Water, Clean and Dirty

This is a pair of opinion pieces on related water issues. Read the researched argument and the op-ed piece below and be ready to discuss how the 3 rhetorical appeals are working in both. Details about the forums is found below each article, but feel free to go to the sites and check them out.

In addition to assessing how each writer uses the rhetorical appeals, consider as you read these how each writer uses data, and how both discuss water issues from a global perspective.

1. **Researched argument from the Breaking Energy website.**

[Utilizing Wastewater Presents Environmental and Economic Opportunities](http://breakingenergy.com/2015/02/16/utilizing-wastewater-presents-environmental-and-economic-opportunities/)  By Hsueh-min Patrick Hung, February 16, 2015



Among the most urgent concerns for the future is to have enough water to sustain a human population projected to reach 9.6 billion people by 2050.[[1]](http://breakingenergy.com/2015/02/16/utilizing-wastewater-presents-environmental-and-economic-opportunities/?utm_source=breakingenergy&utm_medium=module&utm_campaign=Career%20Insights" \l "_ftn1) The UN Millennium Development Goals recognize that access to water and sanitation is essential to economic development and poverty alleviation.[[2]](http://breakingenergy.com/2015/02/16/utilizing-wastewater-presents-environmental-and-economic-opportunities/?utm_source=breakingenergy&utm_medium=module&utm_campaign=Career%20Insights" \l "_ftn2) However, global consumption patterns indicate that we are becoming more water profligate, and the waste that pollutes water supplies generally remains an unmitigated hazard. According to some estimates, 70 percent of drinking water in India is contaminated by sewage, which is a significant impediment to equitable development that occurs in many lower-income countries.[[3]](http://breakingenergy.com/2015/02/16/utilizing-wastewater-presents-environmental-and-economic-opportunities/?utm_source=breakingenergy&utm_medium=module&utm_campaign=Career%20Insights" \l "_ftn3) The UN estimated that if water consumption trends continue unabated, 1.8 billion people will experience water shortages as soon as 2025.[[4]](http://breakingenergy.com/2015/02/16/utilizing-wastewater-presents-environmental-and-economic-opportunities/?utm_source=breakingenergy&utm_medium=module&utm_campaign=Career%20Insights" \l "_ftn4) Among solutions with great potential are the development and deployment of technologies that use wastewater as a resource, which can generate incentives for industries and municipalities to treat waste that is otherwise discharged into vital waterways.

*Read a 3-part Breaking Energy series on wastewater recycling in the oil and gas industry* [*here*](http://breakingenergy.com/2013/05/14/wastewater-recycling-part-i-will-drilling-and-environmental-goals-align-as-cleanup-costs-fall/)*.*

Effective wastewater management can grow an economy and protect the environment. The World Bank estimates that infrastructure for sanitation can reward investment fivefold, whereas poor sanitation can drain up to seven percent of GDP each year.[[5]](http://breakingenergy.com/2015/02/16/utilizing-wastewater-presents-environmental-and-economic-opportunities/?utm_source=breakingenergy&utm_medium=module&utm_campaign=Career%20Insights" \l "_ftn5) That is because healthcare costs are lower and labor is more productive when workers are healthy. Pursuit of prudent strategies for water management will be more active if we recognize the resource potential of wastewater, which is a powerful opportunity for sustainable economic development and growth.[[6]](http://breakingenergy.com/2015/02/16/utilizing-wastewater-presents-environmental-and-economic-opportunities/?utm_source=breakingenergy&utm_medium=module&utm_campaign=Career%20Insights" \l "_ftn6) Wastewater treatment is a desirable process for mitigating the hazards of agricultural, industrial, and municipal by-products. However, investors are wary to finance water infrastructure projects demanding high upfront costs and long development periods. That is why multi-billion dollar wastewater treatment facilities are a privilege enjoyed mainly in developed economies and advanced regions in poorer countries. A UN study articulates this disparity; on average, high-income countries treat 70 percent of generated wastewater (North America treats 75 percent, or 61 km3 of wastewater annually), while low-income countries treat only 8 percent of generated wastewater.[[7]](http://breakingenergy.com/2015/02/16/utilizing-wastewater-presents-environmental-and-economic-opportunities/?utm_source=breakingenergy&utm_medium=module&utm_campaign=Career%20Insights" \l "_ftn7) Because of projections for impending water scarcity, governments in water-poor regions are investing in technologies for desalination and water purification, but their impact will be limited to too few people and they fail to address water pollution more fully.[[8]](http://breakingenergy.com/2015/02/16/utilizing-wastewater-presents-environmental-and-economic-opportunities/?utm_source=breakingenergy&utm_medium=module&utm_campaign=Career%20Insights" \l "_ftn8)

