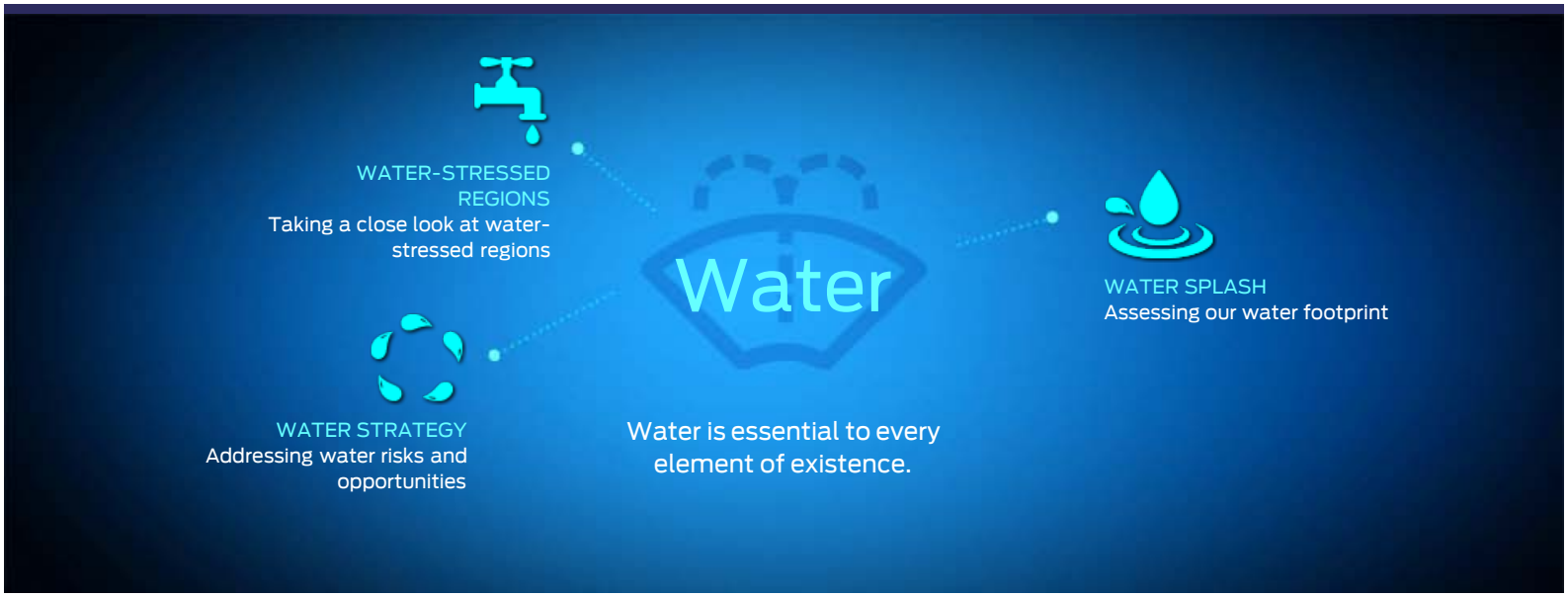




The availability of high-quality water to meet the needs of humans and ecosystems is a critical global sustainability issue, the effects of which are felt locally. Water is essential to every element of existence. It is vital for health, indispensable for agriculture and biodiversity, necessary for industry and critical for community development. The need for clean water cuts across all social, economic, environmental and political boundaries.

We believe Ford can play a role in developing and implementing solutions to the global water challenge. We are committed to conserving water and using it responsibly. Many vehicle manufacturing processes require 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 also from being a large purchaser of water-intensive materials, parts and components.

Our comprehensive water strategy is based on an analysis of risks and opportunities throughout our value chain from environmental and social perspectives. To better understand our impacts, we have been assessing our water footprint throughout the lifecycle of our vehicles. We also have taken a close look at Ford operations located in water-stressed regions. We prioritize facility water reductions based on local needs, while using a global, company-wide approach. We are also participating in social programs that provide better access to water.

Our water strategy actions – including our water-use-per-vehicle reduction goal of 30 percent from 2009 to 2015 – aim to meet a number of objectives. These include:

- Minimizing water use and consumption at Ford facilities
- Finding ways to use alternative, lower-quality water sources
- Prioritizing our water technology investments based on local water scarcity and cost effectiveness
- 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

Approximately
**1 billion**
people around the world lack access to safe, clean drinking water.

About
**2.5 billion**
people globally lack sanitation facilities[1]

**Reducing Water Use**

Between 2011 and 2012, we reduced the average amount of water used to make each vehicle by 8.5 percent.

At Ford, we recognize water as a human rights issue – in other words, as 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. Our Company’s water strategy complements our overall Code of Human Rights, Basic Working Conditions and Corporate Responsibility.

