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ANCOUVER, British Columbia—On a bright, sunny March day, the industrial hubbub at the Port Metro Vancouver in British Columbia blends seamlessly with residential life playing out in the phalanxes of metal-and-glass apartment buildings that line both sides of Vancouver Harbor. People stroll in waterfront parks, taking in views of stacked shipping containers painted in primary colors and the dinosauric cranes that dot the port. Across the water in North Vancouver, giant piles of yellow sulfur and white salt sit dockside, waiting for shipment. The air smells fresh, the water looks clean, and a harbor seal surfaces, lolling by the white tents of Canada Place, the cruise ship terminal.

Not too long ago, the idea of a clean, green port would have been an oxymoron. The gateways to global commerce have ranked as some of the world's most polluting places, industrial behemoths spewing toxins into the air and water. Now, as globalization booms and more ships than ever are crossing oceans, some ports are working toward being more environmentally friendly—to people, wildlife, and the environment.

The Port Metro Vancouver is the fourth-largest port in North America and seems like a good neighbor, despite recent accidents such as a [chemical fire on the container docks](#) and an [oil spill from an anchored ship](#). Along with other North American ports—including Long Beach, California, and that of New York and New Jersey—it has deployed green technology and undertaken numerous environmental initiatives to clean up the considerable pollution that comes with transporting goods. But it's early days for such efforts, and many ports are doing less—some much less.



That's because community activism—and lawsuits—are often the catalyst for ports to clean up. So in places where communities are less organized or don't have legal leverage, old habits live on, says Morgan Wyenn, a staff attorney at the Natural Resources Defense Council, which helped communities in Long Beach pressure the port to green-up its act.

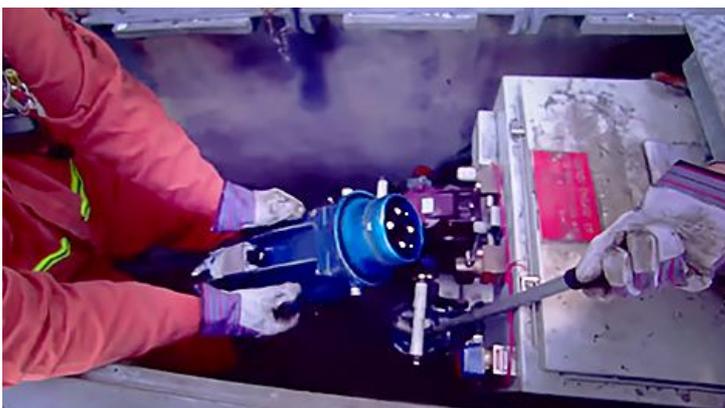
"There's been a lot of progress, but we have a very long way to go before it's safe and healthy to live near a port," says Wyenn.

People do live near ports, and they tend to be low-income, minority people. "We have an asthma rate of one in four children in Newark, which is double the numbers in the rest of the state," says Ana Baptista, a community activist for the Ironbound neighborhood in Newark, New Jersey, and a professor of environmental policy and sustainability at the New School for Public Engagement in New York. "We're the sacrificial lamb, expected to take all this pollution while business is booming."

### The 200,000-Ton Prius

Port neighbors worry most about polluted air, as nearly all ships, trucks, trains, and cranes are powered by fume-belching diesel engines. One of the first ports to start going green was Long Beach, now the second-busiest container seaport in the United States. Long Beach is a big target for regulators charged with cleaning up Southern California's notorious smog. "We were under a lot of pressure that other United States ports hadn't experienced," says Heather Tomley, director of environmental planning for the Port of Long Beach.

The port, along with Vancouver and New York and New Jersey, is replacing old, dirty diesel trucks that transport goods to and from the docks with cleaner models and turning diesel-spewing cargo and cruise ships into what amounts to gigantic Priuses.



Those massive ships also cause grief for many port neighborhoods, emitting diesel fumes 24-7 when docked because they must keep engines running to keep the lights on. But increasingly ports are turning to a technology called shore power that allows the giant ships to plug into the grid and idle their engines. It essentially turns cruise and cargo ships into supersize plug-in electric cars running on grid power. In places like Vancouver, where about 90 percent of electricity comes from clean hydropower, the switch also helps reduce global greenhouse gas emissions.

Vancouver was the first port in Canada and third in the world to install shore power for cruise ships in 2009. Today, along Vancouver's festive cruise ship dock topped with white tents, three 30-foot charging towers stand sentinel, awaiting the return of cruise season. From the towers dangle multiple oversize cords, giving them the appearance of awkward giant squids.

