

Feeder ports, Inland ports and Corridors – Time for a closer look.

Häfen für Feederschiffe und im Inland sowie ihre Korridore – näher betrachtet

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Background

There are arguably more than 4000 ports in 195 countries in the world, according to the portal, World Port Source. Much of course depends on how one defines the word 'port'. Containerization International Yearbook 2010 listed 365 container ports, with the top port (Singapore) recording 29,918,000 TEUs, and the 365th port recording 43,622 TEUs, in 2008. In all there are about 500 ports in the world known to be handling more than 1,000 TEUs per year. It is therefore noteworthy that despite the robust growth of container traffic of about 8 to 10% a year for the past decades, container penetration is not as widespread geographically as one would have imagined. Less than 15% of the world's ports handle any meaningful level of container traffic!

Though the benefits of containerization are abundant and undisputable, containerization bring in its wake a host of many logistical problems. Containers are good for stuffing cargo inside, and delivering the cargo safely to its destination, but what do you do with the empty containers if there is not corresponding cargo to fill up the container for the return leg. Such empty container movement could cost USD 2,000 or more per box for it to be shipped from one port to another. In addition, empty containers may travel thousands of kilometer overland for repositioning. The cost of repositioning empties could even exceed that of a new container. Also handling of laden containers require lifting equipment of at least 35 ton capacity, something that is not easily found in remote and less developed parts of the world.

Während die Entwicklung der großen Container – Seehäfen ständig voranschreitet, bleibt die Leistungsfähigkeit der nächsten Häfen in der Transportkette für den (gemischten) Weitertransport weit zurück. Die Gründe hierfür können beim Eigentümer, bei der Zollabwicklung, im veralteten Dokumentationswesen oder in anderen mangelhaften technischen Ausrüstungen liegen.

Politik und Investoren müssen eine ausgewogene Entwicklung vorantreiben, damit diese Engpässe beseitigt werden.

Hub and Spoke

The hub and spoke pattern of container shipping is well established after 50 years of container evolution. The advent of large ships of 14,000 TEUs and beyond will further drive the traffic density of the major shipping routes such as the Transpacific and Asia Europe trades. In the last 15 years of so, a myriad of ports have emerged: gateway hubs like Yantian-Shenzhen, and Shanghai, transshipment hubs like Algeciras, Malta, and Tanjung Pelepas, and mixed hubs

(transshipment cum gateway traffic) like Dubai, Port Klang, and finally, dominant hub ports like Singapore that have gone on to become super hub port handling more than 29 m TEUs in 2008. Much has of course been reported on such ports, and their relentless expansion and pursuit of container traffic. Huge investment had been poured in, giant sized container cranes of super post panamax dimensions were ordered in dozens and scores, berths of 350m to 400m length with depths of 18 to 20 m were built to fulfill the ever expanding trade.

The same however cannot be said of the other side of the equation. Many regional and feeder ports, stuck in state ownership, are often characterized by complacency, inefficiencies, low productivity, and bureaucratic red tape.

Definitions

For ease of reference, the authors broadly define feeder ports as secondary ports handling a mix of feeder trade, and direct intra-regional or intra-continental trade. These ports typically do not handle main line vessels on long haul routes between continents. Within this feeder port category there is a wide range ports with annual throughputs ranging from 10,000 TEUs to more than 1.0 m TEUs. They can be further categorised into the following:

Minor ports	Handling < 50,000 TEUs annually, Multipurpose ports, feedering + coastal Examples: Mazatlan (Mexico); Bar (Montenegro)
Regional ports	Handling between 50,000 and 300,000 TEUs annually Feeder + direct regional (short sea) calls Examples: Oran, Bejaia (Algeria), Tripoli (Libya) in the Mediterranean
Major regional or national gateways	Handling >300,000 TEUs annually Feeder + direct intra-continental (longer haul) trade Examples: Tg Priok, Surabaya (Indonesia)

An efficient hub and spoke system of shipping cannot be realised unless the spokes can keep up with the development of the hub. As the hub ports are accelerating ahead to meet stringent demands of mega container ships, the secondary ports are being left further behind, with ever widening gaps in productivity and reliability. It is no wonder that in a Drewry study of 2006, only 53% of ships arrive on the scheduled day or the day before. Ship delays can cause havoc to the berth planning and other resource scheduling of not only the immediate port in question, but also a string of other ports downstream.

