

Reducing the Environmental Impacts of Remote Ports: The Example of Prince Rupert

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Abstract

Ports are nineteenth-century industrial complexes that must adapt to twenty-first century concerns. Because of their environmental impacts and the congestion that they cause, the large west coast ports of Vancouver, British Columbia, Seattle and Tacoma, Washington, and Los Angeles and Long Beach, California are increasingly viewed as undesirable neighbors by residents of the populous urban regions in which they are located. The new Port of Prince Rupert, British Columbia is located at the edge of a small town, reducing the likelihood of incompatibilities with neighbors. The development of remote ports such as Prince Rupert appears to provide a logical solution to the environmental problems created by existing urban ports. Because port impacts are global as well as local, however, the Port of Prince Rupert's remote location raises the issue of whether immunity from environmental concerns is desirable or even possible. This article describes the major extralocal impacts of ports and discusses the emergence of binational west coast efforts to address port pollution. The extent to which global environmental concerns were taken into account prior to the construction of the port of Prince Rupert is considered. This analysis leads to the conclusion that all west coast ports, not just those in urban areas, should follow "best practices" to reduce their environmental impacts.

Introduction¹

Ports balance local and global concerns. No global port authority decides where ports should be located or how they should be operated; instead, quasi-autonomous local authorities build and govern North American ports within a framework of federal oversight. Ports also balance public and private interests, comprising the interface between port communities and the people who live there and the multinational shipping companies that do business at the ports.

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The capacity to balance such competing interests will determine the future of port environmental regulation. Ports passed through the first decades of the environmental revolution, from the 1970s to the 1990s, under the radar. Few regulators focused on ports, and the business goals of port authorities were the driving force behind port operation. To the extent that anyone thought of them at all, port environmental impacts were viewed as localized concerns that could be addressed individually, by separate port authorities. With the recent explosion of container shipping, however, interest groups and port officials alike have belatedly realized that ports have significant impacts on the global environment.

The west coast ports of North America are prime examples of twentieth-century ports that must adapt to twenty-first century concerns. Located in urban areas, the ports of Vancouver, British Columbia, Seattle and Tacoma, Washington, and California are increasingly viewed as undesirable neighbors by urban residents. Because these large population centers have diversified economic bases, the economic contributions of ports are not as visible, or as crucial, to residents as in the past. This reduces their tolerance for port impacts. Constraints on developable land and congestion add to the challenges faced by these ports. As trade and container traffic increase, these ports must increase in size, in throughput, or both in order to compete for global trade. As discussed further below, however, this growth must take place without imposing additional externalities on neighbors who are increasingly aware of the burden that ports place on those who live around them.

All of these problems, it seems, could be eliminated by a new port model that locates port facilities away from population centers. The container port at Prince Rupert, British Columbia is an example of such a port. Located in a small town with a limited economic base, the port would appear to be unconstrained by the environmental concerns that have started to affect its West Coast competition. To the extent that ports' impacts are global rather than merely local, however, the port's remote location raises the issue of whether immunity from environmental concerns is desirable or even possible

To address this issue, this article first briefly describes the major extralocal impacts of port operation: air pollution and invasive species transport in ballast water. It then discusses the emergence of binational west coast efforts to address port pollution. The Canadian port of Vancouver and several U.S. west coast ports are cooperating to implement pollution control measures, mindful of the desirability of creating a level playing field that does not induce shippers to take their business to ports with fewer costs and obligations arising from environmental concerns. The third section of the report focuses on the Port of Prince Rupert, reviewing the environmental assessment for the report as one source of evidence of the extent to which global environmental concerns were taken into account prior to the port's construction. The conclusion proposes that all west coast ports, not just those in urban areas, should follow a "best practices" template to reduce their global environmental impacts and preventing the possibility that less environmentally conscious ports could benefit economically from a "race to the bottom."

