

South Atlantic Port City Water Report¹

Buenos Aires, Argentina, Salvador da Bahia, Santos/São Paulo

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Quality of urban life depends on good water management. Any port city may experience Katrina-like disasters of hitherto unimaginable magnitude and should be prepared with a solid understanding of response capabilities in terms of ecology, infrastructure, and administration of water as a public good. This report presents key points related to water provision, waste removal, and waterway development in South Atlantic cities that host the container shipping industry.

I. Ecology: *Where rivers meet the sea*

Seas, bays and rivers have great cultural and infrastructural significance. Yet, human fascination with and practical reliance on the coastal landscape often obscures essential underlying natural processes, especially in intermediate edge zones connecting fresh and salt water. Estuaries, deltas, mangroves, and *restingas* are essential for the water cycle; but they have been thought of as disease-generating wastelands that are more useful as land-fills.

Public health and medical advances made it possible for port cities to develop, even as development has resulted in pollution that threatens public health. The status quo—industrial expansion without sufficient environmental control—will inevitably lead to expansion of large swaths of toxic dead zones surrounding shipping channels, neighborhoods, beaches and fisheries. The alternative—thinking and acting ecologically—will allow port cities to thrive and to reinvent their cosmopolitan ambience in unique aquatic landscapes.

II. Infrastructure: *A historical composite*

A. Water, Sewage and Drainage: *separate flows and contaminating connections*

Potable water may come from naturally flowing rivers which sometimes pass through a hydroelectric plant first. It may be pumped across regions in vast lengths of pipe, or pumped up from underground aquifers, arriving in treatment plants before being distributed to the populace. Switching from one capture system to another may alter the hydrological balance and cause flooding.

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Most urban inhabitants have potable water. Those who don't, get water from streams, fountains, cisterns, or wells (legal and illegal). Supplementary illegal wells are also built in middle and upper class neighborhoods. Poorly insulated wells may produce contaminated water, and more dangerously, may contaminate and deplete deeper aquifers.

Urban development tends to come in bundles of benefits that unintentionally degrade pre-existing water sources. Electricity and piped water usually arrives in neighborhoods simultaneously with asphalt roads that cover over fountains and streams.

Seasonal water shortages in hot, dry, holiday seasons, do not affect everyone equally. Poor and working class people tend to live on hillsides or suburbs without adequate infrastructure, where water is cut off during the day or for longer periods.

Sewage is collected in underground pipes connecting buildings to treatment plants and then sent offshore in underwater pipes. Trucks may collect sewage from septic tanks to deliver for treatment. Untreated sewage may be dumped directly into waterways from buildings, ships, or encampments. Even in the most efficient collection networks, treatment levels may be minimal.

Historical port zones are often in the oldest sections of the city, and while they usually get potable water from city systems, they often rely on antiquated or nonexistent sewage infrastructure. Thus, untreated sewage continues to flow into adjacent waters.

Infrastructure degradation and reconstruction is always in process. Antiquated and incomplete systems rely on ad hoc linkages that dump sewage streams into fresh water streams, thereby contaminating natural and historical water sources and artisanal fishing territories.

Canals for draining surface water may be contaminated by sewage. Drainage canals may be connected to sewage systems in dry seasons but are disconnected in rainy seasons to prevent overflow. This causes canal contents to dump directly onto beaches.

Some home and business owners illegally connect sewage outflow to canals or streams, either because sewage services aren't available, or because they don't want to pay. Ships frequently break maritime laws that govern disposal of bilge water, garbage, and sewage.

Some cities notify the public when bacteria and virus levels on beaches are unsafe.

B. Harbor infrastructure: *interconnection and surveillance*

Container shipping ports are sets of specially engineered economic and technological interfaces that, for the most part, ignore ecology. One recent innovation is platforms molded to efficiently collect spills from containers and tanks.

Water's natural power to shape landscape is curtailed by docks constructed to support immense vessels. Bilge water and hulls sequester exotic plant and animal species whose reproductive potential is a danger to local fresh and salt water ecology.

A port's technical capabilities determine its global competitiveness. Terrain and equipment are designed to service container, tanker, bulk and cruise vessels using minimal human labor while using advanced telecommunication and information technology. Intensified surveillance architecture meeting post-9/11 ISPS code requirements enforces spatial segregation between

port zones and adjacent public spaces. These are nevertheless connected by incoming and outgoing truck traffic.

Stacks of dilapidated containers breed mosquitoes, increasing disease risk (dengue).

Dredging shipping canals is a constant feature of port maintenance that is intensifying with increasing container ship size. Dredging exposes toxic heavy metals buried in sediments through prior decades of uncontrolled industrialization. Law now specifies rules for hazardous sediment disposal (e.g. in deep sea).

Sunken vessels, some carrying hazardous chemicals, lurk in channels and harbors.