Feeder port syndromes

Contrary to hub ports, where push for productivity is driven increasingly by use of technology, IT and automation, secondary ports face quite a different kind of problems, some of which are within their direct control, and others are less so. The authors list below some of such problems:

a) State ownership

Many secondary ports are still under government ownership, as in Africa, Latin America, and parts of Asia. Many of them are operated on a non commercial basis and hence customer service is often not their top priority. Privatising such ports, and bringing about a commercial approach to running the port, is a tried and proven way of overhauling the port.

b) Archaic customs practices

Many third world countries have a policy of requiring 100% of containers to be customs inspected. This creates a host of logistical issues, as each box needs to be shifted several times, space needs to be allocated for the container to be set down, and lifting equipment, freight parties all need to be coordinated. Fastidious customs officers means that cargoes are often held up because of minor documentation discrepancy, or markings on goods not done in the language stipulated, and insistence on full compliance to the smallest details. The port is not able to run its own 24x7, 3 shifts operation as port working hours are quite often limited to those of the Customs Department's. In addition to customs controls, sanitary, veterinarian and agriculture, commercial and trade controls further add more complication and coordination delays. All this bureaucratic red tape soon becomes ingrained into the system, and vested interests serve to maintain the status-quo.

c) Cumbersome documentation flow –

In most cases, border controls involve not only customs but also health and trade controls, all independent from one another and uncoordinated in the field. Consequently, many sets of documentation are required for trade department, customs and health declaration. Poor flow of information, and lack of reliable internet connection to facilitate electronic processing results in long paper trails, with intolerable delays and unnecessary additional costs to the business community. The direct effect on the container terminal is a congestion of yard space and freezing up of its container handling equipment capacity.

d) Port operating inefficiency –

The above issues are mainly outside the control of the port management, but there are also areas which the port management could have done a better job of. Poor labour relations, lack of skilled manpower and training, and safety awareness gave rise to poorly motivated workforce and low productivity. Inefficient operating procedures, lack of a proper Terminal Operating Software, leading to missing containers, or inability to locate containers, adds to long cycle time for a container move. In many of the third world countries, it is not uncommon to find valuable yard space being occupied by long staying containers, that had overstayed for years, and the port is powerless to dispose of them.

e) Equipment availability –

Many state owned feeder ports suffers from poor equipment maintenance, caused by a lack of maintenance mindset, shortage of spare parts, and cumbersome procurement procedures. Expensive equipment lies forlorn in the yard waiting for some spares which may just cost a few hundred dollars. Maintenance and repairs are carried only when equipment breakdown. Preventive and planned maintenance are non-existent or just given cursory treatment. The port also finds it difficult to retain the talents and skilled technicians, given that it cannot pay a competitive salary as offered in the private sector.

f) Dwell time –

All the above factors conspire together to lead to unreasonably long dwell times of containers in the port, some as long as 30 days on average, from what should have been a norm of 5 to 7 days. Cargo owners not only have to live with the delays and disruptions to their production schedule, and high inventory cost, but also end up paying costly demurrage cost for stowage and container rental charges. High dwell time, leads to yard congestion, as containers keep piling up, which in turn prolongs the dwell time, and so continues the vicious cycle.

Transshipment traffic

It often amazes the authors that many governments would spare no effort to push for building world class transshipment hub ports and yet leaving their own existing regional ports languishing in low productivity and inefficiency. International transshipment hubs are becoming extremely costly to build, having to cater for the requirements of mega ships of 8,000 to 14,000 TEUs. Costly dredging of navigation channel and berths, to 16 m depth and more, and in addition massive equipment systems to support the operation of a 10,000 TEUs vessel, have taken the transshipment business to a much more formidable scale. With greater concentration of traffic along major routes, and fewer port calls, only few such ventures will truly succeed, and produce the return on investment, and the expected economic benefits. Yet many governments still clamor for such glamour projects. Many a grand hub port have been built with great hopes of attracting transshipment traffic, and after failed attempts to attract any such traffic, they were then subsequently concessioned out to shipping lines at greatly discounted prices to induce their container traffic through the port. This is surely an expensive way of buying into the transshipment market and making a statement. The world map is dotted with such examples. Yet shipping line-owned or -managed transshipment centre tend to remain dedicated terminals, and seldom make the grade as a multi-user port, since other shipping lines are fearful of supporting, and divulging their commercial information to their competitors.