Ports' Global Environmental Impacts

Ports are significant sources of air pollution. In addition to largely unregulated marine vessels, which burn cheap, dirty diesel bunker fuel, trucks, trains, and cargo handling equipment are all sources of air pollution. Recent reports project that, by 2020, ports are

likely to be the most significant single source of sulfur dioxide (SO_x)² and nitrogen oxides (NO_x)³ in Europe and in the Puget Sound region.⁴ This sounds abstract and technical, but for those who breathe port air, the effects are concrete and personal. Both SO_x and NO_x lead directly to respiratory disease; in addition, both are constituents of acid rain. NO_x combines with volatile organic compounds to form smog, which is also a health hazard because of its respiratory effects.

Ports are also significant sources of diesel particulate matter, a pollutant of concern because of its toxicity and relation to cancer. Diesel particulates contain a range of hazardous substances, including heavy metals and polycyclic hydrocarbons. Some of the constituents of diesel particulate include lead, arsenic, cadmium, nickel, antimony, beryllium, cobalt, manganese, mercury, and selenium. These substances have been related to cancer, lung disease, and heart disease.⁵ Diesel particulates also reduce visibility and, because of the “black soot” released by diesel engines, are potent contributors to climate change.⁶

On a global scale, greenhouse gas (“GHG”) emissions, primarily from the burning of fossil fuels, threaten human health and the environment. Port GHG emissions, which are just beginning to be measured, are substantial. A recent Maritime Air Emissions Inventory in the Puget Sound region is the “first emissions inventory in the United States to include a detailed, activity-based inventory of greenhouse gases for maritime related sources.”⁷ The inventory calculates that almost 2 million tons per year of GHG are emitted by ocean-going vessels, harbor vessels, rail, cargo handling equipment, and vehicles.⁸ To put this figure in perspective, ConocoPhillips just reached a settlement with the state of California to offset the 550,000 tons⁹ of carbon dioxide that will be emitted by an expansion of a San Francisco Bay Area oil refinery.¹⁰ The Chairman of the Bay Area Air Quality Management District estimates that this agreement could translate into one-quarter to one-third of the GHG reductions required by 2020 under California’s climate change law.¹¹ To mitigate this quantity of GHG emissions, which is less than a third of the GHG emitted by the port sector in the Puget Sound, ConocoPhillips will spend \$10 million in GHG offsets.¹²

On a global scale, it is estimated that marine vessel carbon dioxide emissions alone – not including harbor vessels or other sources – currently exceed the GHG emissions from most of the developed nations with an obligation to reduce GHG emissions under the Kyoto Protocol.¹³ In Britain, researchers found that Great Britain’s claim to have reduced GHG to below 1990 levels rested on the national inventory’s exclusion of shipping industry and aircraft emissions. When these sources were measured and added to the GHG inventory, all gains in reducing GHG emissions were wiped out.¹⁴ While these piecemeal data may not establish the significance of port-related GHG emissions beyond dispute, they are at least a first step in identifying and quantifying a potentially significant contributor to climate change.

Air pollution is not the only port pollution issue with global implications. Invasive species travel in marine vessels’ ballast water, ranging from viruses and bacteria to plankton to mollusks and crustaceans. For example, the invasive diatom genus *Chaetoceros*, with long needle-like spines, clogged the gills of Washington state farmed salmon with mucus, leading to high mortality.¹⁵ As discussed further below, current ballast water regulations do not necessarily prevent invasive species from hitching a ride into new habitats.

These global pollution problems belie claims that concerns about the environmental impacts of port are always parochial or intended solely as an impediment to globalization.

A recent report highlighting the business problems posed by port congestion, for example, characterized environmental concerns relating to ports as based on a NIMBY mentality: "Local communities consider container ports to be polluters, noisy contributors to road and rail congestion, and just plain ugly."¹⁶ When environmentalists are not caricatured as NIMBYs, they are associated with protectionism; the report muses that "the best strategy for U.S. protectionists may lie not in quotas or tariffs but in the active backing of environmentalists' efforts to hinder port expansion."¹⁷ Although the report focuses on hidden and indirect costs created by congestion, nowhere does it mention that the ability to externalize pollution costs is a massive hidden subsidy of the shipment of goods around the world.

