# Facilitating Communication and Interactivity for a Sustainability Initiative at WPI

An Interactive Qualifying Project Report
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Degree of Bachelor of Science

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## Abstract

This report describes the design, progression, and launch of a Sustainability Website for the newly-formed Sustainability Initiative at WPI. We discuss the leadership role of higher education in sustainability and emphasize the critical need for communication and interactivity among university community members. Working with the President's Task Force on Sustainability, our team identified several key criteria that make a university's sustainability initiative and sustainability website effective. Using these criteria, we present a comprehensive WPI Sustainability Website (found at http://www.wpi.edu/About/Sustainability/) and several recommendations for the further development of the WPI Sustainability Initiative.

## Acknowledgements

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## Executive Summary

Much like the borderless nature of a WPI education, which is facilitated by technical conveniences frequently underappreciated and overindulged, the economic, societal, and environmental impacts of our learning and living reach well beyond the walls of our classrooms, labs, and dormitories to affect the entire world. We cannot continue to effectively advance as a University, nor as a society, until we become fully conscious of and responsive to these often overlooked consequences of our lifestyles. Our global society has become aware of the need for change, but now leaders – in government, industry, and higher education – are challenged to effectively communicate their goals while putting into action meaningful policy toward reducing the harmful environmental, societal, and economic effects of our daily lifestyles.

In this Executive Summary, we present an overview of our project, in which we define the context of our IQP by discussing the concept of *Sustainability* globally, translate this to sustainability at the university level, and identify breakthrough efforts that have been made in recent years to encourage universities around the world to incorporate the basic principles of sustainability into their academic programs and operations. We briefly cover the precursors, formation, and purpose of the new Sustainability Initiative at WPI, including the appointment of the President's Task Force on Sustainability (PTFS). Finally, we discuss how our IQP fits into this campus-wide movement, our roles as members of the PTFS, our objectives and mission, how we sought to achieve our goals, and the outcomes of our project, which included a Sustainability website and recommendations for the continuation and expansion of the Sustainability Initiative at WPI.

### Context

Traditionally, the designation of being a "green" institution has been conferred upon any government, business, or organization that is aware of its environmental impact and has made an effort to minimize the destructive ecological effects of its operation. While the labeling of a green building can be achieved objectively by adhering to standards such as those instituted by the US Green Building Council, there are no widely accepted guidelines by which to assess the overall "green-ness" of an organization's activities and practices. Furthermore, it is crucial to consider the impact our activities have not only on the environment, but on the economy and social justice as well. Solely focusing on climate protection and responsible materials management, for example, is not sufficient to ensure the continued well-being of the world and its population (Campbell 1996).

Ecological concerns represent a single facet of a more ubiquitous approach – *Sustainability* – that seeks to address the complex global problems of climate change, poverty, and social inequity. Sustainability involves a way of thinking and behaving in order to meet current needs without compromising the ability of future generations to satisfy their needs (UN 1987).

Concisely, the most appropriate interpretation of the concept of sustainability includes three facets that must be considered as equally important components: *environmental preservation*, *social equity*, and *economic prosperity*. The triangular model of sustainability shown in Figure 1 was originally proposed by Scott Campbell and it demonstrates "not only the conflicts, but also the potential complementarity of the interests" among the three aspects of sustainability (Campbell, 1996).