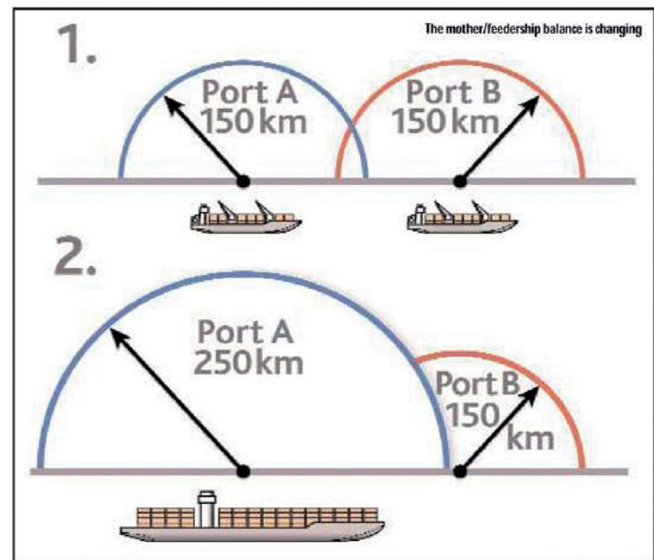
Transshipment traffic typically generate an economic value of about US\$50 per TEU at best (low price due to competitive nature of transshipment traffic), and not a great deal of multiplier effects to the economy, unless there is already an active marine cluster pre-existing in the area (such as bunkering, ship chandelling, and repairs) for the calling ships to tap into. This is not surprising as each transshipment container is unloaded and reloaded onto another vessel without leaving the gate of the port at all, and container ships will only spend

the minimum time in port. The money spent on such projects would have seen much more economic benefits if it were used to develop the country's various ports along its coast lines, to become effective gateways for their respective regions. Having an efficient gateway, feeder port or otherwise, for a region's imports and exports will go a long way towards improving the region's competitiveness, and attract greater manufacturing investment and boost job creation. Allocating huge resources to develop international transshipment ports, while the country's regional gateways ports are still grappling with inefficiencies is therefore a misallocation of resources. This could well amount to distorting the economy, and hampers the natural development of the regional port and its hinterland. In some cases, importers and exporters are slapped with higher costs, as the government rules by fiat that all container cargo must now be only handled through the new transshipment port, which may be located far away from the population and industrial centres.

Feeder shipping (versus direct shipping) should not be blamed for the high cost of freight. Rather one should look inwards at its own ports, their productivity, and the kind of ship turn-around time which could be rendered to the ships. Shipping lines will always go where there are cargos, and where they can predict the likely duration of port stay, and hence price their services accordingly. Competition and free access to all shipping lines will then ensure market freight rates being competitively priced by supply and demand forces. High cost of shipping in a particular route usually result from lack of competition as shipping lines are reluctant to serve that sector due to unpredictable delays caused by port congestion, uncooperative harbour masters or security concerns. Overtime, the sector becomes a niche market in which only specialist players who know how to work the system can operate. Shippers and consignees of the country are then faced with increasingly limited choice of shipping, and end up paying high freight costs. Therefore it is the role of the port to ensure a level of productivity and turnaround time to the ships, and to encourage competition and a level playing field to attract as much ship calls as possible.