The inaccurate perception that port environmental problems are merely local issues results in a false balancing of interests. Merely local concerns are easy to discount when millions, if not billions, of dollars in trade are at stake. In fact, however, marine vessel pollution represents a market failure on a global scale – and, precisely because the scale is global, this market failure occurs in a system lacking accountability. No nation or effective governmental body¹⁸ is in charge of the pollution impacts of marine vessels in international waters. Therefore, for the foreseeable future, the internalization of pollution costs is unlikely to occur on a top-down basis.

Nonetheless, these global market failures are slowly beginning to be recognized and internalized. In the Pacific Coast context, this is occurring almost entirely because of the "parochial" concerns of local communities. Communities' unwillingness to bear the externalized costs of pollution have been the primary means of articulating and addressing larger, even global, issues of concern.

Port Leadership: Creating a Level Playing Field

The neighboring Southern California ports of Long Beach and Los Angeles, the two largest ports in the United States and, if considered jointly, the fifth-largest port in the world, have been leaders in addressing marine vessel emissions. They have taken on this role as a result of citizens' suit litigation,¹⁹ a protracted air pollution crisis leading to necessarily stringent regulation of emissions sources,²⁰ and leadership at the port and state level. Although top port officials were so competitive and so mistrustful of each other that they had not held a joint meeting since 1929, the two ports started joint planning to reduce pollution in 2005 and are now cooperating to reduce air pollution from diesel engines.²¹

The Southern California ports handle forty per cent of the nation's cargo. Protected by the economic clout of these massive ports, the Puget Sound/Georgia Basin ports of Seattle and Tacoma, Washington, and Vancouver, British Columbia are entering into joint initiatives and coordinated monitoring programs to combat pollution. Echoing the radical change that has occurred on environmental cooperation in southern California, one Seattle port environmental employee commented that "Ten years ago, we weren't even allowed to talk to the Port of Tacoma because of competition. Now, we talk to them every day."²² The new CEO of the Port of Seattle has stated that making Seattle the greenest port in the country will give it a competitive advantage.²³ This raises the interesting possibility of a west coast "race to the top," in which ports attempt to attract business by adopting policies that highlight their "green" credentials. By focusing on the need for a coordinated response to a largely unregulated global problem, Vancouver, Seattle, and

Tacoma are rejecting the logic of a “race to the bottom,” which would focus on reducing costs through the avoidance of environmental controls.

Prince Rupert: A Remote Port and Its Environment

The Puget Sound/Georgia Basin ports, like the Southern California ports, are located in urban areas, where port operations are literally under the eyes of thousands of people. In response to port congestion at the west coast ports, the pressure for additional container vessel space is leading to the development of ports in other areas. One of these new container ports, the Fairview Container Terminal, is located in Prince Rupert, a northern British Columbia town with a population of only around 15,000.²⁴ The Prince Rupert port is an experiment in goods movement: rather than relying on a local market to absorb part of the imported goods, railroads will move the containerized goods arriving at the port to urban markets, primarily in the United States. The port is envisioned as an edge-of-the-sea way station for inland areas.

The possibility of locating ports in remote areas holds an intuitive appeal as a way to reduce both the local impacts of ports and the possibility of delays in expansion and port construction caused by local resistance to port operations. Without a concerned constituency affected by port impacts, however, remote ports may also represent a “safe harbor” from pollution controls. With less concern over local impacts, remote ports may not be as scrutinized for environmental concerns during approval processes or as subject to ongoing monitoring and pressure during their operation.