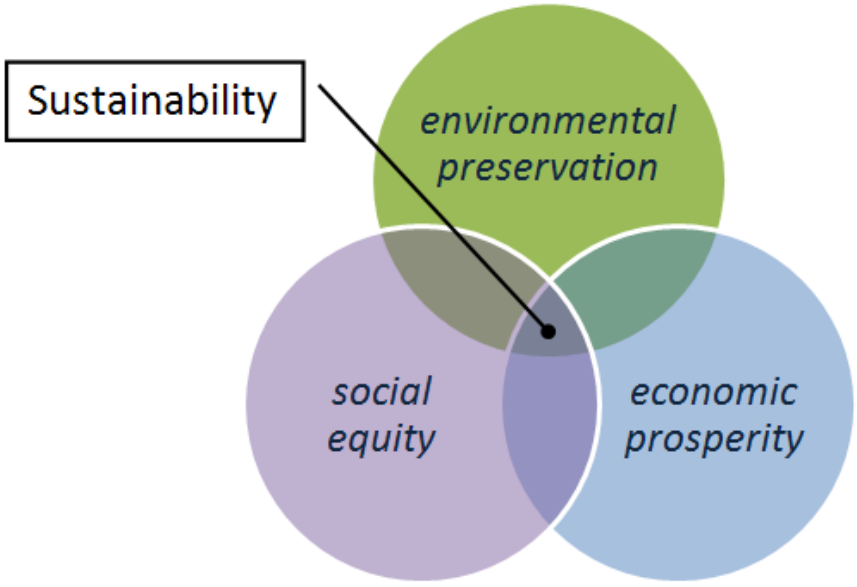


**Figure 1: The three facets of sustainability (Campbell 1996)**

In 1987, the United Nations sought to persuade the world's leaders that it was important to acknowledge and apply the principles of sustainability as part of a strategy for the continued development of global society. The *Report of the World Commission on Environment and Development* outlined recommendations that would encourage businesses, private institutions, and governments to embrace the notion of sustainability. Similarly, although on a much smaller scale, universities around the world have attempted to present the sustainability story to their communities. One technique that has been explored by other universities to cultivate interest and unify campus sustainability efforts is the formation of entire departments devoted to sustainability. One such example is the Office of Sustainability at the University of Florida, which supports faculty, students, and staff as they strive to integrate their goals of ecological restoration, economic development, and social equity into every aspect of the university (UF 2007). Other institutions have a variety of student-run environmental awareness and social justice organizations and nearly all universities have environmental programs and initiatives.

There has been a significant push in recent years to encourage institutions of higher education to incorporate sustainability practices into their operations and academics. The Association for the Advancement of Sustainability in Higher Education (AASHE) has evolved into an essential

piece of the sustainability puzzle, seeking to make sustainability practices mainstream within all sectors of higher education including governance, operations, curriculum, and outreach. Further, AASHE promotes resource sharing by means of collaboration among individuals, institutions, and external partners (AASHE 2008). Organizations such as Clean Air-Cool Planet, the U.S. Green Building Council (USGBC), and the Ceres group serve as valuable resources to universities by providing standards for climate protection, sustainable building design and construction, and annual reporting, respectively. Additionally, the journals *Facilities Manager*, *Planning for Higher Education*, and *University Business* have become valuable resources by publishing relevant articles written by credible sustainability experts from around the world. Each of the aforementioned entities has provided a unique perspective and has played an important role in the campus sustainability initiative by (1) creating realistic and meaningful standards by which universities can assess their progress, and (2) offering leadership and providing useful tools to encourage universities to develop innovative approaches to solving the world's environmental, social, and economic problems. Most importantly, these groups have served to unify sustainability efforts nationwide.

Taking the lead from the above groups, many schools have striven to establish effective sustainability programs; however, fully incorporating sustainability into all aspects of the university remains a major challenge. While pioneering organizations such as AASHE and the USGBC have played a crucial part in the university-based sustainability movement, as Timothy Egan of the New York Times wrote about green buildings:

> *It's one thing to put up a trophy of recycled glass and brick that relies on the sun, the wind or other renewable resources for power. It's another to build a curriculum – and to get students to look at the world differently – with green buildings as a centerpiece.* (Egan 2006)

According to Cortese, higher education should strive to recognize the connection between curriculum and (1) research; (2) understanding and reducing negative ecological and social impacts of the institution; and (3) working to improve local and regional communities so that they are healthier, more socially vibrant and stable, economically secure, and environmentally sustainable (Cortese 2003). Because of the significant role they have in the social, intellectual, and moral development of the world's future leaders, universities such as WPI are poised to make progress toward the goal of a more sustainable society.

