Planning Cityport Container Terminals: Challenges and Trends

By

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The primary function of seaports is to facilitate trade. To do this effectively demands that seaports offer and maintain higher levels of efficiency at reducing cost. Seaports must be able to achieve these aims whilst also ensuring that what they do is environmentally sustainable.

An ever-increasing share of world trade is carried in containers; unfortunately for many of the world's largest cityports, container terminal efficiency, low cost (i.e. the 'real' cost) and environmental sustainability do not go hand in hand.

So what is driving ongoing container port development in cityports? At its most basic level, constant trade growth means a doubling of port capacity is necessary every 10-15 years or so, and in virtually all regions of the world. Some regions are growing faster than others, but by and large all regions of the world are having to gear up to handle more container traffic.

Historically, container traffic has expanded at more than twice the rate of GDP. While world trade has expanded between 3-5% per annum over the past 20 years, container traffic has grown by an average of between 8-12% annually. Even today, more and different types of goods are being transported in containers. This is primarily as a consequence of two factors – lower transport costs and the extended global reach of megacarriers – with both of these factors resulting in ever-greater volumes of container traffic.

The ongoing rise in traffic flows has contributed towards a dramatic increase in the size of container ship, in turn generating massive economy of scale effects and hence even lower transport costs. Ships capable of carrying in excess of 8,000 twenty-foot equivalent units (teu) now ply the oceans carrying, in addition to high value goods such as computers, spirits and CKD cars, low value products such as hay, potatoes and pulp that previously had to be shipped in bulk or simply were not shipped at all over long distances.

Together, the increase in the size of ship and far greater traffic volumes has placed added demands on seaports to upgrade. However, traditional seaports situated in urban and semi-urban locations are often unable to *adequately* accommodate larger ships and the additional traffic they bring. The very high cost of dredging is only one of several significant challenges that today's naturally shallow and often-saturated cityports have to overcome. The lack of land, or at least affordable land is another problem they face. In addition, there is the added headache of transport access on the landside – and whether this has to be overcome through very substantial infrastructure investments, such as LA's Alameda Corridor or the Dutch Betuwe Line.

Expense related to the dredging of artificial deep-water navigation channels, together with the usually high cost (and opportunity cost) of land in cities, plus rail and road

access investments, must be added together, not forgetting the associated external costs resulting from all these activities, for the environment and for society. But does all this container terminal and megaship activity really have to take place in shallow, congested cityports? Are the world's cityports the only alternative to effectively handle ever-more container traffic and larger ships, more especially bearing in mind that today's port capacity expansion scheme will need to be repeated every 10-15 years?

The answer to both questions is most certainly no. The reason large container ship activity is directed towards cityports is primarily (locally) politically motivated and this is unfortunate – unfortunate for the environment, for the taxpayer and for business. Port hinterlands are far wider then they have ever been, and certainly extend far from a cityport interface. No longer does a seaport supply only the city that serves to constrain it today – major ports can and do serve entire economic regions, and often comprising several states (the EU, for example).

To return to the statement at the beginning of this article, ports are not simply about creating jobs in the area around the port – ports primarily exist to facilitate trade. It is the employment associated with trade that is far more important than port jobs, relatively speaking. As transport is a derived demand, then the more trade there is, the more jobs there will be in ports, as well as in other services. But without trade, or with less trade due to constraining factors (e.g. including saturated and high cost ports), there will obviously be less port jobs.

Unfortunately, major container port location decisions are not always driven by the needs of trade; rather, it tends to be driven by local (i.e. city/port) political priorities. The jurisdiction and control over ports is very often decentralised to the region, state or even worse to the cityport itself. Take Hamburg for example, a small city-state almost 100 kms from the sea and connected by a long shallow (now artificially deep) navigation channel. In this case the national taxpayer pays for River Elbe channel deepening and maintenance, while state taxpayers pay for ongoing port development. Yet when considering the hinterland of Hamburg and the traffic flows that move through the port, more than half the traffic is not even for Germany! So why should national taxpayers be asked to fund port infrastructure at an inappropriate location that essentially serves the businesses of other countries (i.e. mostly feeder traffic for Baltic/Scandinavia)? Similarly, Rotterdam does not simply serve only Rotterdam or even just The Netherlands, and neither does Antwerp serve only Belgium, nor does New York/New Jersey serve only the bi-state area.

Whilst the hinterland of today's major container ports encompasses entire economic regions, basic infrastructure port investment and location decisions are being directed at the local port level. As a consequence, planning of new port infrastructure at these heavily constrained locations never takes account of possible alternative locations elsewhere in the hinterland region concerned. Why should it? In the absence of national or even federal port planning (e.g. in the USA, and EU), local port and city/state officials and local politicians drive the future port development agenda in their own constituencies, and this is usually at historic/traditional port locations. These entities will inevitably tend to push their own schemes rather than consider what is good or bad for the entire region that comprises today's massive port hinterlands. In reality this represents a policy mis-match of major proportions. But it

also raises fundamental questions about the need to search for more sustainable port location options on a region-wide basis. Region in this sense might mean the whole of northern Europe, or the entire US East Coast.

