

# Global Logistics and Local Dilemmas

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## ABSTRACT

Global logistics which connects widely dispersed producers and consumers are increasingly organized through gateways and corridors located in urban regions. At the same time, global logistics systems are increasingly infrastructurally, economically and institutionally disconnected from the city-regions that host them. This disconnection raises a series of dilemmas for the host localities. This paper presents a conceptual framework for understanding the dilemmas that confront cities and regions that host national and continental logistics gateways. The framework, which is illustrated with examples from several seaport gateways, focuses on the land use, economic and community development impacts of gateways and corridors on the host city-region. It also pays attention to the differing scales at which these impacts occur; these range from the highly localized to the metropolitan scale. It is proposed that solutions to the local dilemmas of global logistics be evaluated in terms of sustainability criteria, namely efficiency, equity and environment.

## 1. INTRODUCTION

While the economic benefits of global trade are enormous, the potential for differences in local and national perspectives when developing gateways and corridors are no less significant. Global logistics which connects widely dispersed producers and consumers are increasingly organized through gateways and corridors located in urban regions. These “system(s) of marine, road, rail and air transportation infrastructure of national significance for international commerce” (Canada, 2007) seek out urban locations precisely because of the accessibility and agglomeration advantages they confer. Yet, gateways find themselves in constant tension with the other inhabitants of the city-regions that host them. This is particularly true in the case of seaport gateways, which are the focus of this paper. It is not only that waterfront land is scarce, desirable and highly regulated; seaport gateways are increasingly infrastructurally, economically and institutionally disconnected from the city-regions that host them. This disconnection raises a series of dilemmas for the host localities.

This paper presents a conceptual framework for understanding the dilemmas that confront cities and regions that host national and continental logistics gateways. The framework is illustrated with examples from several

seaport gateways and their associated city-regions, including Los Angeles-Long Beach and Durban, South Africa. The framework focuses on the land use, economic and community development impacts of gateways and corridors on the host city-region. It also pays attention to the differing scales at which these impacts occur; these range from the highly localized to the metropolitan scale. Reconnection - the reconstruction of the relationship between gateways and corridors, and the localities that host them - requires a fundamental re-thinking of the goals and practices of global logistics. No blueprint for future development is offered here, but it is proposed that solutions to the local dilemmas of gateways and corridors be evaluated in terms of sustainability criteria, namely efficiency, equity and environment.

## 2. INFRASTRUCTURE'S LEGITIMACY PROBLEM

Seaport gateways, and their associated truck and rail corridors, inter-modal yards, warehouses and distribution centres, are not alone in facing increasing resistance from the communities and polities residing in the urban regions they inhabit. In their recent book on urban mega-projects in the United States, Altshuler and Luberoff (2003) trace the increasing challenges faced by those attempting to secure the necessary approvals, permissions and finance for projects such as airport expansions, highway developments, and mass transit systems. As an approach to urban development, the urban mega-project became non-routine after the 1960s, and was increasingly displaced by a 'do no harm paradigm'. Communities successfully resisted the disruptive effects of large-scale projects, insisting on mitigation measures and on renegotiating project-financing arrangements to reduce local costs and risk exposure. Shifting costs and risk changed the political economy of urban redevelopment, and in time it became "much easier to site new buildings-even stadiums, convention centers, and shopping malls-away from sensitive neighbors than airports, highways, or rapid transit systems because they require neither mammoth sites nor continuous corridors" (2003: 230). As the political economy of infrastructure projects changed, so too did the shape of urban development.

The story related by Altshuler and Luberoff resonates with the work of other scholars, and it is important because in a democracy, ultimately what lies behind the ability to advance urban mega-projects is public support, as mediated through a variety of infrastructure-delivery mechanisms, including planning, decision-making, mitigation, implementation, operation, management, and pricing. So, before turning to seaport gateways *specifically*, I want to mention two ideas that cast further light on why large-scale urban infrastructure projects *in general* are having such a hard time gaining public support.

First, public support for proposed major infrastructure projects has been undermined by public and scholarly questioning of the accuracy of cost and benefit estimates. For example, Flyvberg et al (2002) examined estimated and actual costs of 258 transportation infrastructure projects worth \$90billion (USD), and concluded "that the cost estimates used in public debates, media coverage, and decision making for transportation infrastructure development are highly, systematically, and significantly deceptive. So are the cost-benefit analyses into which cost estimates are routinely fed to calculate the viability and ranking of

projects. The misrepresentation of costs is likely to lead to the misallocation of scarce resources, which, in turn, will produce losers among those financing and using infrastructure, be they taxpayers or private investors" (290). The authors do note that there is nothing especially inaccurate about transportation cost estimates in comparison to other infrastructure types, or indeed about public versus private projects. The work of Flyvberg and his colleagues is controversial, but it has been followed up by work showing that systematic cost underestimation is also often accompanied by systematic benefit overestimation (see Flyvberg et al, 2003).

