

2014 Environmental Performance
Index Features New Indicators,
Improved Country Coverage

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[10 Key Findings from the 2014 Environmental Performance Index \(EPI\)](#)

1. The EPI provides a stocktaking of what is working in international environmental governance and what isn't. Among the **nine** categories it measures, about **a half show no or negative progress**. Environmental issues directly tied to public health, like access to water and sanitation and child mortality, tend to show the most hopeful signs.

2. When it comes to issues most directly tied to ecosystems -- like fisheries, forests, and the protection of critical habitat, things do not look

A Note from the Associate Director

By **Joshua Galperin**, Associate Director, Yale Center for Environmental Law & Policy

On January 25 we released the 2014 Environmental Performance Index (EPI). The EPI is the cornerstone of the Yale Center for Environmental Law & Policy's research agenda, and we are extraordinarily proud of the project, particularly this year. We're so proud, in fact, that we are dedicating this entire newsletter to celebrating the 2014 release, which is the fifth iteration of the Index.



We are including a number of interesting pieces of the 2014 EPI in this newsletter, but what we cannot show you here is our amazing new [EPI website](#). In just over a month since its launch, the 2014 EPI website has garnered over 150,000 page views from more than 30,000 unique visitors. Over 60 percent of those visitors spend time exploring the website before they surf away. The average visitor spends over 4 minutes on the website. That may seem like a short time, but across the web, the average site visit is less than one minute. The website is a nominee for several important web design awards including the Webbys and the Awwwards. It has also been a CommArts Webpick of the Day.

too promising. Surprisingly, air quality, a core issue of environmental protection, also lags.

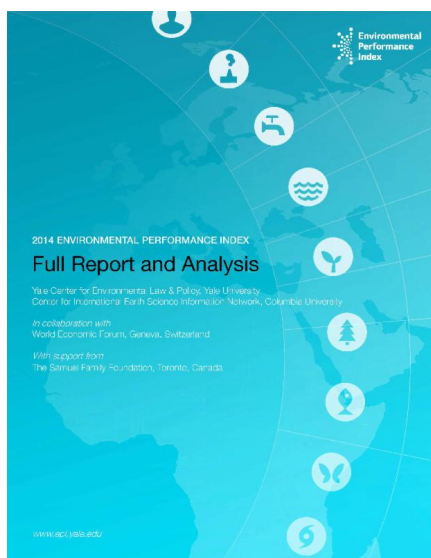
3. Fisheries all over the world are in trouble, mostly because of poor management. **Eighty-seven percent** of all fisheries are overexploited or worse. Many will never return.

4. China and India often get a lot of attention for their bad air quality, and rightly so. Cities in those countries have levels of harmful particulate matter way beyond healthy levels. Air quality in emerging nations is particularly bad, with industry the main cause.

In India alone, premature deaths from outdoor air pollution **increased from 100,000 to 600,000 between 2000 and 2010.**

5. In the decade between 2000 and 2010, the world lost more than one million square kilometers of forest cover, an area the size of Colombia. Most of that loss occurred in the tropics. This is the result of poor management and policy, particularly in regard to agriculture, the main driver of deforestation.

6. Brazil is often cited as a main culprit of deforestation in the Amazon. However, new satellite data confirms that **Brazil actually gained forest cover** in the decade from 2000-2010. While experts cast some doubt on this data's ability to differentiate between old growth forest, sustainable reforestation, and monoculture or plantation forests, this seemed to be a good sign - until Brazilian deforestation rates shot up



[Costa Rica](#), and it has prompted politicians here in the United States to think about the importance of environmental performance. John Kerry, for instance, [referenced the EPI rankings](#) in a recent speech on climate change. Others are considering how environmental rankings might inform trade negotiations.

With the new website, there is no end to the different ways that people across the globe might access the data and use the EPI. Please take a look for yourself (epi.yale.edu) and let us know what you think.

2014 EPI: Finding the Signal through the Noise

By **Angel Hsu**, EPI Project Director, Yale Center for Environmental Law & Policy

With vast amounts of data generated each day, decisionmakers are constantly inundated with information. The Environmental Performance Index (EPI) parses the signal through this noise. For the 2014 EPI, we recognized how critical storytelling is to communicating what the data and indicators tell us about how the world is performing on critical environmental issues.

We are particularly proud of what our EPI team accomplished by way of narrating the science of what constitutes an indicator, its strengths and limitations, and what we can ultimately take away from the Index. Collaborating with a team of scientists, policy experts, statisticians, researchers and students who come from diverse backgrounds -- architecture, studio art, and water science -- we redesigned the [EPI website](#), [Summary for Policymakers](#), and [Full Report](#).