Things are changing though. Competition and economies of scale has led to a dramatic fall in the cost of sea transport, with the result that container shipping is now just another commodity business. Megaship economies of scale and a move towards hub and spoke transhipment has in turn created possibilities for larger feeder vessels to operate, thereby generating economies of scale in feedership size, and in turn lowering the overall cost of transhipment. Not only does this help to reduce costs for intercontinental traffic, it also helps to reduce costs for intra-regional business as well. It is no accident that the intra-Asia trade is the largest single trade in the world, and intra-Europe might be expected to follow this trend.

When ships got very big in the commodity business, what happened? In bulk fuel transport, new seaports were created at offshore natural deep-water locations – oil is a good example of this (e.g. Louisiana Offshore Oil Port – LOOP, Sullom Voe, etc.). Could such a thing happen in container shipping? Well, there is some good news here, it has already happened in a very big way, and its still happening.

Where exactly are these new 'offshore' transhipment hubs? They can usually be found at locations with limited local populations (and hence limited congestion), typically on islands or remote peninsulas where land is plentiful and less expensive than in or nearby a city. For example, in the south of Europe, transhipment hubs have been developed at Algeciras, Sines, Cagliari, Gioia Tauro, Malta and Taranto. In the Mid-East they can be found at Salalah and Aden, in Southeast Asia at Port Klang and Tanjung Pelepas, and in the Caribbean at Kingston, Port of Spain, Freeport Bahamas, Puerto Rico and both ends of the Panama Canal. Other new container transhipment hubs are planned for northern Europe, at the former iron ore terminal at Hunterston on the Firth of Clyde, and at Scapa Flow in the Orkney Islands. In North America, a hub location near Rhode Island is under consideration, with another at Canso in Nova Scotia, while in Japan PSA Corp is investing in a new facility at Kitakyushu.

Recent and ongoing 'offshore' hub developments now means that growth in container transhipment is 1.5 times greater than the rise in overall traffic growth, which as explained is already higher than GDP. This reflects the strategies of global carriers employing the largest as well as more moderate sized vessels as they move towards developing hub and spoke service networks, more often than not using new 'offshore' hub terminals.

The locational choice behind these new-style transhipment hubs largely comes down to one of, firstly, identifying a site with natural deep-water adjoining low cost land that offers on the one hand minimal mainline ship deviation time from ocean routes, and on the other can improve *average* feeder distance. Then the obvious but rather more difficult and challenging question – does the hub in question fit the strategies of global carriers and global terminal operators, and which ones?

What can individual seaports do to address this new reality? The answer for most ports, and more especially for traditional cityports situated in shallow and congested areas is they can actually do very little. Consider what happened when Maersk

Sealand and Evergreen Line moved their business from Singapore to Tanjung Pelepas. MSC and Maersk Sealand have also moved a significant part of their traffic to transhipment hubs such as Freeport Bahamas, Salalah and Gioia Tauro.

Globalisation of the container terminal business further implies that an increasing share of the total activity is now in the hands of multinational terminal operators, some of whom also operate as carriers. Continued evolution in this key sector of the global intermodal transport chain has led to the creation of entities that each have literally dozens of terminal investments across the globe. Individual ports will benefit from this evolution, but on its own a single port can do very little to influence matters.

In this new reality, potential seaport locations that can offer the strategic advantages mentioned have to be able to promote and then facilitate their development in the wider interest. In this regard it is imperative that national and supra-national (e.g. EU, USA) governments recognise the ongoing transformation in the global container shipping industry and in particular the trend towards developments in offshore transhipment hub ports, and from this the opportunities that exist for much more sustainable as well as lower cost alternative port development in future. Sustainability *and* cost reduction are the essential twin virtues of new style 'offshore' transhipment hubs, and this applies to both inter-continental and intra-regional traffic flows.

In summary, it should be recognised that the lifecycle of shallow and congested/ saturated traditional cityports has been artificially extended, and this process is being allowed to continue, more often than not with the aid of local/state taxpayers money, and in some instances federal resources as well (e.g. dredging in the USA, Germany, The Netherlands etc.). This is hardly a sustainable process, either environmentally or financially. It is a locally politically motivated process that totally ignores the availability of sustainable and low-cost natural deep-water alternative locations elsewhere in today's vast port hinterland. It is a process that will need to be put right, and hopefully sooner rather than later.

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