Second, regardless of what is going on with prospective estimates, several analytical studies have shown that the benefits of new infrastructure investments, especially in the context of highway development, have declined over time. A useful summary of a large number of these studies has been prepared by the Victoria Transport Policy Institute (VTPI, 2007). Highway developments can and do provide enormous economic development advantages to under-served localities through improved accessibility and reduced transportation costs. But this is only the case when the lack of highways is a constraint on economic development. In the developed world, and especially in the United States in recent decades, there is considerable evidence that the marginal benefits of new highway construction have declined over time. While the first post-World War Two highway developments brought undeniably huge advantages, the contribution of each subsequent highway was less and less impressive. New highways and highway connections can have important localized effects, but these benefits often involve the redistribution of existing activity that comes at the expense of other localities.

### 3. SEAPORTS AND DISCONNECTION

The general arguments about infrastructure's legitimacy problem outlined above take on a particularly intense and spatially selective form when considered in the context of seaport gateways. This is because the demand for local accommodation of seaport gateways and their associated corridors has been increasing at the same time that local public support for them in port city-regions has been decreasing. Most characterizations of this dilemma focus on the first part of the problem, namely the increasing demand for local response. One consequence of containerisation and intermodalism is the increasing competition between ports to attract carriers and their cargo. Increasing competition between ports places great demands on localities to respond creatively and rapidly. McCalla (1999) has described this process with the notion of 'global change, local pain'; he writes that "globalisation has led to a paradoxical situation.... adjustments to the globalisation phenomena must necessarily take place at the local level" (1999: 247).

The second part of the problem, decreasing local support, is equally important. Public support for seaport gateways has declined because the relationship between seaports and port cities has been profoundly altered by the processes of containerization and the rise of global logistics. The metaphor that I use to describe the underlying causes of the falling public support is *disconnection*, because it focuses on the qualitative nature of the difficult relationship between two sets of actors and actions that nevertheless occupy the same physical space. In what follows I discuss three dimensions of the disconnection process, the

infrastructural, the economic and the institutional, and I trace how these have had profound land use, economic and community development impacts in the city-regions that host gateways and corridors.

Before moving to the discussion of disconnection, it is worth considering in a little more detail what is meant by the term 'local'. Some earlier discussions of contemporary globalization - which is the driving force behind contemporary seaport gateways, containerization and logistics (see Levinson, 2006) - drew a sharp distinction between global and local forces. Global forces were often viewed as those external, uncontrollable and impersonal forces over which the local, internal, representative and communal forces had little control (see Cox, 2005). Global and local forces were viewed as being in constant conflict; one logical conclusion of this view was that national regulation systems would wither away. The current, more nuanced, view is that there is no such sharp distinction between local and global. Instead, geographers now focus more on the relationship between the two (see Coe et al, 2004), and they have added new spatial categories such as enclave, city-region, corridor, and trading bloc to more traditional categories such as nation and municipality.

What is important to take from this academic debate about geographic scale is that when we speak about the 'local' dilemmas and impacts of seaport gateways, we are actually speaking about a range of spatial categories from the neighbourhood to the metropolitan-scales. For example, when considering the impacts of vehicle pollution emissions, it makes a big difference whether you are talking about neighbourhoods or a regional air district. Because some emissions are highly localized, living within 200m of a highway measurably increases child asthma-related hospitalizations (Lin, et al, 2002); other impacts, such as ozone formation, occur at the more regional scale. In other words, even within localities, we need to pay attention to the geographic scale and distribution of impacts.

### **3.1 Seaport Infrastructure and the Urban Interface**

Containerization fundamentally transformed the physical shape of seaports and the infrastructure networks they are embedded in. The container is a moving warehouse that eliminates the need for the on-dock storage warehouses that characterized the covered finger-piers of old. It requires specialized handling equipment, exemplified by the gantry crane or portainer. Modern containerships are getting bigger and bigger, exhibiting seemingly inexhaustible economies of scale. Massive investments in ships and cranes demand terminals configured for the efficient movement of containers between the dockside, storage stacks, and points of access to land transportation. The scale of marine terminals has increased dramatically - from finger-piers that were yards long and feet wide to the most recent US mega-terminal, the broad, rectangular 484-acre Pier 400 at the Port of Los Angeles.

Port developers around the world have found that they could not easily accommodate these space requirements in traditional urban port locations. Where they could, seaports migrated downstream from river-port to downstream or even oceanfront locations. One place where this occurred was in the US East Coast Port of Baltimore, where the port's main container terminal is located 6 miles to the east of the traditional inner harbour. Land for the Dundalk Marine Terminal was

purchased in 1959; the port's first public container terminal opened there in 1967 (Hall, 2003a).