## Sustainability at WPI

Despite the prevalence of sustainability-related student organizations, research, and other endeavors at WPI by students and faculty, there was still a need for a centralized program to acknowledge and coordinate campus-wide efforts. Fortunately, as our project began, WPI

leaders created a formal *Sustainability Initiative* for WPI that strove to provide the necessary leadership and coordination. Based upon recommendations provided by AASHE (AASHE 2008), our team conceived the following strategic plan for the successful launch and expansion of a Sustainability Initiative:

> *An integrated Sustainability Initiative at WPI should seek to promote the three facets of sustainability in all aspects of the University's activities and should (1) consist of a Sustainability Committee to unify and catalyze campus sustainability efforts, (2) result in the formulation of meaningful policy, (3) promote interactivity among community members , and (4) communicate the goals, activity, and progress of the Sustainability Initiative and Committee to all WPI community members, other universities, and the general public. To accomplish the two final objectives, a website should be developed to promote community interactivity.*

**Appointment of the President's Task Force on Sustainability**

Realizing the importance of a directing force for the Sustainability Initiative, the WPI administration created the *President's Task Force on Sustainability* (PTFS). The fundamental goal of the PTFS was to design, implement, and maintain a high quality sustainability program for WPI. This Task Force was comprised of faculty, staff, and students and would serve as the catalyzing force behind the Sustainability Initiative. Some of the most important initial tasks for the PTFS were to establish strategies, goals, and priorities as well as to carefully define *sustainability* as it relates to WPI. Our IQP team was appointed to the PTFS, and a significant part of our project became providing students' perspective to these and other issues related to campus sustainability.

**Key Gaps to Overcome**

As has been discussed, while many institutions have attempted to establish sustainability movements, the majority have struggled to enact a program that fully integrates and encompasses all University-based activities: operations, education, research, and community outreach. Furthermore, efforts towards sustainability would be for naught if there were no means in place to facilitate communication, interactivity, and data availability among the community. While we were members of the President's Task Force on Sustainability and thus shared the same broad goal, the PTFS charged our IQP team with a more focused goal: research, design, and develop a Sustainability Website for WPI.

**Sustainability Website**

A key step in the overall Sustainability Initiative at WPI was carried out by our IQP: the development of a method to communicate the objectives, programs, and outcomes of the Sustainability Initiative to the school's students, faculty, and staff, as well as with the global population. It was crucial that this communication system promoted interactivity among its audience. A Sustainability Website would serve both of these purposes and publicize the close link between sustainability and several aspects of WPI's operations and academics including activities of the Department of Facilities, the Global Projects Program, and faculty research efforts.

## Project Objectives & Methodology

In addition to our membership on the President's Task Force on Sustainability (PTFS), our IQP team was responsible for the research, design, and creation of WPI's Sustainability website. Because sustainability affects the entire WPI community, it was necessary to provide a convenient "gathering place" to welcome feedback, contributions, and proposals from WPI students, faculty, and staff. A well-designed, information-rich website allowed for these capabilities while providing room for expansion as well as frequent updates. We therefore developed IQP project objectives specific to the design of an effective website in addition to our overall Task Force contribution objectives. We aimed to:

- Facilitate the development of the President's Task Force on Sustainability, including the establishment of effective communication with key players
- Identify previous and existing sustainability efforts at WPI
- Benchmark successful websites launched by other institutions
- Develop and launch an official sustainability site for WPI to:
    - Effectively communicate the goals of the Sustainability Initiative
    - Promote interactivity and community involvement via forums (online and live)
    - Present meaningful data clearly through well-designed graphics
    - Provide raw data for continued research
- Establish a means of Annual Reporting
- Maintain the dynamic state of the Sustainability Initiative

Our efforts towards achieving the goals above represented an important component of the greater Sustainability Initiative at WPI. The *Methodology and Results* chapter offers insight into how we developed each objective and what strategizes we took to successfully complete them.

