

BI-COASTAL DISORDER: COMMERCIAL SHIFTS IN NORTH AMERICAN MARITIME RANGES

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Global Maritime Ranges

A maritime range is an area where a set of ports are either in competition, complementary, sharing a common regulatory regime or have some geographical commonality (e.g. contiguity, proximity or being part of an archipelago). Commercial services are established by maritime shipping companies to either link maritime ranges (deep-sea services) or to connect the range itself with regional, feeder or cabotage services. A maritime range thus represents a functional region that includes the coast (the maritime / land interface) but as well as the commercial hinterland that the range is potentially servicing. Since oceans are not empty entities (e.g. Hawaii in the Pacific), they can be considered as separate ranges that have oceanic boundaries, such as between the Atlantic and the Indian oceans.

Figure 1 is an attempt to depict the world's main maritime ranges. Although the range boundary could in theory be the coastline, using Exclusive Economic Zones (EEZ) to mark the extent of a maritime range has a higher relevance with the geopolitical and economic reality of maritime ranges since it includes an area of maritime jurisdiction. These ranges can be used as regional units to monitor changes in commercial activity.

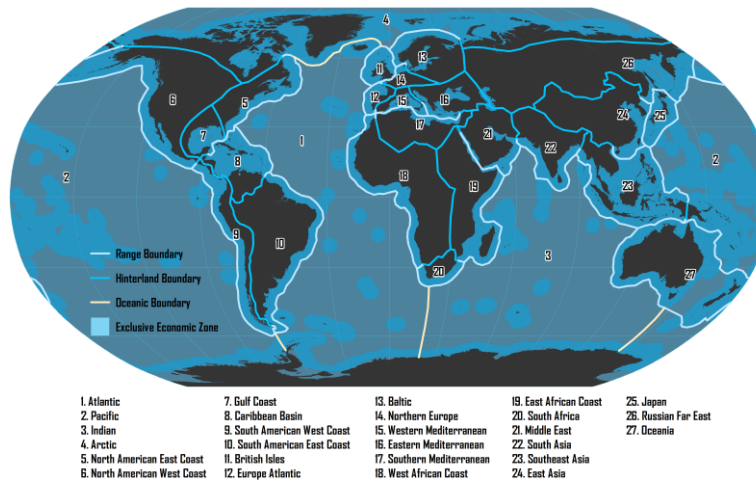


Figure 1: World's Main Maritime Rangesⁱ

The maritime ranges of the Americas are oriented along the east and the west coasts, with the Gulf Coast (7) and the Caribbean (8) as subsets. Because of North American economic integration (NAFTA) both the West Coast (6) and the Gulf Coast include the United States and Mexico as a single functional entity. The same rationale applies to the inclusion of Canada to the East and West coasts ranges. While for South America the hinterland boundary is mostly physical (Andean), the North American hinterland boundary is mostly defined by the market areas of rail operators (Western and Eastern carriers).

European maritime ranges are organized along two main regions, one linked to the Atlantic (British Isles, Europe Atlantic and Northern Range) and the other to the Mediterranean (East and West). Due to relatively short hinterland distances, all these ranges are competing with one another, with the Northern European range (14) assuming a level of dominance. The Baltic range (13) represents a subset servicing adjacent countries. For the African continent, the Southern Mediterranean range (17) represents a specific market of

nonintegrated ports servicing their national markets and with limited competition. A similar observation applies to the West African (18) and East African (19) ranges where ports are servicing poorly connected national markets with the setting of inland corridors in an early stage. South Africa (20) represents a specific range because of its higher level of economic development and being at the interface between two oceans.

The Middle East (21) and South Asia (22) ranges are impacted by dual functions of accessing regional economies, but also as growing transshipment platforms. Southeast Asia (23) is an archipelago range with a series of ports servicing their respective insular or national markets with the system articulated by a major hub; Singapore. East Asia (24) is dominated by coastal Chinese ports, each servicing vast economic hinterlands, but facing growing competition levels. Japan (25) is a specific range due to its archipelago nature with its ports oriented at servicing the national economy and supporting cabotage. The Russian Far East range (26) is marginal and does not see significant volumes. Last, Oceania (27) covers the range of Australia and New Zealand, active resource and agricultural good exporters.