Though things have improved considerably since late 20th century environmental legislation was enacted, rivers, bays, and seas are still used as sinks, toilets, and dumps for toxic waste, sewage, plastic and other garbage; and nuclear plants may be responsible for radioactive contamination of aquifers.

C. Tourism infrastructure: new promenades and harborscapes

The seascape is a key symbol of desire in the imagination of tourists and residents. The beach is a center of daytime social interaction, which in some cities, results in daily heaps of plastic and other garbage pulled into the sea. Cement promenades curving along beaches provide beachgoers with restrooms and restaurants, and visually connect legions of towering apartments and sprawling estates. Holiday homes and hotels, empty much of the year, crowd the coastline and undermine its natural beauty.

Abandoned post-industrial harbor and warehouse zones, unfit for container shipping, are being redeveloped to capture the romance of aquatic horizons for public enjoyment. These projects may use non-toxic dredged materials to create ecological parks; however, the difficult work of restoring healthy balance to local water features is rarely done.

III. Water as a Public Good

The distinctive cultural mix of locals and migrants attracted to even small port cities transforms them from mere nodal points in the global transit network to metropolitan destinations. Economies based on global information streams coexist with those based on artisanal fishing.

Illegal invasion of natural areas within and near the city is not specific to class although there is a class-based pattern to local geography. Both rich and poor adversely affect water but the poor suffer harsher consequences.

Each person depends on, and is part of water's elemental cycle. Yet, we frame our decisions by needs that seem more immediate—a place to live, a job to get. Who will speak for the practicalities of plants, animals and streams?

Water Governance:

A central component of legitimate governance entails providing ecologically sustainable water and sanitation services; but cities face serious obstacles in this regard. No matter how good laws look on paper, when investment practices focus on short-term profits, rather than projects that take longer than a political term, or even a generation; when public utilities are sold to

private multinational companies that do not have the common good as their top priority; when river basin committees are subservient to industry; when water and maritime law implementation and enforcement is bureaucratically divided among agencies and is incoherent, non-comprehensive, unfunded and ineffective, then ecology and infrastructure will degenerate. Decentralization is no remedy for the erosion of the public good accompanying privatization.

The promising capabilities of port zones may not be directly affected by ecological devastation of the water bodies on which they depend. Yet, private multinationals in the shipping industry that are concerned with their global image profess a determination to enact green practices encoded in international law. Paradoxically, private companies in port zones may display a greater level of environmental sensitivity than municipal, state and national governments, which may allow old industries, mostly upstream, to continue to pollute. Industrial effluents combine with sewage and garbage from communities without infrastructure, inevitably flowing downstream. Perhaps, the people of the cities themselves, who inhabit the meeting place of fresh and salt water, can facilitate a productive set of actions that bring industry, government, NGOs and community assemblies together where investment in innovative technologies and practices can reverse destructive processes.

IV: Recommendations:

Goals for more democratic, ecologically sustainable water governance

Decision-making:

Heavily tax, or if possible, reject economic activity that does not avoid or account for detrimental social and ecological costs. Err on the side of the public good, interpreted ecologically, with animals, plants, streams and aquifers included in the circle of human concern.

Reconsider the risks and benefits of privatization and public-private partnerships sector by sector.

Create river basin committees that are consistent with local ecology and not subservient to industry.

Encourage effective communication among civil engineers, planners, scientists, and community representatives before starting big projects. Develop an engineering of sustainable ecosystems.

When maps are used in development proposals, mark the presence of undeveloped natural areas and small subsistence communities as actively important.

Administration and Enforcement:

Infrastructure management of potable water, sewage, drainage canals, surface and underground waters should be centralized and their functions coordinated.

Waterway management should be centralized and coordinated such that intermediate zones such as estuaries are protected.

Allocate state and federal funds to fully enable municipal enforcement of anti-pollution laws.

Create a website to give neighborhood residents capability to report criminal incidents of water pollution.

Create an epidemiological database mapping medical conditions and deaths related to or caused by toxic environments.

Adjusting Current Imbalances:

Assure that water, sewage and garbage pickup services operate in all central and suburban neighborhoods.

Replace antiquated industrial machinery and processes. Where practical, industries should cluster and jointly support centers for hazardous waste collection, treatment, and disposal.

A percentage of all industrial profit should be dedicated to infrastructure and ecological habitat maintenance.

Create and maintain marine and forest reserves to reverse threats to fisheries and watersheds.

Protect traditional and indigenous communities from tourist and port industries. They should be distinguished from migrant families that may numerically overwhelm them in edge zones.

Relocate irregular communities residing in protected forest reserves, in toxic zones, or adjoining streams flowing into treatment plants.

Limit zoning waivers and avoid loosening restrictions on building permits and height restrictions for middle and upper income invasion of beach areas.

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