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Water

2010 HIGHLIGHTS...

Identified water as a top sustainability concern	Refined our corporate water strategy	Reduced water use per vehicle by 8.5 percent in 2010	Assessing our water footprint throughout the vehicle lifecycle
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Water availability, quality and access have rapidly become critical global issues extending well beyond environmental concerns. Water is essential to every element of human existence on our planet. It is vital for health, indispensable for agriculture and biodiversity, necessary for industry and critical for community development. The need for clean water cuts across all social, economic, environmental and political boundaries.

At Ford, water conservation is an integral part of our sustainability strategy, alongside greenhouse gas reduction. Many key vehicle manufacturing processes require the use of water, and water is used at every point in our supply chain. Our water-related risks come not only from being a direct water consumer, but from being a large purchaser of water-intensive materials, parts and components.

In preparation for this 2010 Sustainability Report, Ford conducted a new materiality analysis to determine the issues of highest priority for our Company and our stakeholders. For the first time, water emerged among the top concerns, and we now include it among the top material issues for our Company. Indeed, we recognize that our long-term success is dependent upon thriving communities and ecosystems, both of which require water.

Although we have been working on water-related issues for some time, at the end of 2010, we refined our Ford Motor Company water strategy, and our Board of Directors reviewed our water-related progress in early 2011. The water strategy is described in this section of the report along with details of our progress, targets and water-related impacts, among other topics.

To understand our water impacts, we have undertaken an [assessment of our water footprint](#) throughout the lifecycle of our vehicles.

Ford recognizes water as a human rights issue – a “right to water.” Companies that underperform on water issues will face scrutiny over human rights violations – especially those companies operating in water-stressed areas.

We see water as a local issue directly influenced by availability, quality and economics. We target facility water reductions based on local needs, while using a holistic, company-wide approach.

Perspectives on Sustainability

**Monica Ellis**  
 Chief Executive Officer, Global Environment & Technology Foundation and Chief Executive Officer, Global Water Challenge

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Related Links

This Report:

- [Water Use](#)



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## Global Landscape

With water pollution increasing and the world's population growing, access to clean water is growing more uncertain. Approximately 1 billion people around the world lack access to safe, clean drinking water, and 2.5 billion lack sanitation facilities.<sup>1</sup> As global populations grow, demand for clean water soars, too.

Among some of the sobering statistics:

- Less than 3 percent of the Earth's water is freshwater. Of that, less than 0.5 percent is accessible to plants, animals and humans.<sup>2</sup>
- Water use has been increasing at more than double the rate of human population growth.<sup>3</sup>
- By 2025, 1.8 billion people will be living in countries or regions with absolute water scarcity, and two-thirds of the world population could be under stress conditions.<sup>3</sup>
- At least 1.8 million children under age 5 die each year from water-related diseases.<sup>4</sup>

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1. Source: UN Water, WHO/Unicef  
2. Source: National Oceanic and Atmospheric Administration  
3. Source: Food and Agriculture Organization (FAO) of the United Nations  
4. United Nations Environment Programme

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## Progress at Ford

More than a decade ago, Ford made a commitment to decrease our water use, setting a target of 3 percent year-over-year reductions. Since we launched our Global Water Management Initiative in 2000, we have made outstanding progress. Our global manufacturing facilities have saved approximately 10.5 billion gallons of water over the past 10 years – a 62 percent reduction. Water use per vehicle decreased by 49 percent from 2000 to 2010.

We have taken a broad range of actions that have helped us minimize our water footprint. For example, we implemented a reverse-osmosis process to recycle water in a number of our production plants, allowing us to avoid using higher-quality water suitable for human consumption. We've employed an innovative parts-washing system to reduce wastewater and cut energy consumption. We have also looked to new technologies, such as one that lubricates cutting tools with a fine spray of oil, rather than the conventional wet machining that previously required pumping millions of gallons of metal-working fluids and water to cool and lubricate tools.

These actions don't attract many headlines – but they make an impact. And they reflect our commitment to reduce our environmental impacts.

For 2011, we are aiming for a global water reduction of 5 percent per vehicle compared to 2010. Moving forward, we also will be setting internal year-over-year efficiency targets as part of the annual environmental quality business planning process within each of our global regions. And we will be requiring all of our plants to perform basic, low-cost water-reduction actions.