To examine a recent case, the Fairview Container Terminal was the subject of an Environmental Screening²⁵ under the Canadian Environmental Assessment Act (“CEAA”),²⁶ which is one indicator of the issues that may be examined (or ignored) during the environmental review of a remote port. Environmental Screening requires the responsible authority to “document[] the environmental effects of a proposed project and determine[] ways to eliminate or minimize (mitigate) harmful effects through modifications to the project plan.”²⁷ Environmental screenings are not required to evaluate alternatives to the proposed action, as would be required for all non-exempt projects subject to the National Environmental Policy Act (“NEPA”)²⁸ in the United States. Although a full-fledged environmental review, called a “Comprehensive Study” under the CEAA, is required for “large-scale and environmentally sensitive projects,”²⁹ the possibility of a Comprehensive Study appears not to have been contemplated for the Fairview Container Terminal.³⁰

According to the Terminal’s Environmental Screening, “the spatial boundaries of the assessment are primarily limited to the footprint of Fairview Terminal, as the project works and undertaking will be conducted at the current site.”³¹ This limited scope reveals the Screening’s emphasis on localized impacts. The geographical scope was expanded somewhat for marine impacts, for which “considerations were given to the Prince Rupert Harbour, the City of Prince Rupert extending southward to Ridley Island and the vessel fairway.”³²

The Environmental Screening considers impacts on salmon, whales, other marine species, marine water quality, and marine habitat, primarily in the area directly adjacent to the Container Terminal. When the Screening turns to air quality, however, the impact area is not clearly defined. The Environmental Screening includes only a qualitative,

comparative discussion of air impacts incorporating assumptions and extrapolations that would tend to underestimate the significance of marine vessel emissions.

First, the air quality analysis does not compare projected air emissions to existing conditions. It notes that no baseline air quality monitoring data were available:

The Port of Prince Rupert reported that there were two Air Quality monitoring stations located in Prince Rupert in the past, but that they have been discontinued. Up to date MOE online air quality bulletins (<http://wlapwww.gov.bc.ca/air/wamr/>) are not available for Prince Rupert.³³

The Screening instead purports to evaluate “the difference between the design capacity of a new container terminal (500,000 TEU) likely to be achieved by the end of this decade, and the recorded capacity of the terminal from the reference year of 1991,”³⁴ when the terminal was operating at approximately 93% of the maximum recorded capacity. The reference year of 1991 is not a representative year. The Screening states that “During the most active year in 1994, the Port handled approximately 14-million tonnes of cargo traffic through various facilities and terminals. As a result of declines in many of the commodity sectors serviced by the Port and general decline in economic activity in Northern BC, traffic volumes declined to as low as 4.4-million tonnes in 2002 [the latest year discussed in the document].”³⁵ It would appear, therefore, that the Port has most recently handled approximately 31%, rather than 93%, of recorded capacity.

If impacts were compared to current air quality conditions, the extent of increase could be larger than under a comparison to a “dirtier” year. The effect of the 1991 baseline year is to minimize the potential air pollution impacts of the Container Terminal. The Screening states that “the conversion will result in approximately 1/3 the number of ships historically handled at Fairview, although the expected ships will be substantially larger and contain higher horsepower engines.”³⁶ Compared to current conditions, a fair estimate might be that the conversion will result in approximately the same number of ships that are larger and with higher horsepower engines.

No effort is made to identify or quantify the likely air pollutants, such as SO_x, NO_x, and diesel particulates. Instead, the Screening simply concludes that “[a] significant negative effect on air quality is not expected as a result of the Fairview Terminal Conversion Project, based on a number of factors including the vacancy of past emissions resulting from local industry cutbacks and the record of [historical] air quality data from provincial monitoring stations.”³⁷

A subsequent “Cumulative Effects” analysis “involves trading the emission capacities from past and ceased operations for emissions from new and eligible projects. For example the number of ships, trains and trucks serving the old Fairview Terminal are exchanged for the number proposed to be serving the converted terminal. Emissions from retired fishing vessels are subtracted and cruise ships are added and so forth.”³⁸ This exercise provides a basis for the conclusion that the Terminal will result in a “marginal increase” in air pollution compared to fairly limited data from sixteen years ago. The Screening does not discuss whether standards for pollutants have changed since 1991, or whether additional pollutants not subject to monitoring in 1991 should be considered. Greenhouse gas

emissions are not mentioned at all; nor are the small particulates (PM2.5) that are of great concern today but were not measured in 1991.

