

CONCLUSIONS



WATERSHED

GE can employ our water risk and impact analysis to identify priority sites and engage in local watershed management. GE should continue to collect and monitor data related to the local water context of their operating sites.



FACILITY

Next, GE can zoom in on specific facilities within the priority sites and apply our cost-effectiveness analysis to evaluate operational efficiency strategies. We recommend creating a database to track the implementation of water-saving projects.



EMPLOYEE

Finally, GE should design EEE programs to implement at individual facilities to encourage water-saving behaviors. In particular, Volunteering initiatives may offer the most financial and environmental benefits.

The interconnectedness of the three tiers in our framework enables a more holistic perspective on the tools and metrics that GE can leverage in keeping themselves at the forefront of corporate water sustainability. Nevertheless, the flexibility built into our framework allows GE to easily pursue water management programs on just one or two of the scales or to re-evaluate optimal strategies under changing business or environmental settings.

ACKNOWLEDGMENTS

We would like to thank our client, Paul Holdredge, at General Electric for giving us the opportunity to work on this project. We are also grateful for our faculty advisor Dr. Patricia Holden, PhD advisor Jessica Perkins, and external advisor Dr. Bob Wilkinson for all of their advice and guidance. Finally, we would like to thank all the GE employees and affiliates who contributed data and insight to our project.



NEXT GENERATION WATER

Developing a Next Generation Water Action Plan for General Electric

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Spring 2018

BACKGROUND

Industrial corporations in the United States use over **22 trillion gallons** of freshwater annually to manufacture the everyday products we all know and use. Freshwater is integral to the creation of these products, and thus the success of the private sector. But freshwater is also a shared resource, needed and used by humans and ecosystems alike. In the last decade, corporations have recognized their large water footprint, and have begun to develop and implement water management strategies.

Our client, General Electric (GE) is one such corporation. As a digital industrial, conglomerate corporation with locations in over 170 countries and more than 300,000 employees worldwide, GE has recognized and worked to address their large water impact. Since the launch of their Ecomagination sustainability program in 2006, they have been tracking their water usage while setting and surpassing a series of water reduction goals.

GE WATER GOALS

2008
20% reduction from 2006 baseline

2009
25% reduction from 2006 baseline

2014
20% reduction from 2011 baseline

GE is now working to identify new and high-impact water reduction goals and strategies to implement in 2020 and beyond to continue their role as corporate water stewards. Using a three-tiered approach, our project sought to create a framework for GE to discover meaningful next steps in corporate water sustainability.



THREE-TIERED APPROACH



WATERSHED

Objective:

Identify priority sites for GE to engage with based on the water risk and water use impact of the watershed.

Data for analysis:

Annual freshwater use and specific locations of GE's 72 criteria sites from 2016. Criteria sites are sites that use 15+ million gallons of freshwater annually and encompasses 90% of GE's freshwater use.



FACILITY

Objective:

Prioritize the implementation of water-saving strategies in GE's facilities through cost-effectiveness evaluations.

Data for analysis:

Results and recommendations from nine water audits completed by GE between 2009 to 2012. These audits were workshops designed to identify water-saving opportunities at individual sites.



EMPLOYEE

Objective:

Identify optimal employee engagement practices to fuse with GE's water initiatives.

Data for analysis:

Information on environmental employee engagement programs at 54 peer and competitor companies, collected from their most recent corporate sustainability reports.

KEY FINDINGS



Watershed

We used two separate tools to assess **water risk** and **water impact** for all 72 criteria sites, and then combined the results to see which sites should be prioritized for GE.

Water risk includes *quality* such as pollutants in the freshwater, *quantity* such as droughts and floods, and *regulatory* such as funding for infrastructure upgrades and risks to water movement within the watershed.