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1. Sources: UN-Water, WHO/UNICEF

# Progress in Reducing Water Use

For more than a decade, Ford has been committed to decreasing our water use. We began our Global Water Management Initiative in 2000, setting a target of 3 percent year-over-year reductions. In late 2011, we announced a new water goal. We are now aiming to cut the amount of water used to make each vehicle by 30 percent globally from 2009 to 2015, which is currently equivalent to an average of 4 cubic meters (or 1,056 gallons) per vehicle.

We are on track to reach this goal, even as we grow our business, adding plants and expanding production to meet global consumer demand. Between 2011 and 2012, we reduced the average amount of water used to make each vehicle by 8.5 percent, putting us more than halfway toward our goal.

Between 2000 and 2012, we reduced our total global water use by 62 percent, or 10.6 billion gallons (see graphic below), by cutting the water we use in everything from cooling towers to parts washing to paint operations. That's equivalent to the water used annually by nearly 99,000 U.S. residences, based on figures from the U.S. Environmental Protection Agency, or enough to fill 16,000 Olympic-size pools. We decreased the total amount of water used around our global facilities from 64 million cubic meters per year to 24 million cubic meters.

Between 2000 and 2012, reduced total global water use by 62 percent, or

**10.6 billion gallons**

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## 10.6 billion gallons of water is:

the amount of water that flows over Niagara Falls in

**3.9 hours***

equal to the amount of annual water use for about

**99,000**

U.S. residences*

**16,000**

Olympic pools*

**265 million**

loads of laundry**

* U.S. Environmental Protection Agency

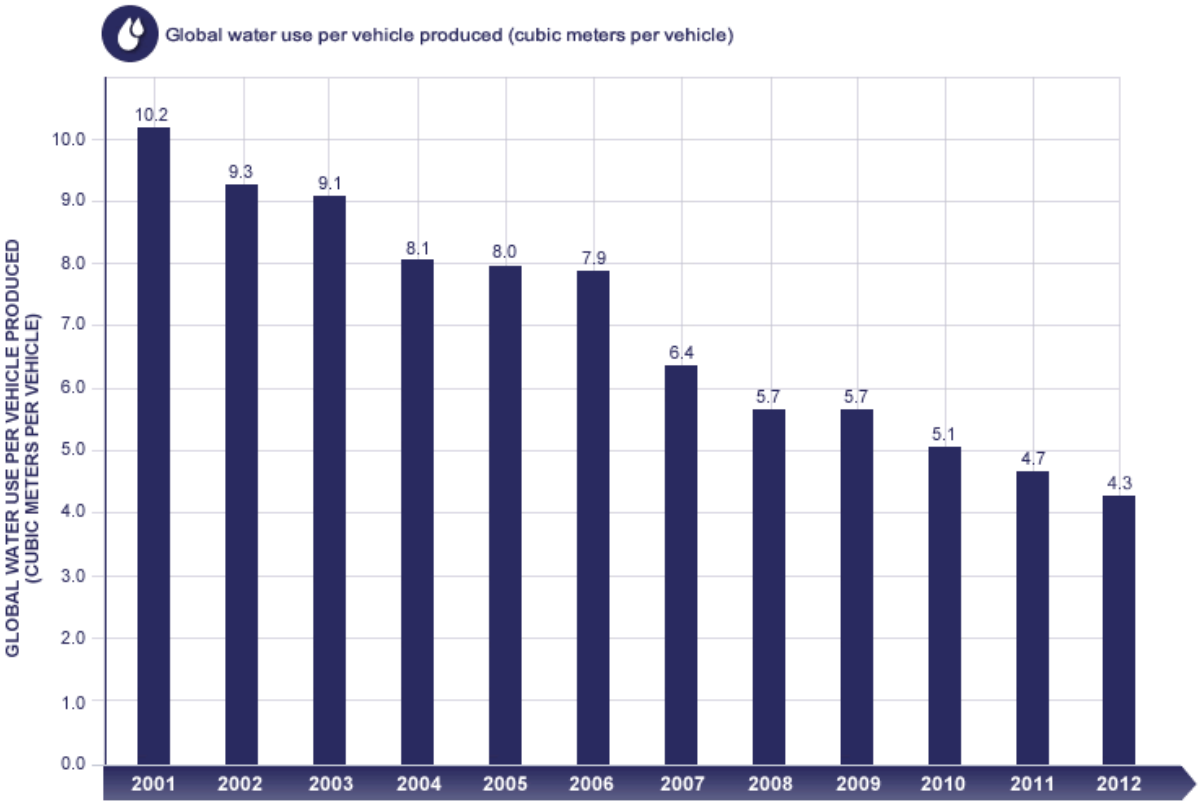
** California Energy Commission

Although we have exceeded expected progress toward our 2015 goal, we continue to set year-over-year efficiency targets as part of our annual environmental business planning process. For 2013, our year-over-year efficiency target is a 2 percent water use reduction per vehicle. This target represents a phase when we are building a number of new plants that have not yet fully launched.