Because the review is so limited and the conclusions are so vague, the Screening does not provide a basis for imposing mitigation measures. It does discuss possible future mitigation measures such as “cold ironing,” or providing in-shore power to prevent marine vessels from burning dirty bunker fuels while in port, or the use of cleaner fuels. No commitment is made to implement these measures, which are already in place in the Georgia Basin/Puget Sound ports. Instead, they are described as possibilities for a future date when the Terminal is expanded.³⁹

Ballast water, the other major global issue associated with ports, is only mentioned once in the Screening, in response to a comment submitted by Gitxaala First Nation indicating concern over marine vessel waste. The response states that “MARPOL, IMO, Canada Shipping Act Regulations and Migratory Birds Convention Act Regulations are in place to deal with refuse, ballast water, oily discharges. Container ships carry cargo both directions, reducing need for ballast water.”⁴⁰

Container ships do carry ballast water, which (as noted above) has been documented to transport invasive species, so the statement about “reduced need” provides reassurance that may not be realistic. The problem with the regulatory regimes listed in the response is that, while they reduce the possibility of invasive species, the impact remains after their application. Canadian federal standards,⁴¹ which are similar to U.S. federal standards,⁴² generally require ballast water exchange 200 nautical miles offshore, with various exceptions. Open ocean ballast water exchange efficiency ranges from 75 to 95% of the tank water; records in Washington State indicate that about 90% of ballast water discharged in WA had been exchanged or “partially exchanged.”⁴³ For some species, such as plankton, Washington researchers have concluded that ballast water exchange has little effect. Transport Canada has also acknowledged that ballast water exchange is not always effective at removing the organisms contained in ships' ballast water tanks.⁴⁴

Stricter regulations, which could provide a basis for collective port action, govern the southern California ports. In September 2006, California adopted a law⁴⁵ requiring that ships treat ballast water onboard to kill invasive species before the water can be released into California ports or coastal areas. Treatment standards will be adopted by early 2008 and phased in starting in 2009; by 2020, all ships must comply with zero detectable live-organism discharge. This law will help to ensure that the marine vessels coming on line will be designed with the ability to retrofit for ballast water treatment. In 2006, the Congressional Research Service estimated the cost of retrofitting vessels to treat ballast water as between \$200,000 and \$310,000 per vessel for mechanical treatment and around \$300,000 for chemical treatment. For the ever-larger vessels under construction, this cost may be resisted but should not be prohibitive.⁴⁶

For a remote port, the possibility that ballast water from Asia or California might transport invasive species that could harm local ecosystems should be an issue of concern. While Prince Rupert cannot be faulted for failing to be on the cutting edge of ballast water regulation – California's law is the most stringent in the United States – the “best practices” of west coast port states and provinces can provide a template for remote ports to follow. The development of such a template would provide certainty to west coast ports, would ensure a level playing field, and would prevent future generations from paying for the long-term environmental costs of our current global trading practices.

Conclusion: A Template for West Coast Ports

Based on the discussion above, a simple template for west coast ports to follow would include the following:

- Ports must evaluate the air quality impacts of their operations, especially for the emissions known to be generated by marine vessels and port operations, including SO_x, NO_x, and diesel particulates.
- Ports can and should inventory the GHG emissions of port-related operations. They are significant contributors and should be part of the mitigation schemes under development in all west coast states and British Columbia.⁴⁷
- Ports, especially remote ports, should follow California's lead in adopting ballast water treatment measures.

The question arising from this template is why any port should follow these recommendations when they are not yet required by law. One possible answer is that political pressure will develop for regulatory action if ports do not act proactively. The ports of Seattle, Tacoma, and Vancouver have all acted proactively to forestall regulatory requirements, and will undoubtedly be pressuring Prince Rupert to fall in line. Further, the practices adopted by environmentally conscious ports are likely to become regulatory within the next few years; including the costs of adopting these measures in any port cost-benefit analysis will result in a more realistic assessment.