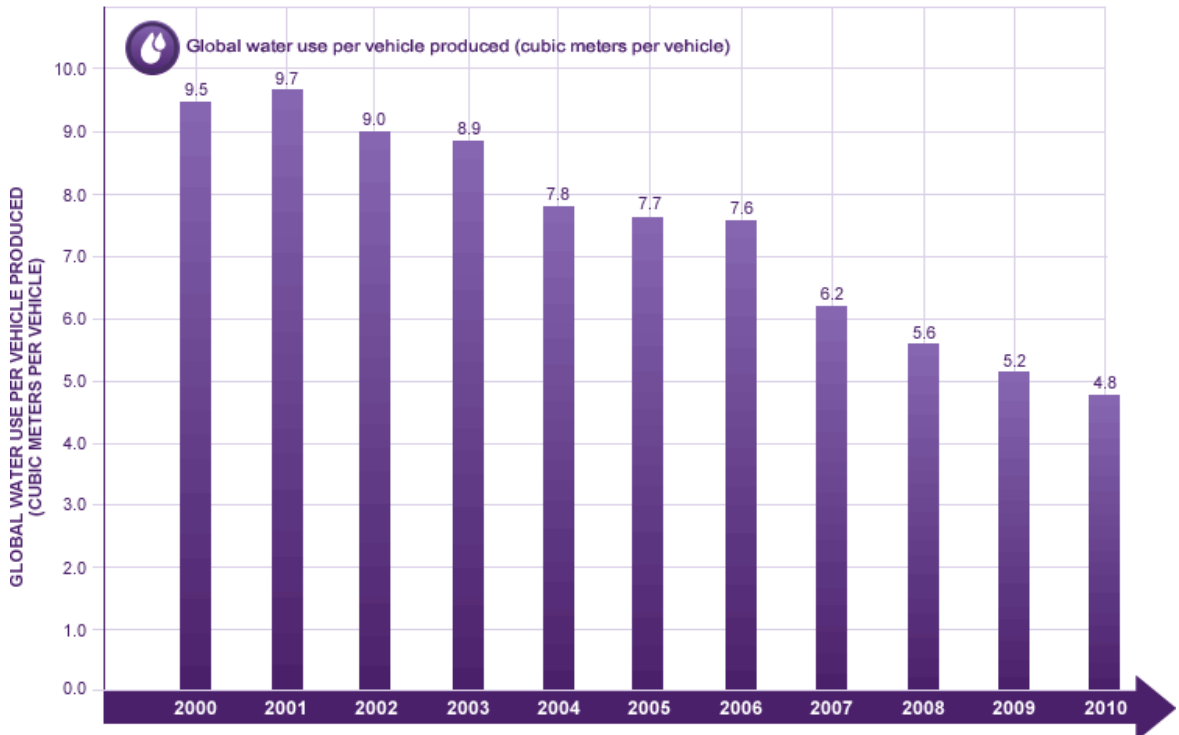
If we want to continue to reduce our water footprint, we must implement a more global approach that cascades best practices from our own plants – and from other industries. We have been benchmarking our peers and other manufacturers to look for water-saving techniques that can be adapted to Ford locations. We will also be looking at other management techniques, such as the introduction of critical monitoring and efficiency projects, the integration of new technologies and facility upgrades, and the alignment of resources.

For more on our water-reduction efforts to date, please see the [Environment](#) section of this report.

### Related Links

This Report:

- [Environment Data: Water Use](#)





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## Impacts, Risks and Opportunities

Water scarcity can have a sizeable impact on our manufacturing operations. Although we do not use as much water as some other industries, we consume water in many key manufacturing phases in our plants. We cannot be certain that we will always have access to water.

Global climate change also has the potential to impact the availability and quality of water.

Water services are the most capital-intensive of all utilities provided, requiring more infrastructure for the delivery of water than the delivery of electricity, for example. According to the World Bank, a \$400 billion to \$600 billion investment will be needed in global water infrastructure in the next two decades. Meanwhile, the United Nations Educational Scientific and Cultural Organization (UNESCO) estimates that between \$111 billion and \$180 billion will be needed per year to meet Millennium Development Goals for sanitation by 2015.<sup>1</sup>

In the U.S., the Environmental Protection Agency estimates the country will need to invest \$202.5 billion over the next 20 years in wastewater facilities, and an additional \$122 billion will be needed to ensure safe drinking water supplies.

