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DEAD RIVERS AND RAW SEWAGE

Choking on Pollution in India

By Daniel Pepper in New Delhi

The country's economy may be growing apace, but pollution in India is quickly spiraling out of control and rivers are dying by the dozen. Fully three billion liters of waste are pumped into Delhi's Yamuna River each day.

Beginning at dawn, beneath the belly of an old wrought iron bridge, 12-year-old Somnath Dantoso drops a dumbbell-shaped magnet from his trash-constructed raft into New Delhi's Yamuna River. The magnet sinks about 30 feet below the river's inky surface and on a good day clings to about 50 rupees -- about \$1.22 -- worth of coins that commuters toss in for good luck. It is a routine he has followed daily for four years.



Daniel Pepper

A young girl pushes her raft along New Delhi's polluted Yamuna river. She and a handful of others trawl the river for loose change tossed in for good luck.

"When people stop throwing coins I'm going to open a grocery shop," says the small, stoic Somnath. "Otherwise I'll do this the rest of my life."

But coins aren't the only things Somnath pulls from the bed of the Yamuna. Like many rivers in India, New Delhi's body of water is little more than a flowing garbage dump, with fully 57 percent of the city's waste finding its way to the Yamuna. Garbage cascades down its banks, giving off the fetid stench of a cesspool -- a major blight on a river that extends 1,376 kilometers from the majestic Himalayas to the holy Ganges. From 1993 to 2005 pollution levels more than doubled and they continue to rise.

Indeed, the stretch of the river where Somnath works is so contaminated it can hardly sustain marine life.

'The River Is Dead'

"The river is dead, it just has not been officially cremated," Sunita Narain, director of the New Delhi-based Centre for Science and Environment -- one of India's top environmental watchdog groups -- told SPIEGEL ONLINE in reference to the Yamuna.

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The problem, though, isn't just with Delhi's river. Fully 80 percent of urban waste in India ends up in the country's rivers, and unchecked urban growth across the country combined with poor government oversight means the problem is only getting worse. A growing number of bodies of water in India are unfit for human use, and in the Ganges River, holy to the country's 82 percent Hindu majority, the river dolphin population is falling so rapidly due to pollution that they were downgraded this year from vulnerable to endangered.

Air pollution is also a growing problem, with some indications that soot and smog from India and China may even be changing weather patterns in North America. Closer to home, though, the effects are obvious: rice crop yields in southern India are falling as brown clouds block out more and more sunlight. And the brilliant white of the famous Taj Mahal is slowly fading to a sickly yellow.

According to Dr. Shreekant Gupta, a professor at the Delhi School of Economics specializing in the environment, factoring in the cost of environmental damage in India would shave 4 percent off of the country's gross domestic product. Lost productivity from death and disease (water-borne diseases are India's leading cause of child mortality) are the primary culprits.

"Some of this feeling of euphoria gets a bit dampened thinking of environmental degradation," says Gupta. After environmental corrections, he puts India's rocketing 9 percent annual growth rate at a mediocre 4.5 percent.

Fecal Coliform

Much of the river pollution problem in India comes from untreated sewage. Samples taken recently from the Ganges River near Varanasi show that levels of fecal coliform, a dangerous bacterium that comes from untreated sewage, were some 3,000 percent higher than what is considered safe for bathing.

How levels of water-borne effluvia skyrocketed to such levels in India can be seen by the example of India's capital, Delhi. Only 55 percent of the 15 million Delhi residents are connected to the city's sewage system. The remainder flush their bath water, waste water and just about everything else down pipes and into drains -- many of them open -- that empty into the Yamuna. "We have a flush and forget mindset," says Narain.

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Not that the problems with the Yamuna have been completely ignored in New Delhi. Indeed, fully 20 billion rupees, or almost US \$500 million, has been spent on various clean up efforts. In addition, the city has spent massive amounts on sewage treatment plants. Today New Delhi is home to 5 percent of India's urban population but boasts 40 percent of the country's sewage treatment capacity.

But that hasn't translated into cleaner water. Eleven of the 17 sewage treatment plants in the city are underutilized with a quarter of the plants running at less than 30 percent capacity. As it turns out, the city's decrepit sewage system is simply unable to deliver sewage to the plants. The lines are "silted and settled...and are corroded," says Arun Mathur, head of the agency responsible for the city's water supply.

A further problem is presented by the sprawling slums of New Delhi that are unconnected to the system. The sewage from "1,500 unplanned colonies find its way into the drains and then into the river," Mathur told SPIEGEL ONLINE, shaking his head.

Three Billion Liters of Waste Per Day

According to the Centre for Science and Environment, between 75 and 80 percent of the river's pollution is the result of raw sewage. Combined with industrial runoff -- and the garbage thrown into the river -- it totals over 3 billion liters of waste per day, a quantity well beyond the river's capacity to assimilate it. The frothy brew is so glaring it can be viewed on Google Earth.

There is little city residents can do. A confusing web of political appointees, civil servants, and weak elected officials with short term limits makes accountability almost impossible. At least eight separate agencies from the city, state and federal level oversee various aspects of the Yamuna's cleanup, alternately competing for funds and passing the buck when public anger reaches a boiling point.

The problem has become so intractable that the Indian Supreme Court -- notorious for legislating from the bench when government bureaucracies fail to act -- has jumped into the void. After having originally taken up the issue in 1994 following a damning article in the *Hindustan Times* highlighting the Yamuna's dismal condition, the court approved a new proposal from the Delhi municipal government in May of this year. The plan foresees the building of interceptor sewers to divert the sewage flowing from unconnected parts of the city to the sewage treatment plants - - and is estimated to cost another 20 billion rupees, or almost \$500 million in total.

Experts like Centre for Science and Environment director Sunita Narain believe throwing still more money into building sewage diversion and treatment infrastructure is a waste of time. She calls for rethinking the entire pollution control paradigm, building small-scale waste treatment plants on a neighborhood scale and re-using the water locally.

India's Prime Minister Dr. Manmohan Singh seems to agree with the scaled-down approach, coming down on the side of innovation over new construction. In a speech delivered on World Water Day in March, he called on India's scientists and engineers to redesign the flush toilet.

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