We report on our progress toward our 2015 goal in this annual Sustainability Report and through our participation in the CDP Water Disclosure, which we joined in 2010 – the first automaker to do so.

In 2013, we began tracking process water discharge at our manufacturing plants globally. This covers water that is used during the manufacturing process and then discharged from the manufacturing plants. It does not cover water used in sanitation (e.g., restrooms, kitchens) and it only tracks water that is eventually discharged from the plant. Prior to this, some plants had been tracking process water discharge, but only on an informal basis. Now, we have made it a formal global metric for our Company. Tracking this metric will help us understand exactly where water is used within our manufacturing processes and, as a result, help us create greater efficiencies.

We are aiming to make our vehicles more efficient, while making our own operations more efficient, too. Water remains one of our top environmental priorities, and our aggressive reduction target helps to ensure continued focus on this critical resource.



# Investing in New Technologies

Ford has successfully implemented many water savings initiatives across our plants to minimize our water footprint. Wherever possible, we take successful projects and mirror them in other locations. Our newest plants use a set of advanced and environmentally friendly technologies to dramatically cut water use.

In 2004, we opened the rebuilt Dearborn Truck Plant at the Ford Rouge Center as a model of sustainable manufacturing. The facility incorporates extensive natural storm water management systems and what was then the largest green roof in the world. As we invest in new and existing facilities globally, we have been building on what we learned at the Ford Rouge Center and implementing other sustainable manufacturing technologies that use water more efficiently and provide environmental benefits.

We have implemented a reverse-osmosis process to recycle water in a number of our production plants, allowing us to avoid using high-quality water suitable for human consumption in our manufacturing processes. We also employ an innovative parts-washing system to reduce wastewater and cut energy consumption.

And, we have looked to new technologies, including a process known as “dry-machining” that lubricates cutting tools with a fine spray of oil, rather than the conventional “wet-machining” that required large amounts of metal-working fluids and water to cool and lubricate the tools. For a typical production line, dry-machining – also known as Minimum Quantity Lubrication, or MQL, machining – can save more than 280,000 gallons of water per year. Our engine plant in Cologne, Germany, for example, decreased water use per engine by 50 percent from 2011 to 2012 by switching to the MQL process.

In Pretoria, South Africa, we began using a new $2.5 million on-site wastewater treatment plant at the Silverton Assembly Plant that is increasing the amount of water that can be reused by up to 15 percent.

Our Chennai (India) Assembly Plant installed a new system that allows the plant to recycle 100 percent of its water. And two assembly plants in Chongqing, China, added advanced water treatment equipment to improve recycling. One plant recycles an average of 100,000 gallons daily, while the other recycles an average of 65,000 gallons daily.

Many of these new systems require substantial capital investments, so we have been adding them on a rolling basis as we update equipment and bring new facilities online. Our water strategy puts primary emphasis on our plants located in areas of water scarcity.

We have come a long way since we began our water conservation initiative in 2000. Back then, many of our facilities had little ability to even track their water usage. When the initiative started, our engineers developed patented software – called the Water Estimation Tool (or WET) – to predict water usage. Another kind of software was developed to track water use at each facility and generate a monthly report that would identify successes and potential opportunities for improvement.

We began building reduction actions into our Environmental Operating System (EOS), which provides a globally standardized, streamlined approach to meeting all environmental requirements, including sustainability objectives and targets. The EOS allows us to track basic water-reduction actions, such as cooling tower optimization, at every manufacturing site worldwide.

In 2012, we conducted water assessment pilot projects at two assembly plants in the U.S. and one in Cologne, Germany. We hired an outside consultant to review the facilities with fresh eyes to map the water usage at the plants. In 2013, we expanded the water assessments to include a plant in each of our four global regions. We will be assessing the results to determine what measures we could take to reduce water and save our Company money at the same time.

Also in 2013, we will be holding a “water futuring” workshop to help us understand future scenarios

For a typical production line, Minimum Quantity Lubrication machining can save

**280,000+**

gallons of water per year.

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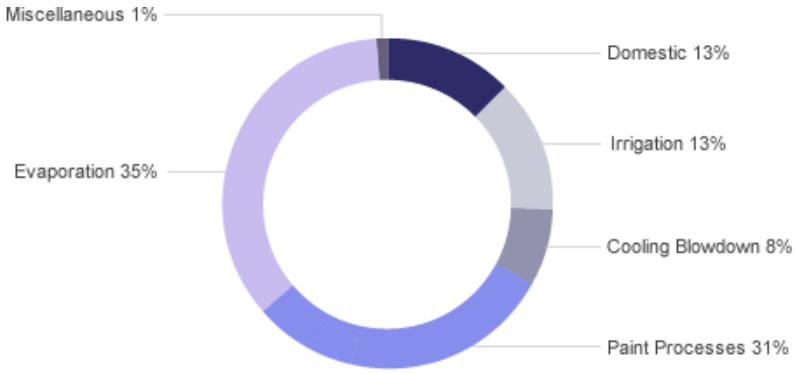
for our Company related to water.