Another answer is that the concept of "green ports" is starting to appear more regularly in some business circles, and the Port of Seattle may be correct in predicting that ports' environmental records will feed into their competitiveness. The nonprofit Business for Social Responsibility's Clean Cargo Working Group convenes major shippers, such as Maersk, and major retailers, including Wal Mart and Ikea, in an effort to "promote[] the use of industry related tools and methodologies to address the environmental and social impacts of transporting products."⁴⁸ If the proportion of shippers and retailers who are concerned with port pollution increases, pressures from the private sector as well as from the public sector may help to move ports towards best practices.

For Prince Rupert in particular, the third factor supporting a proactive environmental policy is self-interest, at least in the area of greenhouse gas emissions. Prince Rupert is particularly vulnerable to sea-level rise. In 2002, the B.C. Ministry of the Environment found that, "[d]uring the 20th century, average relative sea level rose 12 centimetres at Prince Rupert, 8 centimetres at Victoria, and 4 centimetres at Vancouver . . . The height of extreme high water events has increased at a faster rate than the mean sea level has increased. It increased by 22 centimetres per century at Prince Rupert, 16 centimetres per century at Vancouver, and 34 centimetres per century at Point Atkinson, near Vancouver."⁴⁹ This seemingly small increase matters to Prince Rupert because "[h]igher mean sea level and more frequent extreme high water events will increase the likelihood that storms will damage waterfront homes, wharves, roads, and port facilities and contribute to coastal erosion. Areas particularly at risk are . . . Prince Rupert, where extreme high water events are occurring three times more frequently than in other areas of the coast."⁵⁰

For remote ports such as Prince Rupert, the logic of the global commons may seem to dictate that it is in their best competitive interest to avoid implementing the pollution control technologies that are being pioneered in the larger west coast ports for as long as possible. This may work for a short period, which may be the only time horizon that matters to economic decision-makers. Ironically, however, if sea level rises as predicted and global trade is threatened by the storms, droughts, and diminished productive capacity projected under global climate change scenarios, the ports' laissez faire holiday will be cut short as a result of their inattention to the global effects of their local emissions.

Endnotes

- 1 The study was supported by the US Department of Transportation, Office of the Secretary, Grant No. DT0S59-05-G-00016
- 2 "SO_x gases are formed when fuel containing sulfur, such as coal and oil, is burned, and when gasoline is extracted from oil, or metals are extracted from ore. SO₂ dissolves in water vapor to form acid, and interacts with other gases and particles in the air to form sulfates and other products that can be harmful to people and their environment." U.S. Env. Protection Agency, *NO_x: What is it? Where does it come from?* (undated) < <http://www.epa.gov/air/urbanair/so2/what1.html>>.
- 3 "Nitrogen oxides, or NO_x, is the generic term for a group of highly reactive gases, all of which contain nitrogen and oxygen in varying amounts. Many of the nitrogen oxides are colorless and odorless. However, one common pollutant, nitrogen dioxide (NO₂) along with particles in the air can often be seen as a reddish-brown layer over many urban areas. Nitrogen oxides form when fuel is burned at high temperatures, as in a combustion process." U.S. Env. Protection Agency, *NO_x: What is it? Where does it come from?* (undated) < <http://earth1.epa.gov/air/urbanair/nox/what.html>>.
- 4 See Internatl. Council on Green Transp., *Air Pollution and Greenhouse Gas Emissions from Ocean-going Ships: Impacts, Mitigation Options and Opportunities for Managing Growth* (March 2007). and Puget Sound Maritime Air Forum, *Puget Sound Maritime Air Emissions Inventory* (April 2007) <<http://seattlepi.nwsourc.com/dayart/pdf/PugetSoundMaritimeAirEmissionsInventory.pdf>>.
- 5 California Air Resources Board, *Health Effects of Diesel Exhaust Particulate Matter* (2006) <http://www.arb.ca.gov/research/diesel/dpm_draft_3-01-06.pdf>.
- 6 See, e.g., "Black Carbon Pollution Emerges As Major Player In Global Warming," *ScienceDaily* (Mar. 24, 2008) < <http://www.sciencedaily.com/releases/2008/03/080323210225.htm>>.
- 7 Puget Sound Maritime Air Forum, *supra* note 3, at 2. The greenhouse gases inventoried in the report include carbon dioxide, nitrous oxide, and methane.
- 8 *Id.* at 103. The Inventory estimates that 1,870,429 tons of greenhouse gases, measured as carbon dioxide equivalents, are emitted by port-related sources. See *id.* at 18 (Table ES-3).
- 9 The emission increase is reported as 500,000 metric tons, which converts to 551,156 tons.
- 10 T. Reiterman, *Oil Giant Agrees to Fight Greenhouse Gases*, LOS ANGELES TIMES (Sept. 12, 2007).
- 11 California's law, the Global Warming Solutions Act of 2006, requires that the state's global warming emissions be reduced to 1990 levels by 2020. State of California, *Assembly Bill No. 32* (Aug. 31, 2006) <<http://www.arb.ca.gov/cc/docs/ab32text.pdf>>.
- 12 Reiterman, *supra* note 97.
- 13 Internatl. Council on Green Transp., *supra* note 3, at 8.