Given these anticipated expenditures, the cost of using water is expected to continue to increase in the coming decades. For a manufacturing company like ours, this would mean higher operating costs. Already, in some locations, rate increases from 2000 to 2009 outpaced water reductions, and our costs will continue to rise if we don't make further improvements.

Increasing water scarcity means industrial needs can be at odds with community and environmental needs for water to deploy. Industrial facilities in water-stressed areas will have reduced access to water and/or may endure rising water costs. Suppliers within water-stressed areas will also be affected.

Another possible risk for Ford is the water intensity of alternative fuels, such as biofuels and electricity, which require greater amounts of water. We are assessing the consequences for water quality and availability that may result from the increased production of electric and battery-electric vehicles, including the use of lithium.

Tracking and reporting our water usage helps us to manage water-related risks and, as a result, allows us to play a significant role in developing and implementing solutions to the water challenge going forward. We see opportunities for:

- Reduced manufacturing costs through process improvements and new technologies that better track our water usage and enable us to target resource use improvements
- Improved water efficiency, leading to reduced energy consumption (and emissions) as a byproduct of increased water efficiency

Water availability is a local issue with global implications. Working on solutions helps us to secure a "license to operate" in diverse global locations and can enhance our reputation in local communities.

1. In 2000, the United Nations set eight goals for development, called the Millennium Development Goals, to improve the global human condition by 2015.



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## Water Strategy Approach

Ford's new water strategy looks at our water use from both an environmental and a social perspective.

Over the past year, we set up a cross-functional team from across Ford divisions – including our environmental quality, manufacturing, purchasing and community engagement functions – to review water issues in a more holistic way. This team has been meeting with a variety of groups – such as the Interfaith Center on Corporate Responsibility (ICCR), the U.N. Global Compact, the U.S. State Department, the Global Water Challenge and Circle of Blue – to gain a better appreciation of outside stakeholder perspectives.

Also in 2010, we became a founding responder to Water Disclosure, a Carbon Disclosure Project (CDP) initiative that launched in late 2009 to help institutional investors better understand the business risks and opportunities associated with water scarcity and related issues. The CDP's original project focused on corporate disclosures of greenhouse gas (GHG) emissions and climate change strategies, and we found our participation in that project to be very beneficial in helping us formulate our strategy for GHG reporting. We anticipate similar benefits from CDP Water Disclosure, which is providing a globally harmonized method for companies to report on water usage, water risks and water management.

We chose to become part of the project because we believe it can help companies move toward greater understanding of water as a strategic business issue, as well as offer encouragement to implement effective water management and conservation.

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### University Collaboration

Ford is collaborating with Georgia Institute of Technology in Atlanta to develop innovative processes that will better enable us to maintain our commitment to water reductions, particularly as we expand into water-scarce regions in India, China, South Africa and Mexico.

Georgia Tech's Sustainable Design and Manufacturing program is collaborating with us to develop our water footprint, researching the environmental issues surrounding the lifecycle of our vehicles, including the use of water in the manufacturing process. The university has worked with Ford on a number of multidisciplinary issues related to sustainable development.

Georgia Tech is also helping us conduct research on the water-intensity of biofuels and battery materials, such as lithium. Lastly, researchers there are helping us identify the best manufacturing technologies to improve our stationary water use.

## Elements of our Water Strategy

Our water strategy actions aim to meet a number of objectives. These include:

- Minimizing global water consumption at Ford facilities while maximizing reuse
- Finding ways to use alternative, lower-quality water sources
- Prioritizing our investments based on local water scarcity and cost concerns
- Meeting either local quality standards or Ford global standards for wastewater discharge – whichever is more stringent
- Ensuring a stable water supply for our manufacturing facilities while working with local communities to minimize our impact

## Looking Ahead

As we further embed our water strategy into our global operations, Ford will be exploring new ways we can measure, monitor and reduce our water use. We will be looking at new investments in technologies and targeted reuse opportunities. We will pursue unified industry solutions for water reductions within the supply chain to improve lifecycle water use. Our initial focus will be on water-intensive industry segments, including aluminium and steel.

We also will be signing the United Nations' CEO Water Mandate.

In addition, we will be working to safeguard the quality of the water we use in order to protect the health of our workforce and local communities. Our Ford Volunteer Corps, meanwhile, is placing a priority on water-based community projects during our Global Week of Caring and Accelerated

Action Days. In 2010, for example, Ford Shanghai office employees collected more than \$10,000 to fund the installation of 52 freshwater tanks in western China communities. (See the [Communities](#) section for more on these programs).