However, the removal of cargo terminals from the core city does not imply complete physical separation. Trucks entering and leaving the terminal still travel on local roads as they make their way to often-congested highways they share with commuters. There are strong reasons for thinking that relocating ports out of core urban areas and improving their highway accessibility only delays the congestion problem while contributing to the problem of urban sprawl. After comparing two logistics park developments in Berlin-Brandenburg, Germany, Hesse (2004) concluded that "the speculative nature of development activity raises land consumption and contributes to urban sprawl. Distribution firms particularly apply to this, since the comprehensive 'orchestration' of material flows requires not only new sites but also extensive infrastructure, to connect interrelated places" (171).

A Canadian study illuminates some of the reasons why logistics parks may stimulate further urban expansion. After surveying of 196 manufacturing and wholesaling firms location near various Canadian ports, airports and railyards, McCalla, Slack and Comtois (2001) found that businesses in close proximity to the terminals make rather modest use of the terminals. Less than 30 percent of the interviewed firms used the nearby terminal for their freight shipments; only 3 percent of the firms indicated that proximity to the terminal was a primary locational consideration". So why are they there? The authors conclude that "the relationship between industrial location and the terminals is more indirect, than direct, based on the high levels of accessibility found in the terminal zones" (404). In other words, making seaport gateways more accessible for freight movement, especially for road-based transportation, may also make these parts of the city attractive to other users.

In other places, seaports simply could not escape the cities which had grown up around them. For example, the Port of Durban, which is the gateway to South Africa's mining and industrial heartland, is a natural lagoon with a single narrow entrance to the Indian Ocean. Conflict between the port and the city can be traced back to very earliest days of the city, not least because the port has always been administered by the national government (see Freund and Padayachee, 2002). Since the ending of apartheid and the opening of the South African economy in the 1990s, massive increases in container throughput rekindled and intensified conflicts between the seaport and city. These conflicts have revolved around the location of new marine terminals in relation to waterfront real estate developments adjacent to the downtown business district and tourist beaches, the likely ecological impacts of dredging and terminal construction on the port's sandbar and remaining mangrove forest, and the urban impacts of trucking and rail movements. Many working European seaports are also in close proximity to their cities, and the Le Havre-based International Association of Ports and Cities is at the forefront of efforts to share best practices about how to improve the physical interface between port and city.

We can think about the negative impacts of contemporary port infrastructure on urban areas in three ways. First, there is the matter of competition for a scarce resource, namely land that is on or close to the waterfront. Cargo movement stimulates a variety of activities that vary in how close to the waterfront they need to be, or what we might call their degree of

water-dependence. Despite the fact that container ports handle much more cargo per unit of land than ever before and despite the fact that information technologies have allowed some of these activities to be more widely dispersed, some essential cargo-related activities are highly water-dependent. Vessel-related services and cargo handling are obviously the most water-dependent of all since they must occur at ocean terminals, but Table 1 identifies other highly water-dependent land uses, including container services and land transportation services. Both of these activities struggle to command waterfront rents. Trucking services in particular seek parking locations close to the waterfront resulting in a high potential for conflict with other waterfront land users.

**Table 1: Water-dependency and Space Requirements of Seaport Cargo Handling Activity**

Activity	Examples	Water-dependency	Space requirements
Vessel-related services	Tugs, ship repairs and supplies	High	Ocean terminal
Cargo handling	Stevedoring, terminal operations	High	Ocean terminal
Container services	Repair, storage, drayage	High	Low-grade industrial space
Cargo services	Forwarding, legal, financial	Low	Office space
Processing	Automobile accessorization	Moderate-High	Industrial and warehouse space
Warehousing	Transloading, consolidation	Moderate	Accessible warehouse space
Land transport services	Trucking services, parking	High	Low-grade industrial and vacant lots

Adapted from Hall (2003b).

Second, without romanticizing the pre-containerization working waterfront, it is clear that the urban interface of contemporary seaport gateways is relatively hostile to residents of surrounding urban areas. To explore this assertion, we can use Kevin Lynch's concept of 'legibility', which refers to the ease with which residents can understand and thus inhabit an urban space. Lynch (1960) identified five basic elements of urban form, which contribute to the legibility of the city, namely, paths, edges, districts, nodes and landmarks. Pre-containerization seaports were once city *districts* with a common identifying character, albeit not necessarily a particularly safe or clean one. They were knitted into the fabric of the city by *paths* that residents could and did use to enter the port district.