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- 14 D. Adam, "Scientists say British Greenhouse Gas Emissions Now Higher Than in 1990," *The Guardian* (London), March 10, 2006 <<http://www.guardian.co.uk/climatechange/story/0,,1727885,00.html>>.
 - 15 M. Dickman & F. Zhang, *Mid-ocean exchange of container vessel ballast water. 2: Effects of vessel type in the transport of diatoms and dinoflagellates from Manzanillo, Mexico, to Hong Kong, China.* 176 MAR ECOL PROG SER. 253, 258 (1999).
 - 16 G. Stalk & K. Waddell, *Surviving the China Rip Tide; How to Profit from the Supply Chain Bottleneck* 13 (Boston Consulting Grp, May 2007).
 - 17 *Id.* at 28. .
 - 18 The role of the International Maritime Organization (IMO), the United Nations' specialized agency responsible for improving maritime safety and preventing pollution from ships, has diplomatically been described as follows in the context of air pollution:

Unfortunately, IMO efforts to mitigate environmental impacts of emissions from global shipping have not kept pace with the industry's growth and the evolution of control technologies for controlling emissions. The international process for establishing new regulatory requirements is further complicated by the complex relationships that exist between those nations to which most ships are registered under so-called "flags of convenience" and the large shipping interests (typically headquartered in other nations) that own most of the ships. As a result, the IMO adopted standards in 1997 that represented only a modest improvement in emissions from unregulated engines. When these standards entered into force they reflected levels already achieved by the average in-use engine. The IMO's current fuel sulfur limit of 4.5 percent is almost twice the average sulfur content of fuels in use in ships today and several thousand times the sulfur level of fuels used on-road in Europe and North America. These standards at best codify the industry's existing practices.

Internatl. Council on Green Transp., *supra* note 3, at 9.