There are novel strategies for taking advantage of the resource potential of wastewater that can simultaneously generate marketable assets while diverting effluent from water supplies. Partially treated wastewater can be coolant for electric power plants; each year 26 billion gallons of “sullage” cool the Palo Verde Nuclear Generating Station in Arizona.[[9]](http://breakingenergy.com/2015/02/16/utilizing-wastewater-presents-environmental-and-economic-opportunities/?utm_source=breakingenergy&utm_medium=module&utm_campaign=Career%20Insights" \l "_ftn9) Biogas generated in anaerobic digesters can be used for power generation and heating; the Newtown Creek Wastewater Treatment Plant in New York has a 310 million gallon per day capacity, and sells enough natural gas to heat 2,500 to 5,200 homes each year.[[10]](http://breakingenergy.com/2015/02/16/utilizing-wastewater-presents-environmental-and-economic-opportunities/?utm_source=breakingenergy&utm_medium=module&utm_campaign=Career%20Insights" \l "_ftn10) Assuming that governments will be challenged for resources to address increasingly frequent and difficult wastewater problems, market mechanisms will prove more effective to stimulate solutions for capturing and utilizing wastewater.

The most promising and potentially profitable strategy for wastewater management is to utilize it in processes for algae biomass production. Stimulated by the necessity for clean water and renewable energy, several firms operate plants that combine wastewater treatment with biomass production. Earlier processes for separating energy dense lipids from algae were too energy-intensive to qualify as cost-competitive or cleaner alternatives to fossil fuels. The breakthrough innovation distinguishing the new generation of plants is that they produce various products (fuel, clean water, fertilizer) and combine several utilities, which allows these hybrid facilities to generate revenue in an efficient, resourceful, and eco-friendly manner.[[11]](http://breakingenergy.com/2015/02/16/utilizing-wastewater-presents-environmental-and-economic-opportunities/?utm_source=breakingenergy&utm_medium=module&utm_campaign=Career%20Insights" \l "_ftn11)

Despite the urgency of water sanitation issues among public health experts, dirty water is not effectively controlled by policies and regulations alone. Market-based approaches recognize problems and exploit opportunities for solutions that generate wealth, which is why there are excellent prospects for the development of wastewater resources for energy. The potential solutions above-mentioned address pressing concerns, and that is why economic development in the future will be more resourceful and sensitive to its synergies with vital food, water, and energy.

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[[1]](http://breakingenergy.com/2015/02/16/utilizing-wastewater-presents-environmental-and-economic-opportunities/?utm_source=breakingenergy&utm_medium=module&utm_campaign=Career%20Insights" \l "_ftnref1) “World Population Projected to Reach 9.6 Billion by 2050.” *UN News Center*. UN, 13 June 2013. Web. 24 Apr. 2014. <<https://www.un.org/en/development/desa/news/population/un-report-world-population-projected-to-reach-9-6-billion-by-2050.html>>.

[[2]](http://breakingenergy.com/2015/02/16/utilizing-wastewater-presents-environmental-and-economic-opportunities/?utm_source=breakingenergy&utm_medium=module&utm_campaign=Career%20Insights" \l "_ftnref2) Ashe, John W. “*Summary: Thematic Debate of the General Assembly “Water, Sanitation and Sustainable Energy In the Post-2015 Development Agenda.”* United Nations, 15 Mar. 2014. Web. 10 Apr. 2014. <<http://www.un.org/en/ga/president/68/pdf/letters/03062014WSSE_summary.pdf>>.

[[3]](http://breakingenergy.com/2015/02/16/utilizing-wastewater-presents-environmental-and-economic-opportunities/?utm_source=breakingenergy&utm_medium=module&utm_campaign=Career%20Insights" \l "_ftnref3) “India’s Malnourished: A Mess of Pottage.” *The Economist*. 24 Aug 2013: 38-39. Print.

[[4]](http://breakingenergy.com/2015/02/16/utilizing-wastewater-presents-environmental-and-economic-opportunities/?utm_source=breakingenergy&utm_medium=module&utm_campaign=Career%20Insights" \l "_ftnref4)“Water Scarcity Factsheet.” *UN-Water*. United Nations, 2013. Web. 20 Nov. 2014. <<http://www.unwater.org/publications/publications-detail/en/c/204294/>>.

[[5]](http://breakingenergy.com/2015/02/16/utilizing-wastewater-presents-environmental-and-economic-opportunities/?utm_source=breakingenergy&utm_medium=module&utm_campaign=Career%20Insights" \l "_ftnref5) “Why Invest in Sanitation?” *Water and Sanitation Program*. World Bank, 2012. Web. 04 Nov. 2014. <<http://www.wsp.org/content/why-invest-sanitation>>.