However, the scale of modern seaport terminals as well as a variety of safety and security concerns has sharpened the boundaries of seaports to the

extent that they are now surrounded by *edges*. Freight corridors, be they railways or highways, leading to and from seaport gateways are also edge elements that can only be mitigated with costly grade separations and sound walls such as those implemented in the construction of the Intermodal Container Transfer Facility and the Alameda Corridor in southern California (Kagan, 1990). Where edges act as barriers to mobility (for example, of non-motorised transportation) or access (for example, of public enjoyment of the waterfront), they impose costs and resentment. At best, contemporary seaports may act as *landmarks* or signposts in the urban landscape. So for example, you might direct a visitor to “turn left when you see the container cranes”, but you would surely also add “don’t get too close, or you’ll get stuck in the truck traffic”.

Third, and most importantly, seaport infrastructure and associated transportation technology choices are associated with considerable negative environmental impacts (see EPA, 2002). To accommodate the largest container ships, seaport gateways must construct larger terminals and dredge to greater depths, which further damages coastal ecosystems. Recently, it is the air pollution impacts of cargo movement that have attracted the most concern in port cities. In 2005, the twin mega-ports of Los Angeles and Long Beach handled over 14 million container units, and in so doing, they generated approximately 25% of the diesel pollution in the region (O’Brien, 2004). Ocean liner smoke-stacks, trucks and locomotives are responsible for *localized pollution*, especially elemental carbon emissions that affects those living and working in close proximity to traffic exhaust, *regional pollution*, which includes small to ultra-fine diesel particulate matter, nitrogen and sulphur oxides, and ozone, and greenhouse gas emissions with *global impacts*. Epidemiological research has established an association between higher levels of air pollution and asthma-related school absences, reduced lung function in children, more premature births and low birth weights, and elevated risk of cardiovascular disease and cancer (Hricko, 2006). It is still too early to tell whether current efforts to clean up the air around the San Pedro ports will be successful.

### 3.2 Economics, Networks and the Diversified Waterfront

The second dimension of the disconnection between seaport gateways and their host cities is economic. It is not that seaport gateways have ceased to be sources of great added value; rather it is the nature and geographic distribution of those benefits that is of central concern here. The first part of this story - the shrinkage of direct cargo-handling jobs - is well known. All around the world, cities have grown up around safe harbours, and until sometime in the second half the 20<sup>th</sup> century, ports in the developed world were closely related a clearly identifiable economic hinterland. This port-related economy had both highly localized neighbourhood and wider regional dimensions. Before containerization, large numbers of unskilled men found work loading and unloading cargo; these men typically came from neighbourhoods close to the port, so reinforcing the sense of connection between the city and the working waterfront. The huge efficiencies afforded by containers loosened these highly local economic ties over 30 years ago. Levinson (2006: 274) reports that between 1963 and 1976, the total number of longshore hours worked in New York City fell by three-quarters. Yet, in the great

competition between east coast North American container ports, New York is regarded as one of the winners.

In other places, abandoned cargo port facilities blighted large urban areas for decades (Hoyle, Pinder and Husian, 1988). At the same time, abandoned waterfront land also presented new waterfront development opportunities to many port cities, giving rise to what can be described as the diversified waterfront that includes a huge array of users and uses. Table 2 presents a simple classification of these competing maritime/non-maritime and traditional/new uses that have themselves strained the relationship between seaport and city.

**Table 2: Competing land uses on the diversified waterfront**

	Maritime	Non-maritime
Traditional	Cargo Ship services Fishing	Heavy industry Toll / ferry crossings Commuter rail
New	Cruise ships Recreational boating Habitat restoration	Real estate Tourism Public access

Source: Brown and Hall (forthcoming).

Changes in the relationship between seaports and the city-regional scale have been no less profound, although they often came later. Container carriers enjoy enormous economies of scale, but as a result they have become much more selective about the number of ports they will visit in a given port range. For example, several trans-Pacific services to the North American west coast visit Los Angeles / Long Beach and only one other port before returning to Asia (see Esteban, Malchow and Kanafani, 2000); the competition between Oakland, Portland, Seattle/Tacoma and Vancouver to be that other port is especially intense.

The flip side of intense competition between gateway seaports along the same piece of coastline is intense competition to serve the shared hinterland. North American west coast ports have been competing with each other, and indeed with east coast ports, for over 25 years to discharge cargo destined for locations clear across the continent. While these changes would not have been possible without containers, they are closely related to other important economic changes, including transportation deregulation, the de-industrialization of many advanced economies, the rise of the logistics industry and the emergence of global commodity chains (see Dicken, 2003; Hesse, 2006; Robinson, 2002).