## Vehicle Assembly Plant Water Use




| | % |
|---|---|
| Paint Process | 31 |
| Cooling Blowdown | 8 |
| Irrigation | 13 |
| Domestic | 13 |
| Miscellaneous | 1 |
| Evaporation | 35 |

# Water Impacts, Risks and Opportunities

Water scarcity can have a sizeable impact on our manufacturing operations. Although we do not need as much water as some other industries, we use water in many key manufacturing phases in our plants. We cannot be certain that we will always have access to the water we require. Our analysis shows that some of our facilities are located in regions where water supplies are under stress. And global climate change has the potential to further impact the availability and quality of water.

Historically, water has been a relatively inexpensive resource. But that's changing, and the cost of using water is expected to continue to increase in the coming decades. For a manufacturing company like ours, that would mean higher operating costs. Already, in some locations, rate increases from 2000 to 2012 outpaced water reductions, and our costs will continue to rise if we don't make further improvements. From a business perspective, it is important to strategically reduce water consumption now, before we see significant price increases or the implementation of further water use restrictions.

Increasing water scarcity means industrial needs can be at odds with community and environmental needs. Industrial facilities in water-stressed areas will have reduced access to water and/or may endure rising water costs. Working on solutions helps us to secure a "license to operate" in diverse global locations and can enhance our reputation in local communities.

Our suppliers face similar risks in terms of the increasing cost and competition for water and community concerns in water-scarce areas.

Another possible risk for Ford is the water intensity of alternative fuels, such as biofuels and electricity, which may require greater amounts of water to produce than gasoline and diesel fuel. We are continuing to assess the consequences for water quality and availability that may result from the increased production of electrified vehicles, including hybrid, plug-in hybrid and battery electric vehicles.

Water services are the most capital-intensive of all utilities, 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.[1]

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 to ensure safe drinking water supplies.

**Related links**

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

# Operating in Water-Stressed Regions

Ford has been growing in many areas of the world where water access and availability are a concern. We have identified which of our operations are located in water-stressed regions using data from the World Resources Institute's EarthTrends project. Water-stressed regions are considered to be those with a per capita water supply of less than 1,700 cubic meters per year. According to our analysis, about 10 percent of our operations are located in regions that are considered to be at risk.

Our facilities in Mexico are located in water-stressed regions; our manufacturing facility in Cuautitl?n, Mexico, for example, is already subject to water-withdrawal limitations. Several of our facilities in our Asia Pacific and Africa region are in areas that are currently water-stressed, or are expected to be in the near future.

**Related links**

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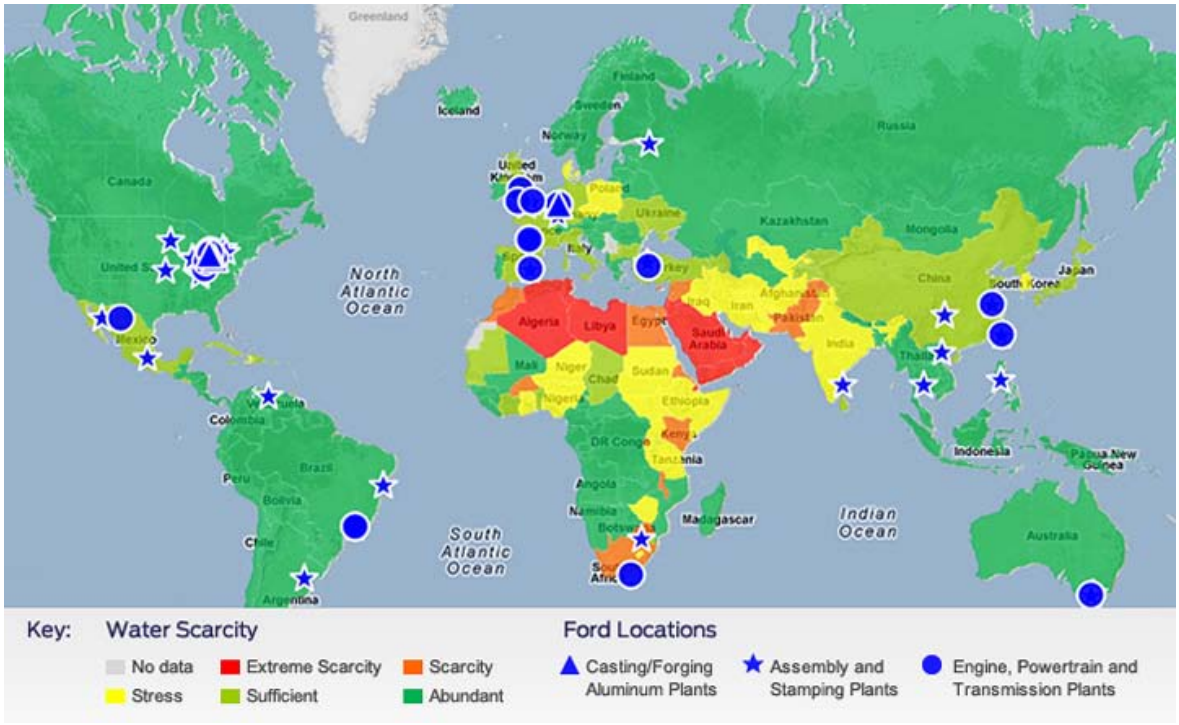
## Ford Operations: 2025 Projected Annual Renewable Water Supply per Person