We've achieved this success because of a new strategy that emphasizes communication. The new website has an interactive data explorer, detailed narrative explanations of each of our environmental indicators, and [accessible infographics](#) that explain how the EPI works, to name just a few of our new tools.

All of this innovation gives users an unmatched experience, which leads to unmatched uptake of the EPI's lessons. The 2014 EPI has already spurred a critical debate about air quality and the success of air quality monitoring programs in China and India, it has led to some [soul searching in](#)



in 2013 by **almost 30 percent**.

7. Critical habitat is under threat worldwide. Only **33 percent** of terrestrial ecoregions, **14 percent** of marine ecoregions, and **22 percent** of critical habitat sites reach targets for protections. Of all countries in the 2014 EPI, only **Peru** demonstrated improvement in protecting its critical habitat.

8. Cities offer unique opportunities for sustainable development, something that's increasingly important **now that a majority of the world's population lives in them**.

Singapore, a highly dense, urbanized nation, ranks in the top 5 of the 2014 EPI. Its high performance on Wastewater Treatment (**99.65 out of 100**, compared to a world average of 24.87), Access to Drinking Water, and Access to Sanitation speaks to the potential of urban infrastructure to secure key elements of environmental health.

9. In **Afghanistan** the percentage of households with access to clean drinking water went from **5 percent in 1991 to 61 percent in 2011**.

Since 1990, **more than 2 billion people** have gained access to improved drinking water and proper sanitation, exceeding Millennium Development Goal targets and improving global well-being.

10. Measurement and clear targets matter, and are deeply connected.

The EPI helps policymakers take stock of the world's environment. Improvements this year

A few features are particularly noteworthy. The EPI website provides an [interactive data explorer](#) that allows visualization of the indicators and other key datasets. Do richer countries score better on the EPI? Users can now visualize this scenario with a few clicks of a mouse. The website and report also feature [infographics to unpack what goes into each indicator](#). Entirely designed by students and YCELP staff, each infographic addresses three points: 1) What does the indicator mean? 2) How do we know? and 3) Why does it matter? Finally, we present a revamped EPI report - also designed and written entirely by students and YCELP staff, that unpacks the complexity of the EPI and the challenges of measuring performance for the issues we considered. It includes nearly 50 feature boxes that offer a nuanced view of the issues addressed in the Index.

The 2014 Environmental Performance Index: Who's on Top and Bottom

By **Angel Hsu, Omar Malik, Laura Johnson, Avi Allison, Kelly Coplin, Nora Hawkins, Sarah Guy, and Susanne Stahl**

The 2014 Environmental Performance Index (EPI) ranks 178 countries on how well they perform on high-priority environmental issues in two broad policy areas: protection of human health from environmental harm and protection of ecosystems. What follows is an overview of the top five and bottom five performers.



Top Five

1. [Switzerland](#)

Switzerland is the top performer on the 2014 EPI, with high marks in Biodiversity and Habitat Protection, and Climate and Energy. For centuries, Switzerland had only one designated protected park area. Over the past five years, however, officials introduced 15 new regional parks, with two additional national park projects underway. With this surge in park development, Switzerland achieved the highest possible score for protected terrestrial areas - significantly higher than those of neighboring countries France, Italy, and Austria. In terms of climate change, Switzerland has substantially reduced the carbon intensity of

give it the greatest coverage yet: **178** countries, **99 percent** of the world's population, **98 percent** of its landmass, **97 percent** of its GDP.

2014 EPI Press Conference and Release

The Yale Center for Environmental Law & Policy, in collaboration with Center for International Earth Science Information Network at Columbia University, launched the 2014 Environmental Performance Index at the World Economic Forum annual meeting in Davos, Switzerland. A recording of the press conference is available [here](#).

Angel Hsu, director and lead author of the 2014 EPI, offers a detailed look at the EPI rankings and methods, as well as an overview of global performance, in this [podcast](#) and [video interview](#).

2014 EPI in the News

[Beijing's Bad Air Would Be Step Up for Smoggy Delhi](#)

The New York Times
25 January 2014

[Browner, Greener](#)

The Economist
26 January 2014

[Indian bumper: Is Delhi the smoggiest city in Asia?](#)

Grist
30 January 2014

[How to Read Pollution Statistics](#)

The Wall Street Journal
30 January 2014

its economic growth, with over half its domestic electricity production from hydropower and another 40 percent from nuclear. The country is also committed to reducing the carbon intensity of its economy, and is doing so at a substantially faster rate than Germany, France, Austria or Italy. In 2000, Switzerland passed a CO2 Act stipulating that energy-based CO2 emissions be reduced by 10 percent below 1990 levels between 2008 and 2012. In 2013, it reset the goal to at least 20 percent below 1990 levels by 2020. Switzerland is reducing both its Trend in Carbon Intensity and its Change in Trend in Carbon Intensity at the same time with an overall rank of 7 in the Climate & Energy policy category.