These changes in trade networks have reinforced the sense of economic disconnection between seaport gateways and local economies. Since the 1970s, the Ports of Los Angeles and Long Beach have consolidated their position as the dominant gateway seaports in North America. The most recent economic impact statements of the two ports provide an 'order of magnitude' reflection of the economic disconnection problem. According to its impact statement, port operations at the Port of Long Beach support nearly 30,000 jobs in Long Beach, but as many as 1.4 million jobs in the United States (POLB, 2007). This implies that only 1 in every 47 jobs attributed to port activity is created locally. The Port of Los

Angeles reports similar national benefits (1.35m jobs), but notes that port industries that are involved in the moving and handling of maritime cargo account for only 16,360 jobs, of which 85% are trucking and warehousing jobs (POLA, 2007).

The shift to trucking and warehousing jobs is at best a mixed blessing for port cities because, unlike longshore work, these are not high-wage jobs. Along the entire US West Coast, employment in the trucking and warehousing has grown significantly along with cargo throughput, while employment in water transport (which includes stevedoring), has been stagnant. Statistics taken from the US Census Bureau's annual earner survey (the March Current Population Survey) indicate declining relative earnings in these growing job classes. In the period 1970-76, warehouse workers residing in the metropolitan areas around the large US West Coast ports earned \$10,500 more per year than comparable workers, that is, non-transport operators, fabricators and labourers residing in the same metropolitan areas. By the period 1984-90, warehouse workers residing in the west coast port metropolitan areas were earning \$4,000 less than comparable workers; this pattern persists to today. Truck drivers saw their earnings advantage narrow from \$18,800 more than comparable workers in 1970-76 to \$7,100 in the period 1999-05. In the case of truckers, the reported earnings advantage is likely to be an overestimate because truckers operating as independent contractors likely over-report their earnings (Monaco and Grobar, 2004). In contrast, water transport workers extended their annual earnings advantage over comparable workers of \$16,700 in the period 1970-76 to \$25,700 in the period 1999-05.

The really important contribution of contemporary seaport gateways to the national economy is in the value of the goods they move, yet, it is at precisely this point where the problem of economic disconnection is most keenly felt. By serving shippers located in a distant and highly contested hinterland, seaports have lost much of their direct relationship with influential local interest groups. One vivid illustration of the problems that can arise when this happens is detailed in a case study of automobile supply chains using the Port of Durban (see Hall and Robbins, 2007). In 1998, the national government agency responsible for the port went about building a facility to export BMW motor vehicles assembled over 600 km inland in a way that increased tensions between the port and city over waterfront access. Later, the same port administrators were unresponsive to demands by the Durban-based Toyota motor vehicle assembler for additional motor vehicle export facilities. Instead of serving local shippers, the port became an obstacle to local economic development efforts to insert the Durban automobile cluster into Toyota's global supply chain.

### **3.3 Institutions and Governance**

The ability of local port planners and administrators to secure support for seaport gateway and corridor developments is undermined by fact that the economic benefits of seaport gateways have shifted from port communities to widely dispersed carriers, shippers and final customers. This has occurred at precisely the same time that the infrastructure requirements of gateway seaports are growing in cost, complexity and spatial extent. This is especially the case in the landside corridors of seaport gateways. In order to improve hinterland connections, ports

have had to engage in a new phase of port regionalization that includes inland distribution centres and dedicated rail corridors (Notteboom and Rodrigue, 2005).

In one sense thus, the institutional problem facing gateway seaports is the mismatch between the increasingly expansive geographic scale of the port service area and economic hinterland, and the often-fixed scale of the governance arrangements. In another sense, however, the attempts to deal with the governance mismatch have themselves become a source of the problem of institutional disconnection between port and city. The decade of the 1990s saw considerable discussion and experimentation with alternative reforms of port governance. The driving force behind these changes was the realisation that the speculative investment in lumpy infrastructure is an ultimately self-defeating strategy for most port authorities when hinterlands are increasingly contestable. Localities had discovered that this competition was stacked in favour of the carriers who could play ports off against each other as mere "pawns in a game" (Slack, 1993).

One stream of port reform emphasised the role of the public port authority in the intensely competitive global container port industry. Authors called for comprehensive development strategies that would take account of intermodal links and flexible port operations that facilitate regional specialization (Heaver, 1995; Song, 2003; Notteboom and Winklemans 2001). In some places these strategies are being adopted; Hesse (2006) discusses how congestion problems around the port of Hamburg have led the Hamburg Port Authority and City of Hamburg to engage in cooperative planning with their jurisdictional neighbours to the south in order to improve hinterland connections and to develop the Süderelbe logistics region. However, it is not known how widely these approaches have been adopted, or whether they have been successful. It is interesting to note a recent resurgence in regional port cooperation to deal with air pollution issues. For instance, the ports of Seattle, Tacoma and Vancouver, B.C. recently announced that they would cooperate to cut air pollution in the Puget Sound region (Cornwall, 2007).