- 19 See *Nat. Resources Defense Council v. City of Los Angeles*, 103 Cal. App. 4th 268 (2002). See generally W. Graham, "Dark Side of the New Economy," *On Earth* 14 (2007).
- 20 See, e.g., Cal. Air Resources Bd., *Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Proposed Regulation for Commercial Harbor Craft 2* (Sept. 27, 2007) <<http://www.arb.ca.gov/regact/2007/chc07/isor.pdf>> ("Emissions from marine vessels, which include commercial harbor craft engines, collectively represent one of several key contributors to ambient PM2.5 [small particle] levels, the successful control of which will determine whether California is able to meet the 2014 deadline for PM2.5 attainment in the South Coast Air Basin.")
- 21 M Kasindorf, *Los Angeles, Long Beach Ports Unite on Proposal to Fight Air Pollution*, USA TODAY (June 29, 2006).
- 22 Interview with Sarah Flagg, Port of Seattle (Aug. 21, 2007).
- 23 T. Yoshitani, *Clean, Green Focus will help Port Step Up to Competition*, THE SEATTLE TIMES, Aug. 2, 2007.
- 24 Prince Rupert Port Authority, *Fairview Terminal Conversion Project Environmental Screening Document* (Keystone Env't. Ltd.: Jan. 22, 2006) (hereinafter "Fairview Terminal ESD") 7.
- 25 *Id.*
- 26 Canadian Environmental Assessment Act (1992), c. 37.
- 27 Canadian Environmental Assessment Agency ("CEAA"), *Introduction and Features: Canadian Environmental Assessment Act (March 16, 2007)* <http://www.ceaa.gc.ca/013/intro_e.htm>. *The CEAA was triggered by the fact that the project would receive financial assistance from a Federal Authority, Western Economic Diversification Canada ("WEDC") and by the issuance of a permit by Environment Canada (Disposal at Sea Permit). Fairview Terminal ESD, supra note 21, at*
- 28 42 USC § 4332(C)(ii).
- 29 CEAA, *supra* note 23.

- 30 A Comprehensive Study was prepared for the Vancouver (B.C.) Port Authority's Deltaport Third Berth Container Port Expansion. See CEEA Registry, *Deltaport Third Berth Project*, Feb. 2, 2007 <http://www.acee.gc.ca/050/viewer_e.cfm?cear_id=3734>.
- 31 *Fairview Terminal ESD*, *supra* note 21, at 61.
- 32 *Id.*
- 33 *Id.* at 25.
- 34 *Id.* at 86.
- 35 *Id.* at 25. The Screening subsequently states that "The premise has been adopted that air quality impacts in 1991 from Fairview operations when it was near capacity were acceptable, and for that reason it has been chosen as a reference year for comparison against the proposed terminal conversion." *Id.* at 130. Unfortunately, this "premise" makes no sense in terms of impact identification and mitigation, even if the limited historical data from 1991 were sufficient to prepare such a "comparison." There is simply no reason to "compare" impacts to a previous year, when global pollution sources were different from the present. The concept of a "comparison" appears to have been adopted simply as a way to come up with a conclusion in the complete absence of relevant quantitative data.
- 36 *Id.* at 86.
- 37 *Id.* at 87.
- 38 *Id.* at 130.
- 39 *Id.* at 132-34.
- 40 *Id.* at 60.
- 41 *Ballast Water Control and Management Regulations*, SOR/06-129
- 42 33 C.F.R. Subpart D (§§ 151.2000 – 151.2050).
- 43 State of Washington. *Ballast Water Management in Washington State: Recommendations for Improvement* (Puget Sound Action Team: March 2007).
- 44 OFFICE OF THE AUDITOR GENERAL OF CANADA, STATUS REPORT OF THE COMMISSIONER OF THE ENVIRONMENT AND SUSTAINABLE DEVELOPMENT TO THE HOUSE OF COMMONS ¶ 6.50 (2008).
- 45 Cal.Pub. Res. Code § 71204.7 *et seq.*
- 46 Marine vessels have a long service life relative to most mobile sources: as of January 2004, 38 percent of the world merchant shipping fleet was at least 15 years old (UNCTAD 2005). Building in capacity to allow for future retrofits, when ballast water is firmly on the world agenda, makes particular sense under these circumstance.
- 47 See, e.g., Western Climate Initiative, *Statement of Regional Goal* (Aug. 22, 2007) <www.westernclimateinitiative.org>.
- 48 Business for Social Responsibility, Clean Cargo, Sustainable Transportation (March 07) <http://www.bsr.org/CSRResources/WGO/CC-GF/Docs/CC_Information_Sheet.pdf>:
- 49 B.C. Ministry of the Environment, *Climate Change and Marine Indicators* <http://www.env.gov.bc.ca/air/climate/indicat/sealevel_id1.html>.
- 50 *Id.*