2. [Luxembourg](#)

At roughly \$114,232 USD per capita, Luxembourg is the second richest country in the world with one of the smallest populations of all European Union countries. As a wealthy country, Luxembourg performs well on environmental health indicators, providing 100 percent Access to Drinking Water and Access to Sanitation. It also has achieved the international target of protecting 17 percent of terrestrial habitats - a goal designated in the Convention on Biological Diversity. Luxembourg has prided itself on its longstanding fulfillment of sustainable development criteria. Officials approved a domestic [National Plan for Sustainable Development in 1999](#) and a second version of the plan was ratified in November 2010. Between the first and second plans, policymakers created indicators for sustainable development (there are currently 29) and related implementation laws. However, Luxembourg performs only moderately well in Climate and Energy, despite adopting a Kyoto Protocol target to reduce greenhouse gas emissions 72 percent of 1990 levels between 2008 and 2012. While the country has established a program to subsidize renewable energy, it still has a ways to go to de-carbonize its electricity generation sector.

3. [Australia](#)

With perfect or excellent target scores in many policy categories, Australia achieved the highest rank of all the G20 countries - likely the result of Australia's robust environmental protection and conservation policies. However, the country has much room for improvement in both the Fisheries and Climate and Energy categories. Australia's fish stocks - [mainly the school shark, bigeye tuna, and the critically endangered bluefin tuna](#) - are highly (15 percent) collapsed and overexploited within Australia's Exclusive Economic Zone, and Australia has no plan to suspend fishing or restore the depleted and collapsed stocks. Australia also performed poorly in Climate and Energy; its reliance on coal makes it the second-highest emitter of CO2 per GDP among all OECD countries. However, the country is now taking actions on climate and energy, legislating and implementing a concrete carbon tax scheme.

4. [Singapore](#)

As a small island nation with a population of over 5 million people but a land area of only 671 square kilometers, Singapore has been forced to focus on efficient resource consumption and reuse. Given its limited geography, Singapore has undertaken robust, integrated and long-term land use planning measures and is a recognized, international leader on sustainable development. Created in 2009, the Sustainable Singapore Blueprint set a number of environmental targets for the country to meet by 2030, including an ambitious goal of [recycling 70 percent of its waste](#) within that time horizon. The city-state's performance on Wastewater Treatment, Access to Drinking Water, and Sanitation speaks to the potential of urban infrastructure to secure key elements of environmental health. Singapore scores 99.65 out of 100 for Wastewater Treatment. The world average, meanwhile, is 24.87. Notably, among the top 10 ranked countries, Singapore is also the top performer in Climate and Energy. However, the country is one of the

[India and China Spar for Most Polluted Capital City](#)

Time

31 January 2014

[Environmental progress should spur Beijing to press on](#)

China Economic Review

7 February 2014

[India's Particulate Problem](#)

The New York Times

9 February 2014

[India's Air Pollution Emergency](#)

The New York Times

13 February 2014

[China gets touch on pollution, faces uphill battle](#)

asian.correspondent.com

18 February 2014

The full list is available [here](#).

2014 EPI Downloads

[2014 EPI Summary for Policymakers](#)

[2014 EPI Full Report](#)

[2014 EPI Press Release](#)

[2014 EPI Press Release \(China\)](#)

[2014 EPI Press Release \(India\)](#)

For the metadata and other report materials, visit epi.yale.edu/downloads.

worst performers on Fisheries, receiving a score of zero.

5. [Czech Republic](#)

Mostly surrounded by mountains, the Czech Republic maintains impressive protection for public lands. Nearly 14 percent of the country is designated a protected landscape area, and 1.52 percent is designated a national park. As a result of these policies, along with an article in its constitution that ensures "the protection of natural resources," the Czech Republic scores high in Biodiversity and Habitat Protection, ranking 13th in the world. However, the country suffers from poor air quality. Average exposure to harmful particulate matter is very high - the Czech Republic ranks 162nd in average exposure to fine particulate matter (PM2.5, air pollutants that can penetrate human lung and blood tissue). Poor air quality could be a reason why the country has the [highest cancer rates](#) in the European Union.