## Outcomes and Recommendations

After only a single academic year, the Sustainability Initiative at WPI showed encouraging progress and several crucial steps had been taken. Our IQP provided several integral contributions including:

- Design, development, and launch of *WPI Sustainability Website* including
- Sustainability SharePoint site for WPI community
    - Means for dissemination of raw data (electricity, emissions, waste, etc)
    - Discussion forums
- Volunteer form on Sustainability Website

Key accomplishments of the overall Sustainability Initiative include:

- Appointment of President's Task Force on Sustainability
- Launch of WPI Sustainability Website
- Launch of enhanced *Cans and Bottles Recycling Program*
- Live discussion forums
- President's Task Force on Sustainability-sponsored IQPs in the 08-09 academic year
- Association for the Advancement of Sustainability in Higher Education (AASHE) membership

Even with this considerable growth, there is still a great deal of work that needs to be done to maintain the Sustainability Initiative. Towards this we provide a number of recommendations in the *Discussion and Recommendations* chapter of this report. We reflect on preserving the Sustainability Initiative, the state of the President's Task Force on Sustainability, the role of a Sustainability Webmaster in website development and maintenance, how to achieve effective annual reporting, and IQP dynamics in general.

# Chapter 1: Background

In this chapter, we define the concept of sustainability and discuss the role of higher education in leading and promoting sustainability. At WPI, there are in fact several current practices related to sustainability, and these are covered in the *Sustainability at WPI* section. The President's Task Force on Sustainability is discussed, and the basic framework for the Sustainability website – Facilities, Academics, and Social Sustainability – is given. Finally, principles of good web design and effective communications are provided.

## 1.1 What is Sustainability?

The concept of sustainability has many different meanings, and even the most respected authorities in the field disagree on the most appropriate and inclusive definition of the word. However, many agree on the basic concept as given by the General Assembly of the United Nations in its 1987 *Report of the World Commission on Environment and Development*. Included in this report was a key recommendation that governments, private institutions, and businesses strive to adopt policy to promote economically, socially, and environmentally sustainable development. These guidelines encouraged all such organizations to make changes that would allow them to "[meet] the needs of the present without compromising the ability of future generations to meet their own needs" (United Nations 1987). According to the University of Florida, sustainable practices preserve rather than destroy their ecological base, ensure rather than undermine long-term economic benefits, and advance rather than hinder issues of fairness, equity and diversity (University of Florida 2007). The most appropriate interpretation of this concept of sustainability includes three facets that must be considered as equally important components: *environmental preservation*, *social equity*, and *economic prosperity*. In the following paragraphs, we will discuss the importance of addressing each of the three pieces of the sustainability puzzle. We will provide an explanation of the tensions that exist when trying to meet the goals of sustainability. These tensions illustrate why a fundamental shift toward sustainability as a guiding principle of reorganizing society is both important and challenging.

Because the global ecosystem cannot continuously adapt to the environmental stresses that humans apply, leaders must strive to educate against the misconceptions that some in our society accept as reality (Cortese 2003). As an extreme example, in our modernizing society, there still exists a false impression among so-called "*Cornucopians*" that the planet's resources are not actually finite; rather, believers of this idea, conceived by economist Julian Simon, believe that the ongoing population growth will "ultimately mean a cleaner environment, a healthier humanity, and more abundant supplies of food and raw materials for everyone" (Tierney 1990). Essentially, Simon argues that an ever-increasing global population will somehow make for a more sustainable world, suggesting that technology can solve most of society's problems. The *Cornucopian* school of thought ignores the conspicuous truth that,

despite its unmistakable advantages, technology has, in fact, intensified much of the environmental damage as well as social and economic disparity that exists throughout the world.