Cascade Effect

Some recent trends in shipping will further impact the feeder ports and determine their relevance. The arrival of the mega ships in the main trade routes is setting in motion a chain reaction of ship displacements (the Cascade Effect, as reported in Port Strategy, Portek Port Opinion, May 2008) that will see larger ships of 2,000 TEUs and above being deployed to the feeder trades, up to now mainly served by geared ships of less than 1000 TEUs. The shipping downturn of 2009 is so severe that what used to be industry gold standards of 24 knots cruising speed and 28 day transit time for the Asia-Europe trade, are now jettisoned in favour of slow steaming (18 knots) and super slow steaming (14 knots), and corresponding increase in transit times. Feeder vessel operators also have to deal with the eroding freight rates by deploying larger vessels, and cutting back frequencies, or simply dropping certain port calls altogether. Such larger ships are often non-geared, and hence, quay side mobile harbor or container gantry cranes are a requisite. There will be increasing pressure for feeder ports to have to handle such larger ships, as economies of scale and unit slot cost will drive their deployment. The rules of the game are also changing for the feeder trades. Feeder ports that are able to seize initiatives to accommodate such ships will clearly be winners.

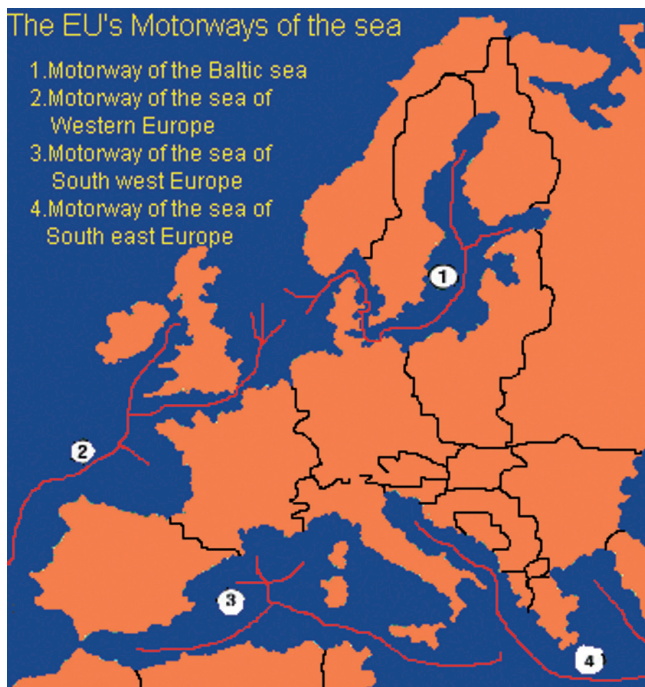


Feeder ports taking advantage of Cascade Effects
(Port Strategy May 2008– Portek Port Opinion)

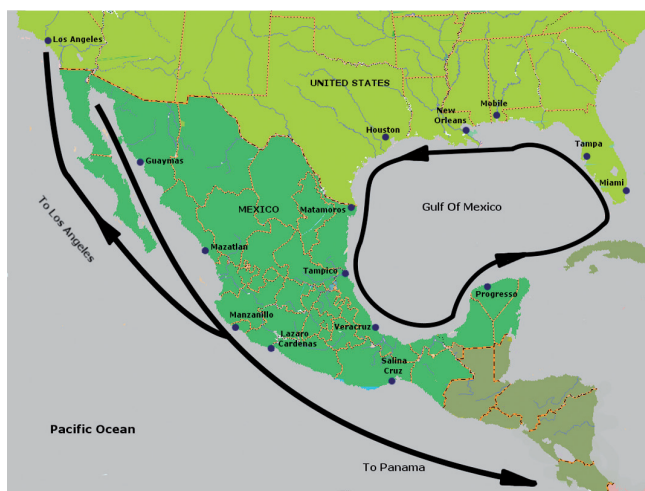
Motorways of the Seas and Short Sea shipping