wbcsd

Ford used the Global Water Tool developed by the World Business Council for Sustainable Development (WBCSD) to evaluate which of our operations are projected to be in water-scarce regions by 2025. According to the analysis, approximately 26 percent of our operations are projected to be in such regions (defined as areas of extreme scarcity or scarcity). The WBCSD's free tool enables companies to map their water use and assess water-related risks. For more information on the tool and how it works, see the WBCSD website.

*Sources:* World Business Council for Sustainable Development's Global Water Tool (GWT) v2. GWTv2 uses the Food and Agriculture Organization of the United Nations AQUASTAT dataset.

# Water Strategy Approach

Water conservation is increasingly important to our stakeholders and to our own operations, particularly in our areas of operation that face challenges such as drought and significant population growth. By reporting our progress, we support positive social change and reduce the environmental impacts of our facilities.

Ford's water strategy, which looks at our water use from both an environmental and a social perspective, is evaluated at the highest levels of our Company. Our Board of Directors reviews our water-related progress annually.

We have established a cross-functional team from across Ford divisions, including our Environmental Quality, Manufacturing, Purchasing, Research and Community Engagement functions, to review water issues in a holistic way. This team has been meeting with a variety of groups – such as the Interfaith Center on Corporate Responsibility, the U.N. Global Compact, the U.S. State Department and the Global Water Challenge – to gain a better appreciation of outside stakeholder perspectives.

## Our Platforms for Water Leadership


*We're aiming to be an industry leader on issues of water. To do so, we're improving our own operational footprint, engaging with our communities, and working with researchers, policy makers and nongovernmental organizations on ways to make an impact.*

# Water as a Community Issue

For many years, we have demonstrated our commitment to water issues primarily through our own operations, focusing on water efficiency, effluent quality and water reuse. But we also are committed to moving beyond our own fence line to address water issues within our communities of operation. We are working with stakeholders to better understand issues around water accessibility and sanitation, especially in water-stressed communities.

We are committed to mobilizing opportunities for communities in the developing world through clean water. We're investing in community water stewardship projects around the world, especially in areas where access to potable water is limited.

Projects vary by location. In Cambodia, Ford and our long-time partner, RM Asia, provided $70,000 to construct dozens of community water wells in villages where residents lack access to clean, potable water. The new wells, which are expected to be completed by the end of 2013, will also provide residents with sufficient water supplies to irrigate their fields. Ford India recently helped to refurbish two schools in villages near our plant in Maraimalai Nagar, a suburb of the southern city of Chennai. The refurbishment included new sanitation facilities and drinking water fountains.

Our Ford Motor Company Volunteer Corps, meanwhile, is placing a priority on water-based community projects during our Global Week of Caring and Accelerated Action Days. In 2012, the Ford Fund supported 19 water-related projects in China, Indonesia, Thailand, the Philippines, India, Germany and South Africa. In arid southwest China, 60 Ford employees from Nanjing teamed up with The Amity Foundation to help eight families build individual water cellars to capture water in the rainy season. In Indonesia, Ford employees helped install a machine that processes salt water into clean, potable water for 5,000 area residents. In the Philippines, Ford volunteers helped construct water collection stations for 250 villagers.

(See the Communities section for more on Ford's volunteer programs.)

**Related links**

This Report

- Greening Our Operations
- Communities
- Ford Volunteer Corps

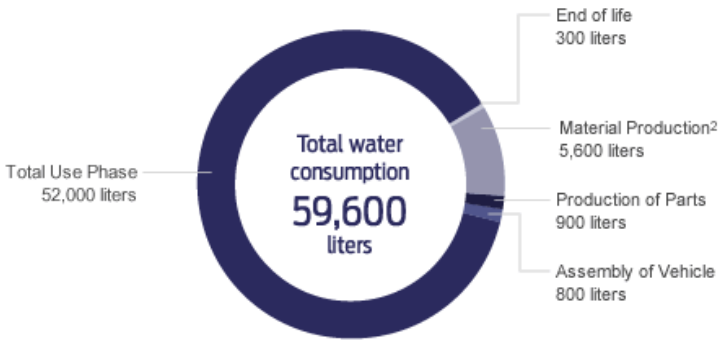
# Water Consumption in the Vehicle Lifecycle

To better assess our water-related impacts, we have been working to quantify water consumption over the life of a typical light-duty vehicle in the U.S. The Georgia Institute of Technology's Sustainable Design and Manufacturing program conducted a literature survey and analysis that included water used in material production, production of parts, vehicle assembly, vehicle use (fuel production and distribution) and vehicle disposal at end-of-life. Georgia Tech has also worked with Ford on a number of other multidisciplinary issues related to sustainable development.

