongik ed., (2007), *A new North Korean Economy*, pp. 122-123 and pp. 180-181.

42 *Rodong Shinmun*, (2003. 1. 20) "Kelp Harvesting started."

43 _____, (2004. 10. 28) "Vigorously for Protecting and Breeding Fisheries Resources with Patriotic Ardor".

Inc."[44] In its initial days, one of main marketable or exportable commodities was fisheries products including fish and shellfish--along with mining materials such as iron ores, mined coals, and agricultural items such as pine mushrooms and brackens. The more fisheries products were being sought for exports, the more rapidly and widespreadly rights of controlling fisheries sector were transferred or concentrated to the military. The phenomenon was accelerated from 1994 when the Party ordered that every organ or corporation should solve food problem by itself, which meant virtually sudden suspension of Public Distribution System (PDS) for food.[45]

In this course, many fisheries companies added "Taehung" to their original title such as Kimch'aek Taehung Fisheries Corporation (North Hamkyong), Hwadae Taehung Fisheries Company (North Hamkyong), Wonpyong Taehung Fisheries Company (South Hamkyong)[46] became channels for foreign currency earnings, which were affiliated by the General Bureau of Taehung running many trade companies such as Taehung Trade Company, and which were effectively directed by the KWP's Bureau 38.[47]

The military did also increase, and multiplied its foreign exchange earning activities in the name of self-obtaining spendings, in which the fisheries sector became a main target. As a result, many military organs commanded their own trade companies, their branches, and export-source bases in the fisheries sector. Maebongsan (Ministry of People's Armed Forces), Kansong General Corporation (General Staff Department), Pirobong (General Bureau of Reconnaissance), Ch'ongwunsan (General Guard Bureau) are a few examples of larger trading companies.[48] Chronic fuel oil shortage made the military and navy, which have been in charge of coastal guard with vessels, controlled not only exportable fisheries production but also its transports and distribution.

In terms of foreign currency earnings, the existing diving fisheries companies (*Chamsu Saopso*) and export fisheries companies (*Such'ulpum Susan Saopso*) deserve attention. Diving fisheries companies, traditionally produced high-priced seafood products such as sea urchin and sea cucumber, are now functioning as major foreign

44 See to John S. Park (2009). "North Korea, Inc.: Gaining Insights into North Korean Regime Stability from Recent Commercial Activities", US Institute of Peace.

45 For a brief discussion, see to Park Hyongjung, (2011). "Commercial Engagement of the Party-State Agencies and the Expansion of the Market in 1990s in North Korea." *TongilChongch'aek Yonku* [Unification Policy Studies], 20(1).

46 In March 2010, Kim Jong Il inspected this company with Chon Il Ch'un, head of the Bureau 38--well known for his role as the watchman of Kim Jong Il's private funds and assets.

47 The Bureau 38 has been known for managing Kim Jong Il's private and secrete funds. The Bureau had once been merged into the Bureau 39 in charge of keeping the KWP's funds until May 2010 when it was again separated from the Bureau.

48 Park Hyongjung, "Commercial Engagements of the Party-State and the Expansion of the Market in 1990s in North Korea", pp. 227-228.

currency sources for many North Korean armed forces' units such as North Korea's Coastal Security Units. Export fisheries companies such as Rakwon (South Hamkyong), Roch'ang (South Hamkyong), Tanch'on (South Hamkyong), which emerged around the early 1990s, seem to have been converted from the existing fisheries companies. In September 1997, a South Korean newspaper said, citing *Democratic Choson* (*Minju Choson*, pro-North Korean newspaper in Japan), that export fisheries companies were spurring to research and development of exportable seafood production.[49]

By this process, most of profitable and productive fisheries branches were metamorphosed into arms for foreign currency earnings of prerogative organs, isolated from North Korea's people's economy, and reducing to "corruption-source bases" rather than "export-source bases." To the corruption problem, North Korea has no prescription except for periodic restructuring and merges of trade companies, and regular inspections on suspicious sites and persons.[50]

5. Prospects and Implications

5.1. Findings and Prospects

The year 2012 has two aspects for North Korea's political stability and economic sustainability. First, 2012 is the year that, as Kim Jong Il declared, should open its "door to strong and prosperous nation." Second, 2012 would be a testing year of newly rising Kim Jong Un leadership emerged more rapidly than ever expected. If the leadership sustain in the future, Kim Jong Un, as "the third Suryong", should inherit Kim Jong Il's liabilities, let alone responsibility of achieving the goal of "Songun" and "Kangsong Taekuk."

In the fisheries sector, details of Kim Jong Il's liabilities would be included as follows.

First, Kim Jong Un should inherit the bankrupt fishing sub-sector, which is failing, so far, to recover even the production level of the 1970s. Without a breakthrough, North Korea under Kim Jong Un's leadership will have difficulty to normalize its fisheries sector. This means that, as his father did, Kim Jong Un would try to search for alternatives in a way that he re-emphasize the importance of aquaculture growth, distancing himself from marine fishing production recovery.

49 *Yonhap News* (1997. 9. 24) "NK, Developing Exportable Seafood Mariculture Vigorously."

50 Park Hyongjung, "Commercial Engagements of the Party-State Agencies and the Expansion of the Market in 1990s' in North Korea".

Second, fisheries production organizations will, as did during the past two decades, go on their activities for aquaculture and mariculture efforts. Restrictions and strains such as fuel oil shortage and aging fishing vessels will continuously push North Korea's fisheries sector to turn to expansion efforts of aquaculture and mariculture, which are relatively less costly, but more profitable.

Third, as in the Kim Jong Il's era, significant portion of North Korean fisheries sector will be devoted to earn foreign exchange so much that the Party and the military can maintain their controlling power on fisheries production resources.

5.2. Policy Implications from Perspective of Inter-Korean Fishery Cooperation

From the perspective of inter-Korean marine and fisheries cooperation, what do these findings really mean for South Korea? First, the prospect of continuous depression of fishing industries ranging from offshore fishery to deep-sea fishery implicates that in the case of cooperation regarding fishing industry, it would be better to negotiate South Korean fishing vessels' access to North Korean waters rather than discuss with inter-Korean joint fishing. Acceleration of mariculture of marine plant and animals in North Korea needs more advanced technology and modernized facilities. Thus, plans for technological exchange related to mariculture between North and South are needed to be more proactively considered.

Second, reconstruction of North Korea's fisheries sector should be considered in terms of environmental integrity of waters surrounding the Korean peninsula, and be approached from the viewpoint of marine living resource management.

Third, when planning inter-Korean fisheries cooperation, especially in the case of joint ventures, South Koreans need to pay more attention on the complexity of North Korean fisheries' operating structure forged by intervention of many prerogative organs in a sense that, in foreseeable future, there is little possibility for North Korea, even under newly rising Kim Jong Un leadership, to reform the distorted power structure in the fisheries sector. ■

Note: Except for some words and names such as Juche and Kim Jong Il, Korean words are transliterated according to the McCune-Reischauer Romanization system, but some diacritical marks for the vowels are not applied (e. I., Ô for 어)

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