The United Nations Environment Program's *Division of Technology, Industry, and Economics* identifies several factors that allow for the advancement of technology as well as some outcomes of technological development (Figure 2).

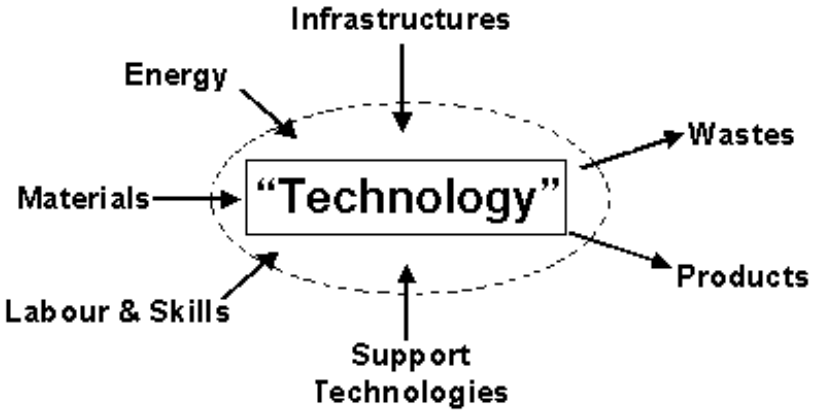


**Figure 2: Components of a technological system (UNEP 2008)**

While the benefits of technology are evident, the precursors – *energy, materials, labor* – as well as the waste byproducts are not always considered. In addition to the environmental effects of technology, the desire for cheap labor and the "not in my backyard" philosophy have significant impacts on our global society and economy. As Scott Campbell wrote:

> *Society's shortcoming is that as it strives to sustain its political and economic systems, it often neglects to sustain the ecological system. The goal for planning is therefore a broader agenda: to sustain, simultaneously and in balance, these three sometimes competing, sometimes complementary systems.* (Campbell 1996)

Our society has become increasingly dependent upon non-renewable natural resources and many suggest that we live with the assumption that the global ecosystem can adapt to our environmentally destructive habits. To embrace the value of *environmental preservation*, we must accept the challenge to both understand how the natural world works and recognize the limits of our environment that we as a global population exceed daily. Becoming aware of the damaging effects of our activities and incorporating this environmental consciousness into our lives through education is essential, and should be one of the fundamental goals of campaigns for the advancement of sustainability. However, a sound global environment alone is not enough to create a more sustainable society.

The luxuries, good working conditions, and comfortable living that we in developed regions readily enjoy are scarce in other parts of the world. Furthermore, as can be seen in Figure 3, the majority of global population increase can be attributed to the less developed countries, where the most severe occurrences of economic and social inequity exist. This suggests that the situation will only get worse if present conditions are maintained.