The analysis found that the greatest water consumption occurs during the use phase, when consumers are driving. This is largely due to the amounts of water required for fuel production. In the supply chain, the production and processing of metals (in particular steel and aluminum) require the most water. Identifying which portions of the supply chain are most water-intensive allows us to better assess the business risk associated with using suppliers in potentially water-stressed areas.

Estimation of water use in the lifecycle of a vehicle is a difficult task because of incomplete data sets, as well as non-standardized definitions (e.g., for "water use" and "water consumption") used in earlier studies. Although water use is typically metered at the factory level, water consumption (i.e., water lost through evaporation and/or incorporation into a material, part and/or product) is much harder to quantify and requires data on water discharge in addition to water input. The Georgia Tech study was based on the average vehicle composition from an older study that did not fully reflect the material composition of current vehicles. We view the latest data as preliminary, but directionally correct. We are working to gain a better understanding of water use and consumption in all aspects of the vehicle lifecycle (including alternative fuels such as biofuels and new vehicle technologies such as electric vehicles) and plan to report updated assessments in the future.

## Lifecycle Water Consumption[1]




| Stage | Approximate Water Consumption (Liters) | Percentage |
|---|---|---|
| Material Production[2] | 5,600 | 9% |
| Production of Parts | 900 | 1.5% |
| Assembly of Vehicle | 800 | 1.3% |
| Total Use Phase | 52,000 | 87% |
| End of Life | 300 | 0.5% |
| Total | 59,600 | 100% |

**Related links**

This Report

» Greening Our Products

## Notes to Data

1. Source: B. Bras, F. Tejada, J. Yen, J. Zullo, T. Guldberg, *Quantifying the Life Cycle Water Consumption of a Passenger Vehicle*, SAE Technical Paper 2012-01-0646.
2. Indirect, upstream water consumptions were not included in the material production stage.

Water Consumption = Freshwater withdrawals that are evaporated or incorporated in products and waste.

Water Use = All water that goes into a system. Most of this typically leaves the system as wastewater.

# Data

**DATA ON THIS PAGE**



## A. Global Water Use per Vehicle Produced

*Cubic meters per vehicle produced*


| 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| 6.4 | 5.7 | 5.7 | 5.1 | 4.7 | 4.3 |

Data managed through the Global Emissions Manager database

### Notes to Data

In 2012, we restated data for 2000-2011 to account for acquisitions and divestitures of facilities.

### Related Links

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- Progress in Reducing Water Use

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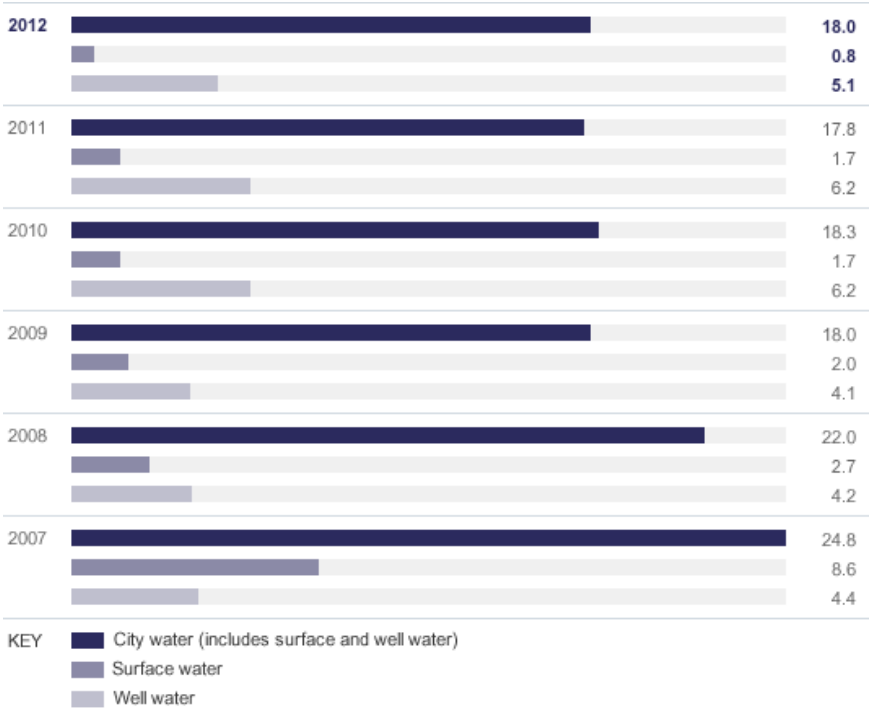
## B. Global Water Use by Source