[[6]](http://breakingenergy.com/2015/02/16/utilizing-wastewater-presents-environmental-and-economic-opportunities/?utm_source=breakingenergy&utm_medium=module&utm_campaign=Career%20Insights" \l "_ftnref6) Cf. Corcoran, Emily, Christian Nellemann, Elaine Baker, Robert Bos, David Osborn, and Heidi Savelli (eds). *Sick Water?: The Central Role of Wastewater Management in Sustainable Development: A Rapid Response Assessment*. Arendal, Norway: UNEP/GRID-Arendal, 2010. <<http://www.unep.org/pdf/SickWater_screen.pdf>>.

[[7]](http://breakingenergy.com/2015/02/16/utilizing-wastewater-presents-environmental-and-economic-opportunities/?utm_source=breakingenergy&utm_medium=module&utm_campaign=Career%20Insights" \l "_ftnref7) **“**UN: Rising Reuse of Wastewater in Forecast but World Lacks Data on “Massive Potential Resource”.” *UN News.* United Nations University, 9 Sept. 2013. Web. 14 Apr. 2014. <<http://unu.edu/media-relations/releases/rising-reuse-of-wastewater-in-forecast-but-world-lacks-data.html>>.

[[8]](http://breakingenergy.com/2015/02/16/utilizing-wastewater-presents-environmental-and-economic-opportunities/?utm_source=breakingenergy&utm_medium=module&utm_campaign=Career%20Insights" \l "_ftnref8) *Global Water Security*. Washington, D.C.: Office of the Director of National Intelligence, 2012. *Intelligence Community Assessment on Global Water Security*. ODNI, 2 Feb. 2012. pg. 9. Web. <<http://www.state.gov/e/oes/water/ica/>>.

[[9]](http://breakingenergy.com/2015/02/16/utilizing-wastewater-presents-environmental-and-economic-opportunities/?utm_source=breakingenergy&utm_medium=module&utm_campaign=Career%20Insights" \l "_ftnref9) Heiser, Steve. “Arizona Nuclear Power Plant To Buy Wastewater From Cities; Agreement Is Win-Win For Plant And Cities.” *Nuclear Street*. Media X Group, 7 Apr. 2010. Web. 04 Nov. 2014. <[*http://nuclearstreet.com/nuclear\_power\_industry\_news/b/nuclear\_power\_news/archive/2010/04/07/arizona-nuclear-power-plant-to-buy-wastewater-from-cities-agreement-is-win-win-for-plant-and-cities-0407.aspx#.U0w2IqIyrQ8*](http://nuclearstreet.com/nuclear_power_industry_news/b/nuclear_power_news/archive/2010/04/07/arizona-nuclear-power-plant-to-buy-wastewater-from-cities-agreement-is-win-win-for-plant-and-cities-0407.aspx#.U0w2IqIyrQ8)>.

[[10]](http://breakingenergy.com/2015/02/16/utilizing-wastewater-presents-environmental-and-economic-opportunities/?utm_source=breakingenergy&utm_medium=module&utm_campaign=Career%20Insights" \l "_ftnref10). “The Newtown Creek Digester Eggs.” *NYC Environmental Protection*. The City of New York, 2014. Web. 04 Nov. 2014. <[*http://www.nyc.gov/html/dep/html/environmental\_education/newtown\_digesters.shtml*](http://www.nyc.gov/html/dep/html/environmental_education/newtown_digesters.shtml)>.

[[11]](http://breakingenergy.com/2015/02/16/utilizing-wastewater-presents-environmental-and-economic-opportunities/?utm_source=breakingenergy&utm_medium=module&utm_campaign=Career%20Insights" \l "_ftnref11) Wald, Matthew L. “Seeing Purpose and Profit in Algae.” *The New York Times*. The New York Times, 18 Aug. 2014. Web. 09 Sept. 2014. <<http://www.nytimes.com/2014/08/19/science/not-letting-algae-just-float-around.html?_r=0>>.

**The forum for this article is *Breaking Energy* web site, which says this about itself:** Breaking Energy provides access to news, analysis, thought leadership, reference materials and discussions about the day’s most important energy market trends. Breaking Energy participants stay ahead of breaking news, participate in high-profile events and enjoy access to the central hub of the industry community as it transforms in response to fast-moving changes in energy politics and regulation, deals with financial challenges and leads technological advances. Contact us at tips@breakingenergy.com.