Another stream of port reform literature emphasised devolution, deregulation and privatization as mechanisms to shift the costs and risks of port development to the private sector. This has opened the door for the emergence of a new class of port actor, the global terminal-operating operator, which includes firms such as Dubai Ports World and Hutchinson Port Holdings (Olivier and Slack, 2006). When combined with the terminal operating arms of ocean carriers, such as the APM Terminals owned by Maersk of Denmark, the share of global container throughput handled by private terminal operators now dwarfs that handled by public port authorities (see Table 3).

Port reform efforts have resulted in a variety of new forms of port governance, almost all combining greater private sector involvement in port operations with some measure of public sector regulatory oversight (Brooks, 2004). If city governments had taken up this regulatory oversight, the disconnection implied by these governance changes might have been mitigated. However, outside of the United States where most ports remain local and state jurisdictions, this has not been the case. In Canada, for example, a majority of the directors of the largest port authorities are appointed by the federal transport minister.

**Table 3: Global terminal ownership and market share restructuring among leading actors, 2001**

Operating body	Share of global terminal ownership	Share of global container port throughput
Global terminal operators	35%	42%
Ocean carriers	19%	12%
Public port authorities	32%	27%
Other private operators	14%	19%

*Note: Figures have been rounded-off for readability. Global terminal operators and carriers are defined as those firms having terminal operations in more than one region. Others are defined as non-global terminal operators and public port authorities. Source: Drewry, 2002 via Olivier & Slack, 2006.*

Institutional disconnection remains a largely intractable consequence of the economic and infrastructural disconnection between gateway ports and the cities that host them, but recent port reforms and industry reorganization have arguably exacerbated the problem because they have allowed decision-making power to shift from local public to global private sector actors. It is by no means clear what can be done to reverse the palpable sense amongst residents of port cities that they cannot influence port decision-making without resorting to lawsuits, and increased regulatory oversight achieved through political coalition building and pressure. Certainly, these are the tactics of the various environmental and community groups and their local political representatives that have prompted the Ports of Los Angeles and Long Beach to work with the South Coast Air Quality Management District, California Air Resources Board and U.S. Environmental Protection Agency to develop the Clean Air Action Plan (POLA and POLB, 2006).

#### **4. CONCLUSIONS: TOWARDS SUSTAINABLE SEAPORT GATEWAYS**

I began this paper by noting the public legitimacy problem facing many urban mega-projects in the developed world. I then developed a conceptual framework for understanding the specific dilemmas that confront cities and regions that host national and continental seaport gateways. In so doing, I adopted a pessimistic tone. I used the metaphor of disconnection to argue that the relationship between seaport gateways and port cities is at best strained, and that in many places it is broken. My framework describes a multi-dimensional problem that will not be easily solved; disconnection extends across the infrastructural, economic and institutional domains. I argue that reconstructing the relationship between seaport gateways and corridors, and the localities that host them requires a fundamental re-thinking of the goals and practices of global logistics. There are positive indications of some emerging approaches to reconnecting seaport gateways and port cities. In conclusion I want to highlight the potential and limitations of a few of these.

The International Association of Ports and Cities recommends the following five strategies to improve the physical relationship between ports and cities (see AIVP, 2006):

- “giving oneself the means to act over a period for a shared city-port interest”;
- “drawing up a coherent strategic plan endowed with the means for monitoring it”;
- “controlling the land policy on the considered site”;
- “taking up the challenge of quality programming, in coherence with the port city and the expectations of the population”; and
- “looking after the economic viability of projects and their flexible and lasting character”.

The full report provides rich detail under each of these broad headings. What is significant about this guide, which is mainly concerned with the physical relationship between port and city, is that it actually devotes so much attention to institutional and economic relationships. This highlights the multi-dimensional nature of the solutions required.

With respect to the economic relationship, Hesse (2007) argues that one way to reconnect ports and cities is to establish facility and service networks that stretch beyond the port city limits but remain within the larger metropolitan region. He points to various ‘logistics region’ strategies associated with major European ports, such as the Süderelbe, Iron-Rhine and Betuweline, as one hopeful approach to capturing more benefits ‘locally’. However, disconnection is a problem not only because a decreasing share of the benefits are enjoyed locally, but also that the costs of gateway activity are concentrated in particular neighbourhoods. Dedicated, segregated and mitigated freight transportation corridors such as the Alameda Corridor are a step in the right direction towards reducing the social costs associated with gateway seaports, but these are expensive and complex options.

At the same time, it is by no means clear that efforts to reduce the impacts of transportation activities through pricing and other economic instruments will succeed. For example, if we assume that we will price for some level of pollution emissions, then determining whether full social pricing of a seaport gateway and corridor is locally acceptable becomes contingent on whether adequate compensation is provided. In other words, even if we had an efficient market-based mechanism that fully internalized the costs of freight movements through gateway seaports, this would only be acceptable to localities if it was accompanied by an equally efficient compensation mechanism. Given that policy makers cannot agree on the former, only an irrationally optimistic local actor would expect the latter. Note that this criticism sets aside even more fundamental critiques that would question whether one can substitute (and thus compensate) for certain environmental and social impacts (see Goodland, 1995).