*Million cubic meters*




| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|
| City water (includes surface and well water) | 24.8 | 22.0 | 18.0 | 18.3 | 17.8 | 18.0 |
| Surface water | 8.6 | 2.7 | 2.0 | 1.7 | 1.7 | 0.8 |
| Well water | 4.4 | 4.2 | 4.1 | 6.2 | 6.2 | 5.1 |

Data managed through the Global Emissions Manager database

## Notes to Data

In 2012, we restated data for 2000-2011 to account for acquisitions and divestitures of facilities.

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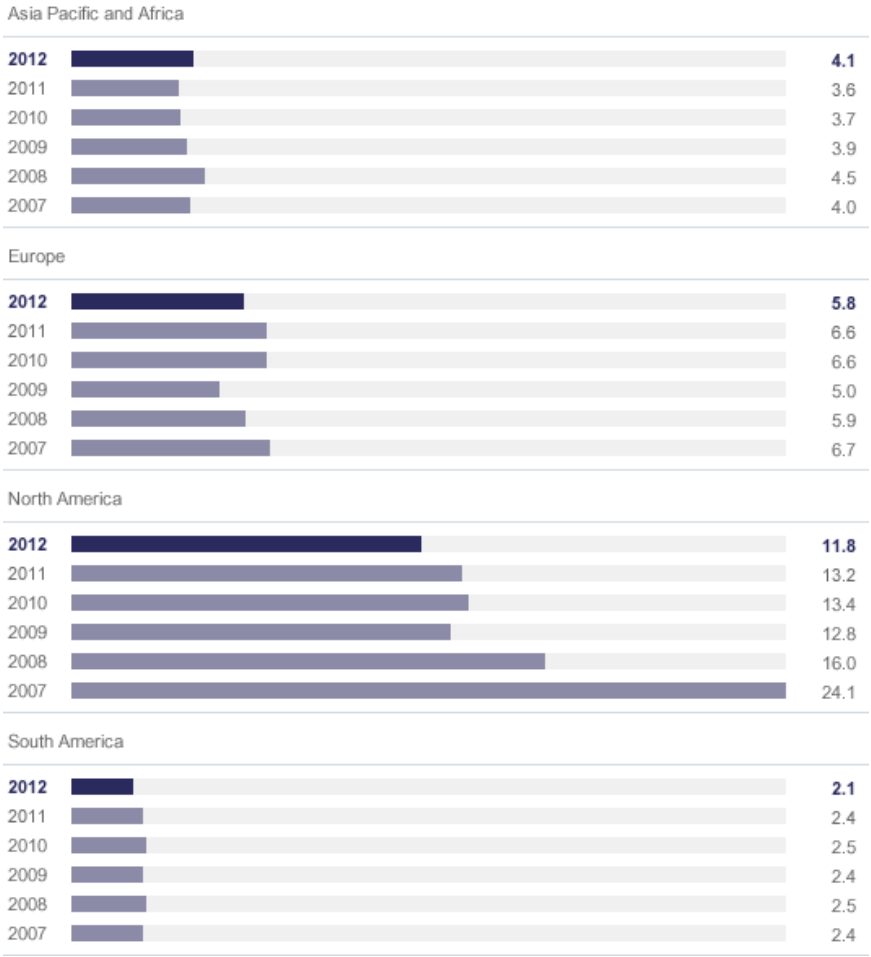
## C. Regional Water Use

*Million cubic meters*




| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|
| Asia Pacific and Africa | 4.0 | 4.5 | 3.9 | 3.7 | 3.6 | 4.1 |
| Europe | 6.7 | 5.9 | 5.0 | 6.6 | 6.6 | 5.8 |
| North America | 24.1 | 16.0 | 12.8 | 13.4 | 13.2 | 11.8 |
| South America | 2.4 | 2.5 | 2.4 | 2.5 | 2.4 | 2.1 |

Data managed through the Global Emissions Manager database

## Notes to Data

In 2012, we restated data for 2000-2011 to account for acquisitions and divestitures of facilities.

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Case Study:

# Ford Manufacturing Water Saving Technologies

Ford has set a goal of decreasing water use per vehicle by 30% from 2009 to 2015. This graphic highlights some of the technologies that will help us reach our goal.

## Three-Wet Paint Technology

This technology enables consolidation of painting activities in an integrated booth, offering the potential to eliminate one booth water wash section, depending on plant design.