## Improving Water Access and Hygiene in Chennai, India

Beginning in mid-2011, Ford will be working with WaterAid America on a program to improve water access, sanitation facilities and hygiene education in three schools in Chennai, India.

The program, WaterAid in India (WAI), will partner with the Integrated Women's Development Institute, which has a proven track record of improving sanitation and hygiene issues in schools.

Each year, more than 385,000 Indian children die as a result of diarrhea and other diseases caused by unsafe water and poor sanitation. And although the country has one of the largest education systems in the world, the sanitary conditions in many schools are appalling. Only 44 percent have water supply, 19 percent have urinals, 8 percent have toilets and 19 percent of those with toilets have separate facilities for boys and girls.

WAI, which is receiving financial aid from Ford, will identify schools in the Chennai area that lack access to safe water and sanitation, and will build new sanitation facilities and help improve water quality.



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## Case Study: Water Reductions at the Chihuahua Engine Plant

The Mexican state of Chihuahua has witnessed an industrial boom within the last several decades, with multinational firms setting up production facilities for auto manufacturing, aerospace and electronics, to name a few.

But the region, which shares a border with the United States, has suffered from droughts, with rainfalls that have been well below average, especially the last few years. The mighty Rio Grande River – the primary source of water for the region – can't keep pace with a growing population and a booming manufacturing base.

Ford opened our Chihuahua Engine Plant (CHEP) in Chihuahua City, the state's capital, in 1983. As water resources became increasingly stressed, we began to look for ways to reduce our water footprint and limit our impact on the surrounding community. We started making significant changes in our manufacturing processes about six years ago; today, we're proud to say that the plant does not use a single drop of potable water for anything except human use.

In Chihuahua City, most of the local residents are only able to receive water in their homes at certain times during the day. The industrial park where CHEP is located has its own wells and its own water supply lines; however, the underground wells pump water from the same underground reservoirs that supply fresh water to local residents.

"We were very conscious of the fact that water is not an abundant resource in the areas in Mexico where Ford has manufacturing operations," said Luis Lara, environmental quality manager for Ford Mexico. "We implemented an aggressive set of actions for water conservation, including a vision that we would use potable water for personal uses only, and that the rest of the water for the plant would be treated and re-used."

The facility has its own wastewater treatment plant, which has been updated and modified to recycle and reuse as much water as possible. About 80 percent of the treated water goes back into the industrial process; the rest is used for land irrigation around the plant.

Indeed, the plant, which has zero discharge to the municipal sewer system, won the 2010 Environmental Leadership for Competitiveness Award from the Mexican government for projects that are saving more than 32,000 cubic meters of water a year. At CHEP, these initiatives include:

- Using reverse-osmosis-treated gray water from the city's water system, instead of drinking-quality water, in the cooling towers of compressor machines and other manufacturing processes, such as washing machines and coolant systems. This system saves more than 3,500 cubic meters of water per year and more than 290,000 pesos per year, equivalent to about \$25,000.
- Using more reverse-osmosis-treated water, rather than drinkable water, for washing equipment and floors in the facility. This saves an estimated 28 cubic meters of fresh water per year and approximately 475,000 pesos (\$40,500) in reduced water, labor and cleaning costs.
- Implementing a new floor cleaning system that saves another 112 cubic meters annually.

Our Company's recently updated [water strategy](#) focuses on regions – such as Chihuahua, Mexico, and Chennai, India – where water is scarce.

"We recognize that water is an important issue everywhere, but we want to focus our efforts where the needs are greatest," said Andy Hobbs, director of Ford's Environmental Quality Office. "This enables both Ford and the communities in which it operates to achieve the most benefits."

Much of the technology used at CHEP is cutting edge. For example, CHEP uses an ultra-filtration membrane process followed by reverse osmosis. We are also implementing this advanced water recycling technology at our Hermosillo Stamping and Assembly Plant, located in the Sonora Desert in Mexico. We will continue to assess opportunities to use advanced water conservation technologies and reduce our overall water consumption across our operations, especially in water-stressed regions.

**Chihuahua Engine Plant Facts**

- Year opened: 1983
- Total employment: 1,300
- Products: 2.0L and 2.5L Duratec engine, 4.4L and 6.7L diesel engine
- Site size: 247 acres
- Plant size: 1,431,600 square feet