Maritime ranges are associated with the commercial dynamics of the hinterland. The scale and change of container traffic is illustrative of these dynamics with significant regional shifts. While container traffic by range has seen an exponential growth between 1980 and 2010, looking at absolute growth figures per decade shows a shift in the relative importance of maritime ranges (Figure 3). The growing share of the East Asian range, both for the total container traffic and its contribution to absolute traffic growth by decade is evident. While the East Asian range accounted for about 21% of the growth in container volumes between 1980 and 1990, this share climbed to 43% between 2000 and 2010. Inversely, the share of the Japanese range declined, from about 10% of the total growth for the 1980 to 1990 decade to less than 2% for the 2000 to 2010 decade. A similar

observation can be made for the West Coast of North America (WCNA) as well as for the East Coast of North America (ECNA).

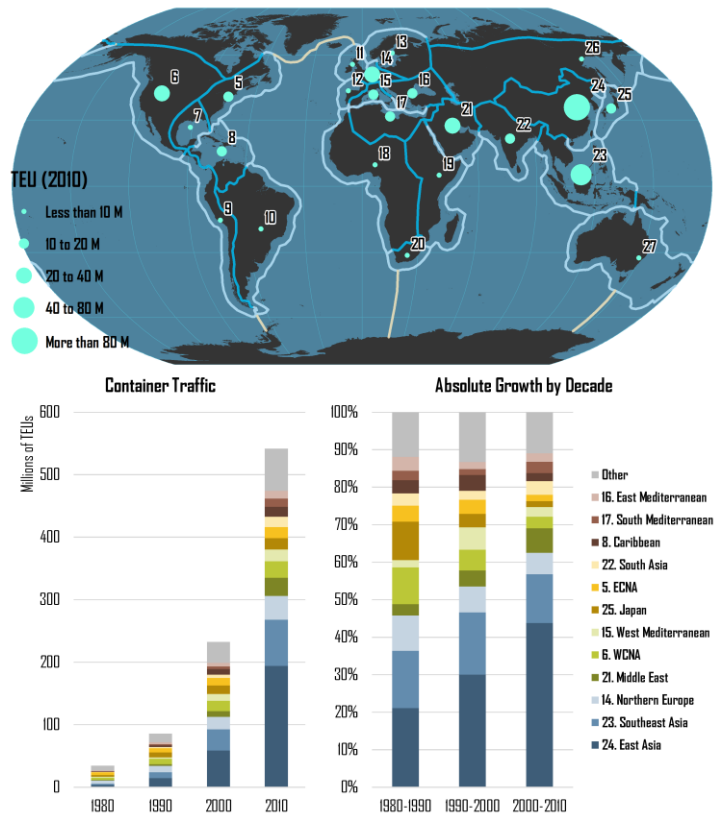


Figure 2: Container Traffic per Maritime Range, 1980-2010

Shifts in the Maritime Ranges of the Americas

The maritime system of the Americas is composed of six major maritime ranges, each with its distinct level of activity and logistics (Figure 3):

- **East, West and Gulf Coasts of North America.** This sub-system has three coasts (Pacific, Atlantic and Gulf) but they are integrated through long distance rail corridors (landbridges). They account for about 57% of the TEUs handled by the Americas. Most of the gateways are within port clusters such as Los Angeles / Long Beach, Vancouver / Seattle - Tacoma, Charleston / Savannah or New York / Hampton Roads. These clusters provide importers and exporters with options and act as logistics platforms for continental freight distribution. While hinterland access is dependent on port proximity, the efficiency and capacity of rail transportation (e.g. double-stacking) provide higher levels of hinterland accessibility. With the setting of NAFTA and the integration of its rail system (e.g. the acquisition by KCS of a rail corridor between Kansas City and Lazaro Cardenas), Mexico is increasingly considered as integrated with North American West and Gulf Coasts.
- **Caribbean.** This sub-system has small hinterlands, implying limited growth potential, with a few exceptions (e.g. Cuba, Venezuela and Columbia), with about 21% of the TEUs handled by the Americas. The nature and extent of the traffic is related to the economic activities of each island. The main growth driver is transshipment with the Panama Canal a fundamental driver of this business.
- **East and West Coasts of South America.** This sub-system has two coasts that are not integrated because of the difficulties to service the hinterland. It accounts for about 22% of the TEUs handled by the Americas. Inland rail

connections tend to be poor or non-existent and when they are present they are simply penetration lines linking a gateway and a few inland load centers. Each coast is a completely different market and more than often each port is able to assert dominance over its hinterland since competition tends to be limited. Most ports are not directly connected to deepsea shipping lines but through coastal services to main transshipment hubs such as Santos, Buenos Aires or Callao.