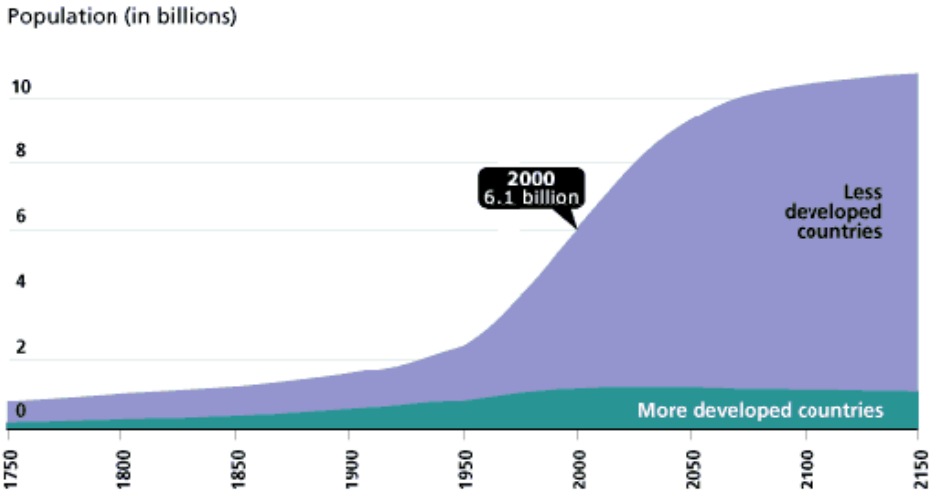


**Figure 3: World Population Growth, 1750-2150 (Nations 1998)**

Since our communities are as much social and economic environments as they are physical environments, the sustainability initiative also strives for *social equity* and *economic prosperity*. "Interactions between population, human activities, and the environment and strategies, technologies and policies for secure, just, and an environmentally sustainable future are among the most complex and interdependent issues with which society must deal" (Cortese 2003). While one of the primary goals of sustainability is to preserve the communities in which we live, both on a local and global scale, the social and economic implications of our actions tend to be overlooked in favor of modern conveniences and cheap prices.

Sustainability truly is a three-faceted approach to dealing with the world's most daunting problems. As acknowledged by the Canadian Public Health Association (CPHA), "human development and the achievement of human potential" require harmonization among sustainable economic activity, environmental consciousness, and social awareness in this and future generations (CPHA 1982).

## 1.2 Sustainability at the University Level

Universities such as Worcester Polytechnic Institute are poised to make progress toward the goal of a more sustainable society because they have a significant role in the social, intellectual, and moral development of the world's future leaders. Specifically, universities have an obligation to "increase the awareness, knowledge, skills, and values needed to create a just and sustainable future" (Cortese 2003). It is important that these institutions of higher education

recognize their role in creating a more sustainable future, as well as understand the broad impacts they have on their local and global communities. It is both necessary and advantageous for higher education institutions to become leaders in creating a sustainable society (Cortese 2003). To do so, many believe it is important that universities take charge and incorporate sustainability into their academics as well as physical operations in an integrated manner.

Environmental sustainability efforts have become more widespread over recent years with the expansion of scientific knowledge to those not in scientific communities. As universities are often at the forefront of new scientific efforts and are pressured by their students to make progress, many of them have already started their own programs on environmental sustainability. Professors, business leaders, student activists, and grass root organizations are a driving force for sustainability efforts ranging from basic awareness programs to pervasive campus-wide initiatives to create completely sustainable campus communities (Carlson 2006).

In addition to the efforts by university-affiliated groups and individuals, there has been a significant push by non-affiliated organizations to encourage institutions of higher education to incorporate sustainability practices into their operations and academics. The Association for the Advancement of Sustainability in Higher Education (AASHE) has evolved into an essential piece of the sustainability puzzle, seeking to make sustainability practices mainstream within all sectors of higher education including governance, operations, curriculum, and outreach. Further, AASHE promotes resource sharing by means of collaboration among individuals, institutions, and external partners (Education 2008). Clean Air-Cool Planet (CA-CP) is an organization that partners with companies and campuses throughout the Northeast to help reduce their carbon emissions. CA-CP's Campuses for Climate Action program supports institutions in finding and demonstrating energy and global warming solutions. The *Campus Climate Action Toolkit* includes technical resources, case studies, and an extensive GHG Emissions Inventory Calculator that has been used by more than 150 campuses across North America, including Worcester Polytechnic Institute, to determine their "carbon footprints" (CACP 2008). The U.S. Green Building Council, a group that is committed to sustainable building design and construction, has also become a significant motivator to campuses nationwide; to date, more than 110 colleges – again including WPI – have built or are building structures certified by the USGBC (Egan 2006). Another important player in the sustainability movement is the Ceres group, which focuses on annual reporting. The reputable and consistent reporting of established indicators is a critical component of any initiative. Ceres is a group of investors, environmental organizations, and public interest groups working with corporations and universities to address sustainability challenges. The group's website offers examples of annual reports that have been completed for several companies. These reports demonstrate a standard of what key elements and indicators to report on as well as how to best communicate

information and data. Finally, journals such as *Facilities Manager*, *Planning for Higher Education*, and *University Business* have become valuable resources by publishing relevant articles written by credible sustainability experts from around the world. Each of the aforementioned groups has provided a unique perspective and has played an important role in the campus sustainability initiative by establishing realistic and meaningful standards by which universities can assess their progress. These organizations offer crucial leadership and provide useful tools to encourage universities to develop innovative approaches to solving the world's environmental, social, and economic problems. Most importantly, these groups have served to unify sustainability efforts nationwide.