Bottom Five

174. [Afghanistan](#)

Afghanistan - ranked for the first time in the 2014 EPI - faces numerous environmental challenges. In Biodiversity and Habitat Protection, the country receives nearly the worst scores for terrestrial habitat protection, and a score of 0 out of 100 for critical species protection. Roughly 150 species of mammals and birds are listed as at risk, but [illegal poaching and hunting seems to be getting worse](#). Ongoing conflicts in the country certainly pose challenges to effective governance; however, a few signs of hope indicate that Afghanistan will improve its performance in the future. The percentage of households with access to clean drinking water went from 5 percent in 1991 to 61 percent in 2011. The Child Mortality score has also vastly improved, with a 38-percent improvement over the last decade.

175. [Lesotho](#)

Nearly two-thirds of this small African country's income is derived from the agricultural sector, making natural resource management key to the Lesotho's economic well-being. However, policy implementation is challenging due to capacity gaps at the individual and institutional levels. While Lesotho's [Environment Act of 2008](#) formally "make(s) provision for the protection and management of the environment and conservation and sustainable utilization of natural resources," the benefits of such policies are not fully realized. Because Lesotho's economy is highly resource dependent, one of the biggest sustainable development challenges for the country is addressing the poverty associated with land degradation caused by overexploitation and erosion. Lesotho scores poorly on the overall EPI due to poor Access to Drinking Water and Access to Sanitation, a high rate of deforestation, and very low levels of habitat and biodiversity protections. The UN Development Programme continues to work closely with the government of Lesotho on a variety of projects, including rural electrification through pilot solar installation programs and developing a sustainable land management model to address governance challenges.

176. [Haiti](#)

Haiti's low position at 176 is no surprise, given its history of political instability and poverty. Under chaotic political circumstances formulating - and enforcing - effective policies is difficult. A lack of land and conservation planning has led large numbers of Haitians to move onto floodplains and other marginal lands, where they face increased risk of dysentery, malaria, tuberculosis, and other sanitation-related diseases. The country scores near the bottom of the Water and Sanitation category, with only 26 percent of the population having access to sanitation and 64 percent, access to drinking water. These environmental challenges are exacerbated by the fact that Haiti is by far the poorest country in the Western hemisphere, with 80

percent of the population living under the poverty line and 54 percent in abject poverty. Most Haitians lack access to modern energy services, instead relying on wood and charcoal as their primary fuel sources, leading to deforestation, soil erosion, and poor biodiversity and habitat protections. In addition, many Haitians depend upon non-commercial fishing for food, and impoverished local fishermen knowingly overexploit fish stocks to feed their families, which explains the country's poor Fisheries performance. Until 2013, Haiti - with the second-longest coastline in the Caribbean - was the only Caribbean country without fishing-restricted marine protected areas.

177. [Mali](#)

Mali has the highest child mortality rate of any country in the 2014 EPI. The high rates of child mortality, which measure the probability of death between a child's first and fifth birthdays, are largely the result of malaria and malnutrition. While the Malian government is not responsible for the presence of malaria-bearing mosquitoes, it could do much more to invest in prevention. In general, Mali's failure to sufficiently invest in environmental protection is the primary reason for its wide array of environmental problems. Unlike many of its neighbors, Mali has experienced rapid economic growth along with political and social stability over the past two decades. However, this stability and rise from the lowest levels of poverty has not been coupled with necessary investments in sustainability. Although Mali's government is relatively well-funded for a developing country, in recent years it has [only spent 1 percent to 2 percent of its non-interest public spending](#) on activities related to environmental protection. Fortunately, the Malian government has recently acknowledged the importance of its environment, and has made initial steps toward greater sustainability investments.

178. [Somalia](#)

Somalia receives the unfortunate position as worst performer in the 2014 EPI. The abysmal ranking offers a classic example of environmental destruction playing out in the absence of a government capable of enacting and enforcing environmental policies. Somalia has been embroiled in [civil war since 1991](#), and for more than two decades following the breakout of the war it lacked a formal parliament. This absence of a functioning government has had significant consequences for local ecosystems, including a ranking of 172 for Biodiversity and Habitat Protection. The Somali population, largely impoverished and persistently threatened by armed conflict, has been focused on short-term survival, resorting to [widespread tree cutting and charcoal burning](#). These activities have reduced forest cover to less than 200 sq. km of forested land and worsened air pollution, particularly for Household Air Quality in which the country ranks 163rd. Somalia's coastal ecosystems have also faced significant destruction in the absence of environmental regulation. Foreign fishing vessels operate at will in Somali waters, over-exploiting fish stocks and harming coral reefs, leading to scores of 0 for both Fisheries indicators in the EPI. Most troubling, however, is the absence of public infrastructure that has meant a lack of functioning water supply systems. Somalis withdraw drinking water from wells which are not fit for human consumption, which explain a last-place ranking on Access to Drinking Water.