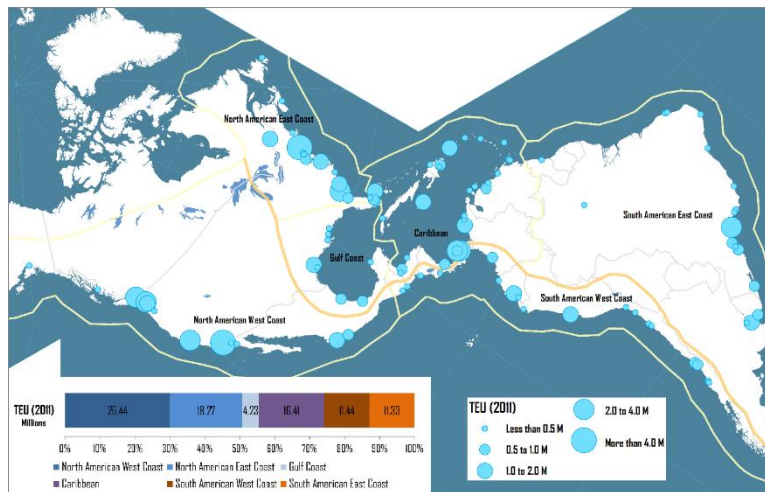


Figure 3 Container Traffic and Share by Maritime Range in the Americas

A look at the net growth of containerized traffic at the maritime range and port levels reveals significant changes in port dynamics in recent years (Figure 4). While the North American East and West Coasts remain the most salient ports, handling an average of 26.44 and 18.27 million TEUs respectively in 2011, they have experienced no net growth in traffic between 2006 and 2011. Latin American and Caribbean ports accounted for 88% of the net container growth of the

Americas during that period. This growth is putting pressure on freight distribution systems, which need to develop better logistical capabilities. It also supports the development of economies of scale in maritime shipping since a growth in traffic handled by Latin American ports can attract services by bigger, and thus more cost-effective, ships. The outcome would be a reduction in transportation costs and better trade facilitation. However, growth is far from uniform and has mostly benefited the largest ports in Latin America.

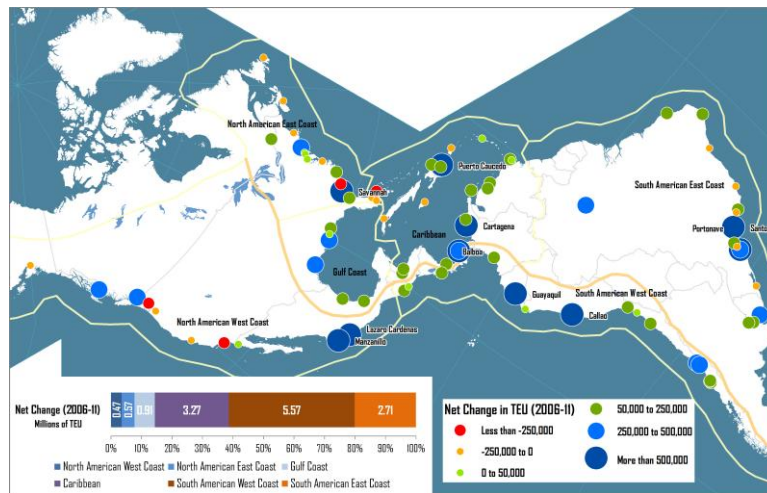


Figure 4: Container Traffic Evolution by Port and Maritime Range in the Americas, 2006-2011

The Panama Canal Expansion and Shifts in North American Maritime Ranges

The cost structure of transport chains is an important determinant in the comparative advantages of routing options to service the North American maritime ranges. For cargo originating from the main manufacturing centers of Pacific Asia, there are several options to service the American East and Gulf coasts, including the landbridge,

the usage of the Suez Canal, or the all-water route through the Panama Canal. For several ports there are significant differences between the inbound and outbound traffic. The pattern for inbound traffic is straightforward and a function of shipping distance; the lowest among the sample being Vancouver and the highest being Montreal at the opposite end of the all-water route (compounded by a significant detour through the St. Lawrence).