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1. **Op-ed (opinion-editorial) piece from a Canadian news site about a recent American issue.**

Op-Ed: Children are the victims in Flint, Michigan's water crisis

By [Karen Graham](http://www.digitaljournal.com/user/843083)     Jan 13, 2016

Members of the Michigan National Guard were called in late Tuesday night to help in passing out bottled water to families in Flint, Michigan because of the ongoing problem with lead-tainted water in the city's municipal water system.

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Flint, Michigan's children are the real victims in what has been described as a man-made disaster. And it all started in March 2014 when the city began drawing its water from [the Flint River](http://www.foodsafetynews.com/2016/01/122437/#.VpaB3BUrIhc) after disconnecting from Detroit's water supply, allowing the city to save $4.0 million a year.

According to a story in [Digital Journal](http://www.digitaljournal.com/news/environment/flint-michigan-kids-high-lead-levels-prompts-state-of-emergency/article/452277) in December 2015, People almost immediately began to complain about the foul smelling, urine-colored water.

The [real hero](http://www.digitaljournal.com/news/environment/flint-michigan-lead-tainted-water-unsafe-to-drink-doctors-say/article/444872), if anyone can be labeled as such, is Dr. Mona Hanna-Attisha, a researcher and the director of the pediatric residency program at Hurley Medical Center.

As Digital Journal writer Megan Hamilton reported, it was this young doctor's concern for her patient's lives that prompted her to tenaciously follow through on lead testing, proving that the high lead levels she found were enough to warrant further studies and alert health officials.

**What went wrong with changing the water supply?**

Yes, people were told to stop drinking the water from their faucets and were urged to get lead filters for their homes. But as Dr. Hanna-Attisha was to discover, the governor said it just wasn't economically feasible to return to the Detroit water supply, even though it was found that water from the Flint River was leaching lead from the old water pipes in the city's municipal water system.

And during all this time, from the very first complaints about the water, the state Department of Environmental Quality did nothing, except to downplay and belittle Flint's concerns. Additionally, they also didn't require Flint to treat the river water for corrosion, according to [CBS News.](http://www.cbsnews.com/news/national-guard-called-up-to-help-in-flint-michigan-water-crisis/)

Now, with the water crisis coming up on almost two years, officials at the state and local level are being quick to point fingers, at everyone but themselves. But that seems to be typical in situations such as this.

Governor Snyder, who declared a state of emergency in Flint last week, has faced criticism over the state's lack of a response to the water crisis. Senate Minority Leader Jim Ananich, D-Flint, said in a statement. "Sadly, myself and many leaders of my community have advocated for this type of response for months."

U.S. Rep. Dan Kildee, a Democrat representing the Flint area, said: "It is the state's ultimate responsibility to act and make it right. Flint residents are the victims in this crisis and they deserve a more urgent response equal to the gravity of this crisis."

As [ABC News](http://abcnews.go.com/Health/michigan-police-delivering-water-door-door-amid-contamination/story?id=36244428) points out, declaring a state of emergency in Flint will allow for federal funds to be siphoned into Genessee County, and they will be needed, if not today, most certainly in the long term. This is because the damage to Flint's young people has already been done.

Long-term exposure to lead is not something you can see. It sometimes takes years for the effects to show up. "We see the consequences of lead poisoning a lot later," Hanna-Attisha, told [ABC News last month](http://abcnews.go.com/topics/lifestyle/health/toxic-heavy-metals.htm). "In five years we’re going to see kids with developmental delays and will have to be in special ed … in 15 years they’ll have problems with behaving."

Today, Flint is again hooked up to the Detroit water supply. But the city's worries are not over. The old pipes are still leaching lead into the water, and hundreds of children, poisoned with lead, will now have to be under a doctors care for a long time to come. And we haven't even gone into the long term costs of special education or the behavioral problems that will crop up, all because a city wanted to save some money.

*This opinion article was written by an independent writer. The opinions and views expressed herein are those of the author and are not necessarily intended to reflect those of DigitalJournal.com*
Read more: <http://www.digitaljournal.com/life/health/op-ed-children-are-the-victims-in-flint-michigan-s-water-crisis/article/454691#ixzz3yI7ynVvf>

### **The Forum:**

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The writer: Karen Graham is Digital Journal's Editor-at-Large for environmental news.

Karen's view of what is happening in our world is colored by her love of history and how the past influences events taking place today. Her belief in man's part in the care of the planet and our environment has led her to focus on the need for action in dealing with climate change. It was said by Geoffrey C. Ward, "Journalism is merely history's first draft." Everyone who writes about what is happening today is indeed, writing a small part of our history.

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