## Dry Paint Overspray System

This system eliminates water usage from the painting process, resulting in an 80% water savings for air conditioning/air tempering and 100% water savings from paint over-spray separation, based on production volume of 158,000 units per year.

## Minimum Quantity Lubricant (MQL)

MQL uses an extremely small amount of oil versus conventional wet machining. For a typical production line of 450,000 vehicles, MQL can save 282,000 gallons of water per year.

## Internal Water Metering

We are increasing usage of internal water metering to identify additional water saving opportunities and drive conservation behaviors to the department level. This has the potential to save approximately $75,000 on average per plant globally.

## Sustainable Stormwater Practices

Where opportunity presents itself, we continue to utilize sustainable stormwater management practices, such as vegetated roofs and porous pavers.

# J. Carl Ganter

## Managing Director and Co-Founder Circle of Blue

On December 24, 1968, Apollo 8 astronaut William Anders took what became one of the most famous pictures in history: a breathtaking image of a tiny, vulnerable blue planet hanging in space. Twenty-five years later, Jerry Linenger flew on the space shuttle Atlantis to the Russian space station Mir, where he would spend five months in orbit around Earth.

“Looking out the window, I could see the great sources of freshwater on the planet,” he told me. “Lake Baikal. The Great Lakes. The mighty rivers of the world – Nile, Tigris, Euphrates, Amazon. But still, when stepping back and looking at the big picture, not so much different from our little orbiting space station. A closed ecosystem, with only so many sources of life-sustaining water. And all the creatures of Earth, just like the three of us circling it, all dependent on water.”

Water was so scarce aboard Linenger’s fragile ship that he spent countless hours studying where he wanted to live down below. Of anywhere in the world, he chose the shoreline of Lake Michigan, a place with abundant water resources.

But today, on this small planet – seen whole for the first time four decades ago – we have systemic failure. A global freshwater crisis.

The world’s demand for freshwater is growing so fast that water scarcity is disrupting energy production, triggering food shortages, upending economic development and threatening political stability. The impacts are being felt now in the U.S., which lost a full point of gross domestic product in 2012 due to a severe, ongoing drought, as well as in Asia and the Middle East, where recent droughts and floods triggered serious disruptions and political unrest.

Perhaps the greatest tragedy of the 21st century is that as many as 800 million people around the world don’t have access to safe drinking water, and more than 5,000 children die each day from waterborne diseases.

Fortunately, water is one of the easiest of our global challenges to talk about because it’s the easiest to understand. You can go without electricity if need be. You can survive for weeks without food. But you can’t live more than a few days without water.

Most water-related challenges can be solved with hard work. We can break down traditional silos and think more holistically about the intersections among water, food, energy and climate, and about how we can develop solutions that reach beyond corporate fences and political boundaries.

When we do bring safe water and sanitation to places that need it, we see remarkable improvements. Children are able to go to school because they don’t need to spend hours every day in search of drinking water, which helps break the cycle of poverty and illness. When we fix the water challenge, we fix so many other problems.

But the water crisis is subtle, not sexy. It is slow to unfold, and, until the taps run dry and the crops wither, it’s not very relevant to those who have the most power to avert it. Until the water issue becomes dire, it’s not breaking news.

This critical moment – when the supply-and-demand balance of water, food and energy are colliding – requires a new scale of data, front-line reporting, collaborative science, social engagement and accelerated solutions.

The media, businesses and governments need to do a better job connecting the dots and demonstrating how water issues affect us today and into the future. At this pivotal point, we need much greater engagement from the corporate sector. Beverage companies have, for obvious reasons, been active in the water arena. Without access to water, they don't have a product. Their supply chains hang on a tenuous blue thread.

The practice of water risk assessment is reaching into other sectors, especially manufacturing and consumer products. More and more firms are making their products more resilient to water disruptions, reducing their water use, and playing the role of advocate and educator on water issues within their communities. Indeed, those companies that are moving the needle furthest and fastest on water issues have embraced the risks within their supply chains and turned them into competitive opportunities.

But how do we bring governments into the conversations so they, too, start acting systemically and create a positive regulatory environment? Most governments simply are not prepared for the threats that water issues may pose to law, policy and stability. Business needs to play a role, leading by example and making the solutions – and the risks of inaction – visible.

From orbit, astronaut Jerry Linenger said he could watch the dust storms of Inner Mongolia blow across the steppes toward Beijing, and on to Los Angeles. Water, drought and pollution know no boundaries.

I co-founded Circle of Blue in 2000 to reach across these lines, to use world-leading journalists, scientists and data experts to tell the world's most important stories. In a decade, we've seen remarkable progress on the water front. We are moving into an age of solutions. More and more, we realize that surviving, even thriving, in a new waterscape requires us to use the right lenses to view the connected issues and shape cohesive responses. Innovation is built upon optimism, and the greatest innovations often occur when we face the greatest challenges.