The container shipping rates for outbound traffic differ with shipping distance playing a much less evident role. They are more reflective of trade patterns, particularly of export opportunities in the port's hinterland. Where inbound flows are significant and where return cargo is proportionally scarcer outbound rates are much lower as shipping companies try to attract backhaul cargo by discounting. The greatest paradox concerns New York and Vancouver. While, as expected, the inbound rate per TEU is 60% higher for New York than Vancouver, the outbound rate is 15% cheaper for New York. The availability of empty containers along the East Coast, as exemplified by New York, could expand export opportunities with the Panama Canal expansion. A significant change could involve a shift in the maritime ranges that are using import-related supply chains that are less time sensitive.

With the expansion of the Panama Canal, the expected lower transportation costs of the all-water route are likely to have an impact on the cost equivalence line. The line represents the theoretical point of indifference between using the landbridge or the all-water route. Under a specific set of parameters related to bunker prices, the usage of panamax ships and canal toll rates, the current (pre expansion) cost equivalence line is an axis roughly between Houston and Detroit. This accounts for about 46% of the American population. By keeping these parameters constant but benefiting from the economies of scale of post-panamax ships, the cost equivalence line shifts further inland along the Chicago – Nuevo Laredo axis, which accounts for 63% of

the American population. However, such an assumption is contentious because it is uncertain how the cost benefits derived from the expansion are going to be allocated. First, the Panama Canal Authority will try to capture as much revenue as possible through higher tolls. Second, maritime shipping companies will try to keep the benefits derived from economies of scale by keeping similar rates. Third, freight forwarders (importers and exporters) will also try to capture some of the cost benefits resulting from the expansion.



Figure 5: Shipping Rate from Shanghai to Selected North American Ports for a 40 Foot Container, Mid 2010ⁱⁱ

The Panama Canal route (all-water route) is competing with ports along the American West Coast to access some North American markets, including the East Coast (landbridge versus all-water routes) and the Midwest. It is uncertain to what extent the cargo handled by the West Coast is divertible to other maritime ranges, with some putting this figure in the vicinity of 25% of the intermodal cargo. West Coast ports are implementing various strategies to improve their competitiveness with a revision of their fares, rules and connectivity with their hinterlands. A particular emphasis will be placed on hinterland access regimes as a strategy to improve the cost, quality and reliability of the West Coast as well as to secure traffic outside their fundamental hinterlands.

In light of the previous point, railways, particularly those servicing the West Coast (BNSF and UP), are also implementing strategies to improve their competitiveness for the landbridge market. For instance, in recent years many railways committed substantial capital investments to improve long distance corridors. The outcome will be a more efficient maritime / land interface along the West Coast. There is however a possible dichotomy with railways servicing the East Coast (NS and CSX) as a growth of the all-water route traffic may benefit them with inland services calling from the East and Gulf coast ports. For instance, NS completed in 2010 the double-tracking and double-stacking of a rail corridor between Hampton Roads, Virginia and Columbus, Ohio; labeled the Heartland Corridor.

Changes in North American gateways have influenced freight distribution and ports of entry on the respective maritime ranges. The development of the Savannah gateway has been a notable driver of traffic growth through the all-water route. Two new port gateways are also emerging, both with the support of major rail operators. In Canada, Prince Rupert capitalizes on shorter transpacific distances and a dedicated and uncongested CN rail corridor to Chicago. In Mexico, Lazaro Cardenas with a rail corridor operated by KCS up to

Kansas City (and through the major market of Mexico City), offers a new corridor in tune with the NAFTA trade. Thus, the role of gateways in coordinating freight distribution influence the routes selected to access markets.

Another factor impacting North America maritime ranges is changes in global routing options. The usage of the Suez Canal as a routing option to service East Coast ports has increased in the last decade, particularly with the growth of transshipment activities around the Mediterranean basin as well as shift in sourcing towards South and Southeast Asia. Mediterranean transshipment hubs offer additional opportunities to consolidate Asian and European cargo and employ larger ships. This option is increasingly competing with the Panama Canal option.