“Motorways of the Seas” project (MOS) initiated under the EU is another trend which will favour feeder port development. The central idea of MOS is to minimize container transportation on land, and push them out to the sea as much as possible. Originally, MOS is mainly referring to movement by Ro-Ro ships. Ro-Ro vessels such as those operated by Grimaldi in the Mediterranean trades is especially suited for such purposes, as containers on trailers are wheeled in and out of the ship at the port, and hardly need to spend time in port, but go directly to its final destination. However, MOS concept is now extended to any container short sea shipping (coastal and feeder container ships) which replaces land transportation. In the whole chain of cargo movement, the port is an interface, and hence a point of discontinuities to the flow of cargo. Ideally for MOS to take off, and become viable on a grander scale, port stay and port transaction costs should be minimized, as such costs do not exist in the case of truck transportation. Therefore, ports should try to minimize their disruptive impact, and help to incentivize cargo to move over the sea rather than on land, by facilitating a seamless cargo flow through the port, nothing more than just a pass through. The realities in the ports of many developing countries are however very different, as they are plagued by delays, bureaucratic red tape, and viewed by users as necessary evils to be avoided as far as possible. Hence the success of MOS depends much on having a network of efficient ports to seamlessly process the movement of cargo through them to take the sea routes.

In many countries, short sea shipping or coastal shipping is protected by Cabotage laws which prohibit foreign shipping lines from entering domestic shipping, and hence leading to lack of competition and high coastal freight in domestic routes. It is time to review such Cabotage laws in view of changing global trends to shift cargo transportation to the sea. Countries with long coast lines such as Mexico could greatly benefit from creating highways of the seas both in its Pacific and Gulf of Mexico coastlines.



EU's Motorways of the Sea



Motorways of the Sea Concept as applied to the Mexican Coastlines.

Inland ports and transport corridors

Much has been said about inland ports, rail and barge corridors. In the initial phase of a container port's development, direct trucking of container between the port and the hinterland is often sufficient to handle the flow of containers. However, as volume builds up, and yard space becomes scarce, some off-dock facilities, initially for empty container storage, etc, is needed to relieve pressure of space shortage. And as a port tries to expand its hinterland, and its sphere of influence, full fledged inland ports with rail corridors or water way connections will be needed to move higher volume of cargo without congesting the roads.

Recent developments such as escalating costs of fuels, road congestion and road safety, concern for climate change and carbon footprint reduction, and increasing ship size, have all converged to favour setting up inland ports and creating transport corridors in the form of rail and water way transportation. Rising cost of fuels

alone will soon make road transportation increasingly less viable. Water transportation is known to be 8 times more efficient than road transportation in terms of ton-km per litre of fuel.

Environmental concerns should form an integral part in the development and improvement of all port processes and operations. It is unavoidable that the port and its eco-system will need to comply with the increasing number of environmental protection laws and regulations, to account for its carbon footprint, and to take steps for mitigation.

An Inland port is a cargo terminal located inland which is connected to one or more seaport via some transport corridors. Such corridors could be a railway, a water way, or simply a motor highway. They are called dry ports, if there is no water way connection or intermodal rail terminal if rail transportation is the major mode. Inland ports can ease the pressure on the seaport, by taking over as much of the functions of the seaport as possible, thereby freeing the valuable space at the seaport for higher value added services. Such functions could include stowage of empties, stuffing, un-stuffing, freight consolidation, customs inspection and clearance, container repairs, etc.

Other significant value contribution of Inland Ports are:

- Empty repositioning – Approximately 20% of worldwide marine container traffic consists empty moves, according to a study by Drewry Shipping. In many ports and their hinterland complex, laden containers are delivered to consignees, and the empty containers returned straight away to the port, only to be trucked out again for stuffing with export cargo. Inland port can certainly eliminate such costly empty moves by providing convenient location for storage, and exchange.
- Containerisation of bulk commodities – With the development of bulk container liners and its greater deployment in the market, stuffing of commodities such as grain, minerals, and liquid into standard ISO containers, is easily facilitated. With bulk containerization, shipment of small to medium quantities of such commodities to the marketplace now becomes an economic proposition. Inland ports, being located inland, helps increase the availability of containers to the sources of origin of these commodities. Inland ports can therefore play an important role in helping the seaports they serve achieve a balanced trade. For import-biased ports, this means a greater volume of export laden containers instead of just loading out empties, thus enabling shipping lines to earn freight on both inbound and outbound legs. Inbound freight should hence reduce significantly as a result. High inbound freight is a chronic problem faced by many third world countries as they import manufactured goods in containers, which need to be re-exported as empties, while some of their bulk commodity exports could have been shipped as containerised cargo.