I have argued that the institutions that govern seaports and their associated infrastructure systems are often part of the problem, even when they represent honest attempts to deal with the challenges of disconnection. At the same time, it is through these institutions that the relationship between seaport gateways and port cities must be reconstructed. No blueprint for future development is offered here, but it is likely that appropriate responses will involve collaboration beyond the traditional organizational and spatial boundaries of public seaport authorities.

Finally, it is proposed that these public authorities, working with all levels of government, evaluate solutions to the local dilemmas of seaport gateways and

corridors in terms of sustainability criteria. This implies integrating or balancing the goals of efficiency, equity and environment (Transportation Association of Canada, 1996). The long-term sustainability of the logistics system will be undermined if any one of these is ignored. For example, there are presumably some ways of arranging goods movement that are environmentally benign but that are so economically inefficient that they will simply be bypassed by carriers and/or shippers. Likewise the most efficient ways of moving goods may impose such high social or environmental costs on local residents that they decide to resist or obstruct that movement. In considering future seaport gateway developments, decision-makers should look beyond optimizing throughput, and instead seek to integrate:

1. Efficiency, by achieving desired and legitimate goods movements with lowest possible inputs;
2. Equity, by ensuring that the benefits and costs of goods movement are proportionately distributed among individuals, groups and localities; and
3. Environment, by ensuring that the movement of goods is compatible with natural ecosystem health.

## REFERENCES

- AIVP, 2006. *Strategies for the transformation of abandoned port sites, interfaces and intermediaries between the city and the port: Guide of good practices (Synthesis document)*. Association Internationale Villes et Ports website, last accessed 28 May, 2007  
[http://www.aivp.org/urbal/UrbanGuideGB\\_SyntheseAIVP.pdf](http://www.aivp.org/urbal/UrbanGuideGB_SyntheseAIVP.pdf)
- Altshuler, A. and Luberoff, D. 2003. *Mega-Projects: The Changing Politics of Urban Public Investment*. Washington DC: Brookings
- Brooks, MR. 2004. "The Governance Structure of Ports", *Review of Network Economics*, 3(2): 168-183
- Brown, P and Hall, PV. (forthcoming) "Ports and Waterfronts" in: Elmer, V and Leigland, A. (eds) *Infrastructure planning and finance: A guide for local officials*. Point Arena: Solano Press
- Coe, NM, Hess, M, Yeung, HW, Dicken, P and J Henderson. 2004. "Globalizing' regional development: a global production networks perspective", *Transactions of the Institute of British Geographers*, 29: 468-484
- Cornwall, W. 2007. "Three ports agree to major cut in toxic soot", *The Seattle Times*, Wednesday, May 16, 2007 ([seattletimes.com](http://seattletimes.com))
- Dicken, P. 2003. *Global Shift: reshaping the global economic map in the 21st century*. (4th Edition). New York: Guildford
- Esteban, AL, Malchow, M and Kanafani, A. 2000. *Intermodalism and port competition in the US*. Unpublished paper. University of California, Berkeley: Department of Civil Engineering
- Flyvberg, B, Holm, MS and Buhl, S. 2002. "Underestimating costs in public works projects: Error or Lie?" *Journal of the American Planning Association*, 68(3): 279-285