QUALITY

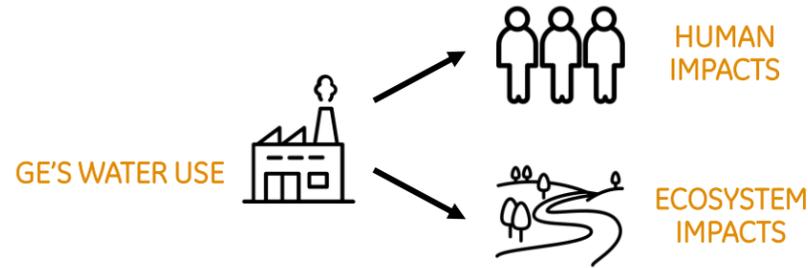


QUANTITY

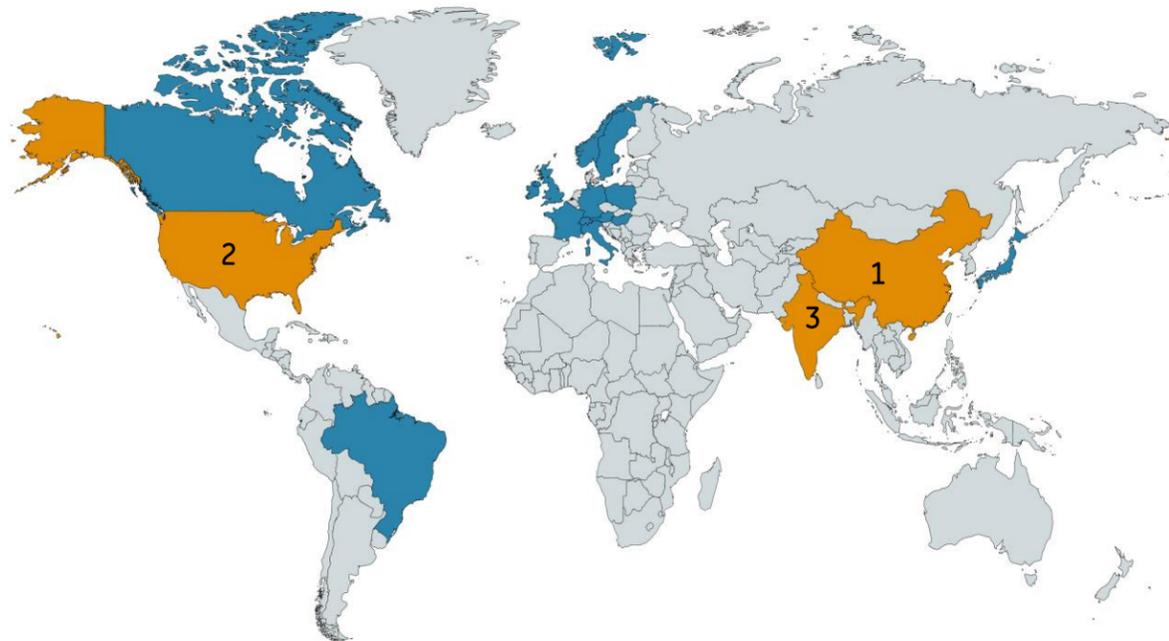


REGULATORY

Water impact looks at how GE's water use is affecting the amount of water available for humans and ecosystems.



We determined a final list of **six priority sites located in the United States, India, and China**, based on criteria sites with high relative water risk and water impact in their local watersheds.



Map of countries in which General Electric criteria sites are located. Countries in blue have General Electric criteria sites; countries in orange have General Electric sites in high priority watersheds. The numbers represent the number of sites in high priority watersheds



Facility

Out of 75 recommendations included in the previous nine water audits, we identified five general categories of water-saving strategies:

Installation of closed-loop systems
Flow monitoring and control

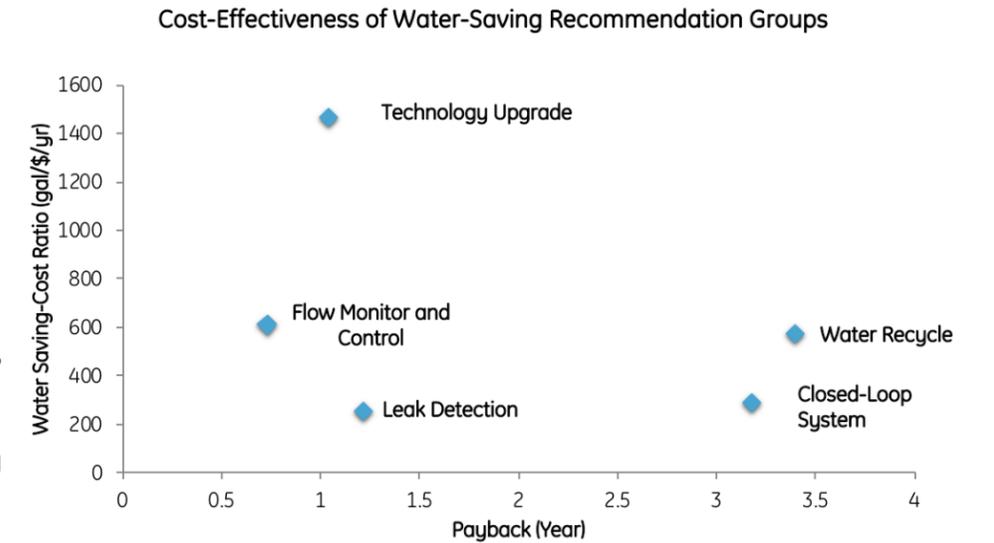
Technology upgrades
Leak detection

Water recycling

$$\text{Water Saving | Cost Ratio} = \frac{\text{Water Saving (gal/yr)}}{\text{Cost of Implementation (\$)}}$$

$$\text{Payback Period} = \frac{\text{Cost of Implementation (\$)}}{\text{Value of Water Savings (\$/yr)}}$$

By looking for projects with a low payback period and a high water-savings to cost ratio, we found that **technology upgrade** and **flow monitoring and control** were the most cost effective measures to implement. Meanwhile, water recycling and closed-loop system installation have a longer payback period due to a higher upfront cost, and may require additional budgetary consideration when assessing the optimal water-saving strategy to implement at facilities.



Employee

Based on our research on the environmental employee engagement (EEE) activities at 54 peer and competitor companies, we identified eight types of related programs:

Volunteer activities
Health engagement
Green workshops
Green teams

Treasure hunts
Green lifestyle
Green rewards
Social media

We found that **Volunteering** is the most common form of EEE, while **Green Lifestyle** had the highest emphasis.

EEE TYPE	PREVALENCE	EMPHASIS SCORE
Volunteer Activities	68%	.34
Health Engagement	53%	.71
Green Workshop	40%	.26
Green Teams	38%	.68
Treasure Hunt	35%	.54
Green Lifestyle	35%	.93
Green Rewards	27%	.75
Social Media	24%	.60

We also discovered a **positive correlation** between financial performance and the presence of environmental employee engagement at a company.

What is Employee Engagement?
"Employee engagement" is a series of strategies designed to involve the employee in the organization and its values; an engaged employee will take positive actions to further the organization