Port competition is basically naval battles fought on land, to quote from a source. How successful a port is, and how resilient it is against its competitor in retaining its customer base, depends to a large extent on how well integrated it is with its hinterland in terms of connectivity. Ports can no longer be just a single node by itself, but require to be supported by a system of nodes on the landside.

Inland Ports in Europe

The presence of a large number of well established ports within 300 km of the Rhine-Sheldt Delta underscore the highly competitive port landscape of Northern Atlantic Europe. Competition drive these

ports to develop their respective hinterland connectivity through various waterway and rail transport corridors. In this respect, Northern Europe has seen the emergence of some of the largest intermodal terminals in the world today. Duisburg for example achieved a throughput of 55 m.ton of cargo in 2008 including more than 1 million TEU carried on barge and rail, and is now the largest inland port possibly in the world. Extensive rail corridors are now extending to most parts of Germany, and neighbouring countries. Other river systems such as the Danube River system, the impending construction of the Seine-North Europe Canal are growing evidence of the need to develop the waterway system to divert traffic from land and complement the road and rail corridors.

Inland ports in Asia

In South East Asia, the absence of large continental land mass, and the distribution of population along the coastal areas, plus the relatively shorter history of containerization, means that inland port system are slow to develop. Whereas in China and India, which have huge land masses, and population in the interior, the need for an inland distribution system of cargo is never more important. The Chinese government, in particular, has to deliver on its promise to develop the interior of the country to achieve a more equitable economic development. Both China and India are now investing heavily in rail networks, with scores of intermodal terminals being set up to serve the inland logistics. China, with its Pearl River, and Yangtze River has further possibility of developing comprehensive river transportation for containers right into the heart of its interior.

Inland ports in South America

Similarly, in South America, the Amazon and the Parana River basins holds great potentials for an inland water way port system to emerge. Whereas in North America, the rail intermodal system is highly developed to transport containers from coast to coast, and to the interior. Huge distribution centres have sprouted up across the country near points of consumption, as part of the supply chain system.

Inland ports in Africa

Elsewhere in Africa, inland port system is either non-existent or just in their infancy. Many of their seaports themselves are still struggling with low productivity, shallow draft, limited shipping choices, and high costs of shipping. Land locked countries in Africa faced huge obstacles in developing their trade and industry owing to high costs of freight and long delays in getting their goods in and out

of their countries. An UNTAC report on Multimodal Transport 1995 stated that "Trade and transport are inextricably linked: efficient transport services are a prerequisite to successful trading." Unfortunately for these landlocked countries, there is no other option than to depend on neighbouring countries road and rail system, and freight companies has to contend with bureaucracy, security issues, not to mention the rampant corruption, and outright extortion of payment along the way. Working through regional cooperation councils such as AMU (Arab Maghreb Union), COMESA (Common Market for Eastern and Southern Africa), (ECOWAS), Economic Community of West African States, EAC (East African Community) etc, remains a viable option for sorting out such transit problems.

Conclusion

The time has now come for policy makers to rethink their development philosophy to focus on feeder ports, inland ports, transport corridors, as well as coastal shipping. Port investment should not be just about headline grabbing deep water mega port, but should instead be based on achieving balanced development in various regions of the country. Governmental support and master planning is key to facilitating the setting up of an integrated network of feeder ports, inland port and intermodal corridor system. The decision process to site inland port should best be left to the technocrats, and the private sector to evaluate, instead of being hijacked by politicians as a part of the vote canvassing campaign, and pork barrel politics. Private sector involvement is therefore one safeguard in ensuring that decisions are made on a sound, commercial, and market oriented basis, with risks and rewards going hand in hand to the parties involved.

Feeder ports and inland ports are really two sides of the same coin. Allocating a country's scarce resources to developing an efficient network of feeder ports and inland ports to has a much larger multiplier effect than setting up transshipment ports in some remote locations. Feeder ports and inland ports are truly the gateways for their respective hinterlands, vital for a region's industrial and economic development, and thus helping to achieve a more balanced development for the entire country.

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