- Flyvberg, B, Bruzelius, N and Rothengatter, W. 2003. *Megaprojects and Risk: an anatomy of ambition*. Cambridge: Cambridge University Press
- Freund, W and Padayachee, V (eds). 2002. *(D)urban Vortex: A South African City in Transition*. Durban: University of Natal Press
- Goodland, R. 1995. "The concept of environmental sustainability", *Annual Review of Ecology and Sustainability*, 26:1-24
- Hall, PV. 2003a. "Regional Institutional Transformation: Reflections from the Baltimore Waterfront" *Economic Geography*, 79(4): 347-363
- Hall, PV. 2003b. "Development Opportunities at Seaports" in Frey, A. (ed) *Just- in-time real estate*, Washington: Urban Land Institute
- Hall, PV and Robbins, G. 2007 "Which link, which chain? Inserting Durban into global automotive supply chains" in: Wang, J, Olivier, D, Notteboom, T and Slack, B. (eds) *Inserting Port-Cities in Global Supply Chains*. Aldershot: Ashgate
- Heaver, TD. 1995. "The Implications of Increased Competition for Port Policy and Management," *Journal of Maritime Policy and Management*, 22(2): 125-133
- Hesse, M. 2004. "Land for Logistics: Locational Dynamics, Real Estate Markets and Political Regulation of Regional Distribution Complexes", *Tijdschrift voor Economische en Sociale Geografie*, 95(2): 162-173
- Hesse, M. 2006. "Global Chain, Local Pain: Regional Implications of Global Distribution Networks in the German North Range", *Growth and Change*, 37(4): 570-596
- Hesse, M. 2007. Personal communication
- Hoyle, B. S., Pinder, D.A. and Husain, M.S. (Eds). (1988). *Revitalising the Waterfront: International Dimensions of Dockland Redevelopment*. London: Bellhaven.
- Hricko, AM. 2006. *Ships, Trucks, and Trains: Effects of Goods Movement on Environmental Health*", *Environmental Health Perspectives*, 114(4): A204
- Kagan, RA. 1990. *Patterns of Port Development: Government, Intermodal Transportation, and Innovation in the United States, China and Hong Kong*. Research Report UCB-ITS-RR-90-13, Institute of Transportation Studies, University of California at Berkeley
- Lin, S., Munsie, JP., Hwang, S., Fitzgerald, E. and Cayo, MR. 2002. "Childhood Asthma Hospitalization and Residential Exposure to State Route Traffic", *Environmental Research (Section A)*, 88: 73-81
- Levinson, M. 2006. *The Box: How the Shipping Container Made the World Smaller and the World Economy Bigger*. Princeton University Press
- Lynch, KA. 1960. *The Image of the City*. Cambridge: M.I.T. Press
- McCalla, RJ. 1999. *Global change, local pain: intermodal seaport terminals and their service areas*. *Journal of Transport Geography*, 7: 247-254
- McCalla, RJ, Slack, B and Comtois, C. 2001. *Intermodal freight terminals: locality and industrial linkages*. *The Canadian Geographer* 45(3): 404-413
- Monaco, K and Grobar, L. 2004. *A Study of Drayage at the Ports of Los Angeles and Long Beach*. Report No. AR04-01-2005-5. Metrans: California Department of Transportation, University of Southern California

- Notteboom, T. and Winkelmanns, W. 2001. "Structural Changes in Logistics: How Do Port Authorities Face the Challenge?" *Maritime Policy and Management*, 28(1): 71-89
- Notteboom, T. and J-P Rodrigue (2005) "Port Regionalization: Towards a New Phase in Port Development", *Maritime Policy and Management*, 32 (3): 297-313
- O'Brien, T. 2004. Quality of Life and Port Operations: Challenges, Successes and the Future, White Paper prepared for the Sixth Annual CITT State of the Trade and Transportation Industry Town Hall Meeting. CITT: Long Beach.
- Olivier, D and Slack, B. 2006. "Rethinking the port" *Environment and Planning A*, 38: 1409-1427
- POLA and POLB, 2006. Final 2006 San Pedro Bay Ports Clean Air Action Plan Overview. Port of Los Angeles and Port of Long Beach (last accessed 25 May 2007  
[http://www.portoflosangeles.org/DOC/CAAP\\_Overview\\_Final.pdf](http://www.portoflosangeles.org/DOC/CAAP_Overview_Final.pdf)
- POLA, 2007. Economic Impact. Port of Los Angeles Website, last accessed 23 May 2007. [http://www.portoflosangeles.org/about\\_economicimpact.htm](http://www.portoflosangeles.org/about_economicimpact.htm)
- POLB, 2007. Economic Impacts. Port of Long Beach Website, last accessed 23 May 2007 <http://www.polb.com/about/overview/economics.asp>
- Robinson, R., 2002, Ports as elements in value-driven chain systems: the new paradigm, *Maritime Policy and Management*, 29(3), 241-255
- Slack, B. 1993. "Pawns in the Game: Ports in a Global Transportation System", *Growth and Change*. Vol 24: 379-88
- Song, D-W. 2003. "Port co-opetition in concept and practice", *Maritime Policy & Management*, 30(1): 29-44
- Transportation Association of Canada, 1996. Sustainable Urban Transportation Initiatives in Canada. APEC Forum on Urban Transportation, Seoul, Korea, November 20-22, 1996
- Transport Canada, 2007. "The Integrated Gateway Approach". Transport Canada Website, <http://www.tc.gc.ca/majorissues/APGCI/integrated.htm>, last accessed 25 April 2007
- US EPA, 1996. Indicators of the Environmental Impacts of Transportation: Highway, Rail, Aviation, and Maritime Transport. Washington: Environmental Protection Agency (Policy, Planning and Evaluation report EPA 230-R-96-009)
- VTPI, 2007. Impacts of Roadway Investments <http://www.vtpi.org/tdm/tdm54.htm>, last accessed 17 April 2007