Fortunately, there are signs of hope. In 2012, Somalia established its first permanent central government since the start of the civil war, and with the support of Kenya, Ethiopia and the United States, this government has been gradually consolidating and expanding its territorial control. As this process unfolds, the Somali government may gradually develop the authority and the capacity to protect the environment and human health.

Creating the Wastewater Indicator

By **Omar Malik**, Environmental Performance Analyst, Yale Center for Environmental Law & Policy

Despite the critical effect of wastewater treatment on freshwater quality, no global databases exist to measure it. International decisionmakers are discussing water quality in the context of United Nations Sustainable Development Goals (SDGs), highlighting the need for metrics. The EPI team has worked in parallel with global water experts to conceptualize an indicator to assess wastewater treatment performance—the latest attempt of its kind. This indicator can now provide a valuable baseline by which to measure progress. After all, whether countries treat wastewater says a lot about how those countries manage their overall water quality.

The Yale Center for Environmental Law & Policy team initially researched as widely as possible to track down every existing source of data on wastewater treatment. After conducting an extensive literature review, we found that no single database existed that was comprehensive enough to develop a global indicator. So the team decided to make its own dataset. In what was an innovation for the EPI, the team went country-by-country to find data wherever available, and, after a burst of research activity, eventually found enough data to put this issue in the Index.

However, there were challenges in the process. Wastewater data, we found, were often reported at only local or regional scales, limiting the study to a mainly urban scope. Data were also reported from various sources ranging from national state-of-the-environment reports to the annual reports from private utilities. They were also reported sparsely through time. On top of that, definitions for "wastewater" varied. For instance, many sources did not make it clear whether the effluent they were describing was from industrial, municipal, or household waste. Often it was a combination of a few, which is reflected in the indicator. Many reports also did not clarify whether the level of treatment was primary, secondary, or tertiary, and so the EPI indicator covers them all. We also had to parse whether reported statistics referred to populations served or volumes of water treated.

The final dataset combines the team's country-level findings with official statistics from the Organization for Economic Cooperation and Development, the United Nations Statistical Division, the Food and Agriculture Organization of the United Nations, and inputs from the Piment-Masons Water Yearbook. In cases where country-level data were not available, we use city-level data for major cities. In a few other cases, the team had to make judgment calls based on evidence, using peer-reviewed literature and conversations with in-country experts. To address consistency, we used multi-year averages, and, to ensure environmental rigor, we weighted the final treatment values by sewerage connection rates to create the final indicator.

Despite the early challenges of its construction, this intensive effort was worthwhile in the end. The international community now has a starting point by which to judge this major driver of both ecosystem and public health.

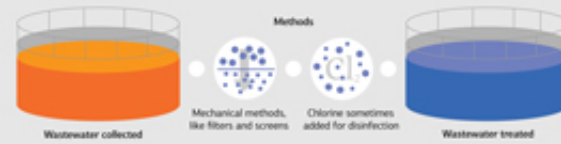
What is Wastewater Treatment?

This indicator tracks how well countries treat wastewater from households and industrial sources before it is dumped into the environment. It tracks the performance of basic wastewater management.

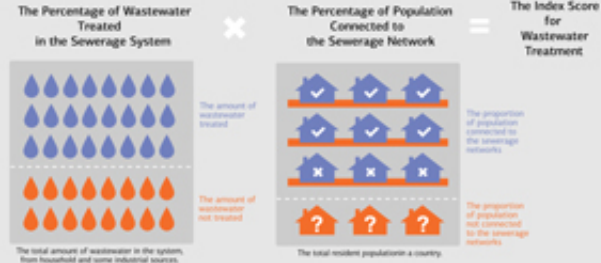


Primary Treatment and Beyond

There are different levels of wastewater treatment. We consider the definition "at least primary treatment," which removes a lot of suspended solids and reduces biochemical oxygen demand. Extra steps may be taken to treat the water further.



How do we know?



Why does it matter?

Downstream Effects of Wastewater

The downstream effects of untreated wastewater are bad for public health and the health of aquatic ecosystems. When pollutants enter the water cycle, aquatic species and humans can be directly harmed through infection or the disruption of their biological development, and they can be harmed indirectly through nutrient loading that causes eutrophication.



Do you know?



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For all of the infographics included in the 2014 EPI, visit <http://visual.ly/users/epi>.