"During the 2013 cruise season, 82 vessels connected to Canada Place shore power facilities, reducing greenhouse gas emissions by over 3,000 [metric] tons," says Duncan Wilson, vice president of corporate social responsibility for the port.

That's the equivalent of the annual emissions of [632 passenger cars](#). The port plans to expand the service to container and refrigerator ships soon.



But shore power isn't always plug and play. To make it work in Long Beach, the port had to invest in electric grid trunk lines and substations to bring enough power down to the dock, doubling the price of installing the service to \$190 million.

Long Beach was motivated by more than just good community relations. A 2007 state law required that cruise, container, and refrigerator ships eliminate half their at-berth emissions by 2014, and the standard will be tightened over time. "California is definitely out in front on this," says Tomley.

Still, some activists argue that such efforts, including tracking truck emissions, fall short and haven't resulted in noticeable improvements in air quality. Baptista says that the Port of New York and New Jersey—the busiest on the East Coast—underestimates the pollution that trucks bring to the Ironbound neighborhood. "Trucks sometimes idle for hours in our neighborhood or drive multiple trips around the community, but they only calculate one turn through the port," she notes.

### Keeping the Water Clean

Water pollution has received far less attention from ports, perhaps because it doesn't bother human neighbors as much. Many shipping practices pollute water, including discharge of untreated bilge water, gray water, sewage, and ballast water, which can transport invasive species. Ship maintenance and accidents, from spilled fuel to upset cargo, are also sources of pollution.



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Water quality has received more attention in the Northwest, where tourists flock to admire the region's pristine natural beauty. High annual rainfall also creates copious runoff that can sweep port pollutants into waterways. Port Metro Vancouver leads in strategies to keep water clean. It requires the capture and treatment of storm water and industrial water, says Wilson, rather than just letting it run off directly into the bay as many other ports do.

To clean storm water and industrial runoff, the port's terminals have catch basins, sort of like a trap in a kitchen sink, to catch oil and grit and separate them from water. Water used for industrial applications must be treated to ensure that contaminants do not enter the aquatic environment. In the event of a spill or emergency, the drains to the environment can be closed or shut off. Likewise, cleaning ship hulls in dock is strictly regulated. Water and debris coming off the ship is captured and transferred to a barge, where it is treated.

### Loading

British Columbia, however, is a hot spot for oil pipeline and liquefied natural gas export facility development, and many residents are concerned about spills that would taint the marine environment. Those fears were realized on April 9 when an anchored bulk carrier ship from Greece, the *MV Marathassa*, spilled oil into English Bay just west of downtown. The slow containment and cleanup response further [raised public ire](#).

Efforts to clean up port activity are particularly important now because shipping is booming worldwide. Economic globalization has dramatically ramped up ship traffic. This year, Panama will finish widening its canal, allowing giant ships from Asia to reach the East Coast for the first time. To keep up with demand, most ports are expanding.

### Port of Call for Wildlife



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That's bad for wildlife when habitat is destroyed to make room for more container ships. To make its port more critter-friendly, Vancouver, for instance, has built underwater condos of sorts beneath terminal births. Rocks wrapped in wire mesh, large concrete pipes with holes drilled into the sides, and benches sunk at various depths have been installed as refuges for shrimp, fish, crabs, sea stars, and other marine animals. Over time, sea plants have colonized the infrastructure as well, offering food and hiding places.

"It's really important to work with nature and not against it when constructing and restoring habitat," says Charlotte Olson, an environmental project manager at the port. For example, a project in the Fraser River took into account the river's stream flow patterns and processes so nature would shore up the constructed freshwater marsh over time rather than destroy it. That project

created habitat for juvenile salmon as well as other fish and wildlife.

The projects are generally considered successful by the biologists who guide them but sometimes have unexpected outcomes. In Long Beach, the port took over a former Navy site where black-crowned night herons nested. Before construction, it fenced off a nearby area, Gull Park, and moved the nests. Recorded calls lured the herons to the new site, where they nested for several years before moving near a public pool.



"The Navy site had been active, with a lot of people and noise," says Tomley. "Gull Park was quiet. We think the birds moved to the pool because they like people." But Gull Park isn't a failure; other migratory shore birds and great blue herons have taken over.

The Port of Long Beach has also funded what amounts to habitat mitigation for people. It's recent Middle Harbor expansion compelled it to pony up for asthma education programs and deploy buses with treatment rooms to bring health care to underserved people. The port is also paying for new doors, windows, and heating and air conditioning systems in local schools to reduce pollution and noise.

While the community welcomes these efforts, more needs to be done, says Wyenn.

So how green can a port get? While a port running completely on renewable energy probably isn't feasible for now, Long Beach is taking a step in that direction. In the coming years, the port plans to start installing solar panels and wind turbines.

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