Discussion: Labor and Policy as a Bi-Coastal Issue

Due to various labor agreements, the unit costs of handling containers at East Coast ports tends to be higher than their West Coast counterparts. The core of the matter relates to Container Royalty Payments. This payment system was introduced in the 1960s as a form of compensation (and labor appeasement) for the labor impacts of the emerging container transport business, which was placing intense pressures on the number of jobs and on working hours. This was a rather unique outcome in labor relations that differs from what happened in other industrial sectors. An analogy would be to see light bulb manufacturers agreeing to compensate candle makers because their product is cheaper and more effective.

The number of longshoremen jobs in the Port of New York and New Jersey declined from 35,000 in the 1960s to about 3,500 in the 1990s. According to the International Longshoremen's Association (ILA), \$4.85 are collected each ton of containerized cargo handled and is

distributed to ILA workers. This can involve a bonus of about \$20,000 per worker per year and as the number of containers increases and as further automation puts the number of longshoremen in check, this royalty has been increasing.

Shippers are not supportive of this agreement due to its uniqueness in the industry and the higher costs it imposes on a captive market such as New York, which is often the main source of labor contention on the East Coast. In addition, all the loading and unloading of cargo within a 50-mile radius of each port has to be performed by ILA members. Therefore, East Coast ports are more expensive, but the labor contracts are a bit less contentious than on the West Coast. The last serious strike on the East Coast was an ILA walk out in 1977 against container carriers. A strike was averted in December 2012, again over the issue of Container Royalty Payments, which could have impacted 14 East Coast ports. Thus, this higher labor cost structure remains.

The situation on the West Coast is more volatile. For instance, in 2002 there was an 11-day lockout which involved the closure of 29 West Coast ports. The impacts of this strike on supply chains were substantial, with some estimates placing it at one billion dollars per day. President Bush was forced to intervene with the application of an anti-union law (known as the Taft-Hartley Act), so that port operations could resume, but the backlog was immense. After the strike, many shippers started to establish new shipping services to the East Coast using the Panama Canal as a risk mitigation strategy. In some way the expansion of the Panama Canal is related to the 2002 strike and the disruptions it imposed on its maritime range.

The contention along West Coast ports is similar to standard labor conflicts, namely over the issues of healthcare, retirement benefits and pay raises. Still, automation is now at the forefront of labor issues as new highly automated terminals are expected to open in LA and

Long Beach. Both ports are trying to consolidate the container terminals on their facilities, a process which is likely to trigger additional labor conflicts. In February 2015 labor disputes slowed operations at West Coast ports, impacting many North American supply chains. On the positive side, the slowdown took place in the lower activity period of the year. With a stabilization of traffic and limited land for expansion, most West Coast ports are looking at automation to improve productivity.

Another part of the debate concerns the role of the Federal government in port related investments, particularly over the dredging issue. In a standard landlord port authority model, port investments are dominantly the responsibility of regional entities, particularly port authorities, but also local and regional governments. The U.S. Army Corps of Engineers, a Federal agency, is responsible for dredging access channels for American commercial ports. Although dredging projects as subject to a cost / benefit analysis, it is also subject to political pressures. As a result, ports have engaged in intense competition and lobbying to secure the funding for dredging projects. Several of the largest port authorities were able to secure sufficient funding, but many have had to raise additional sums. Wherever possible, the dredging aims to reach a reference depth of 50 feet, to match the draft of the expanded Panama Canal. Dredging is the infrastructure project most directly associated with the canal expansion, because most East and Gulf Coast ports are Panamax ports and accommodate drafts of approximately 42 feet.

ⁱ The boundary of many ranges is based on Exclusive Economic Zones (EEZ). Several EEZ are subject to contention. The boundaries depicted on this map are functional representations and should not be viewed as anything else.

ⁱⁱ Source: TEU figures from American Association of Port Authorities. Equivalence lines from WorleyParsons and Princeton Consultants, Inc. Rates from Drewry Shipping Consultants. Note: The rate benchmarks are for full container loads and include the base ocean rate, the terminal handling charge both at origin and at destination, the fuel surcharge and all other surcharges; they do not include inland transport costs.