Several universities with developed sustainability programs have staff and administrative personnel exclusively devoted to the tasks of organizing and promoting sustainability across campus. At Michigan State University, there is an office of campus sustainability that includes a group of people dedicated exclusively to the University's sustainability efforts. Other universities such as MIT have committees run by undergraduate volunteers.

The formation of such a *Sustainability Committee* serves as the core of a sustainability initiative and is a critical step in any sustainability initiative, but simply having such a group does very little toward addressing the principles of sustainability. A robust sustainability program in higher education recognizes the connection between curriculum and (1) research; (2) understanding and reducing any negative ecological and social footprint of the institution; and (3) working to improve local and regional communities so that they are healthier, more socially vibrant and stable, economically secure, and environmentally sustainable (Cortese 2003).

## 1.3 Sustainability at WPI

At WPI, we are poised to make a significant contribution to the global sustainability initiative. The potential environmental, social, and economic impacts of technology were previously discussed, and at a technology-based institution such as Worcester Polytechnic Institute, these issues cannot be ignored.

A great deal of work has already been done both on and off campus by WPI students, faculty, and staff toward the ultimate goal of creating a more sustainable society. The distinctiveness of Worcester Polytechnic Institute puts the school in a position to become a leader in the movement. Specifically, the Projects Program plays a crucial role in the development of a sustainable campus. This program has allowed students to research issues of sustainability on-campus, across the country, and abroad, laying important groundwork for the sustainability movement at WPI (Global Perspectives Program 2008). A significant component of a WPI education is the Interactive Qualifying Project (IQP), in which the emphasis is placed upon utilizing science and technology to address societal issues on campus, in the city of Worcester,

and throughout the world. By nature of the project, many IQPs focus on problems related to sustainability.

In addition to research efforts by faculty and students, a number of prominent student organizations on campus, such as GAEA and the service fraternity Alpha Phi Omega, strive to increase awareness and address environmental preservation and social inequity, respectively. These organizations can ultimately provide the Sustainability Initiative with a core of interested, excited, and dedicated students. Finally, the Department of Facilities at WPI has coordinated recycling and energy management programs for many years. Since WPI has the intellectual resources required to connect curriculum to research, understand its ecological footprint, and act to improve the local and regional communities, the University is ready for a Sustainability Initiative.

### 1.3.1 President's Task Force on Sustainability

As previously discussed, the catalyzing factor of an integrated sustainability program is the group of policy-makers, faculty, staff, and students that develops and oversees new initiatives. The President's Task Force on Sustainability (PTFS), informally known as the "Green Team" was created in the fall of 2007 by mandate of President Berkey. The official purpose of the PTFS is:

> *To provide leadership and coordination for WPI's campus-wide efforts in energy and resource conservation and reduction in the harmful environmental impacts of our operations, all directed toward enhancing the long-term sustainability of WPI's activities and the environment of which we are a part. We are an educational institution; thus, these goals are interwoven with our academic goals in teaching about the practices of sustainable design and the impacts of behavioral changes, as well as in conducting research in the reduction of environmental impacts and in methods of enhancing sustainability.*

The membership of the Task Force was drawn from, and works with, all segments of the WPI community: students, faculty, and staff. Further, since WPI is an active member of the local, regional, and world communities, the work of this task force has impacts beyond the WPI campus. A responsibility of the Task Force is to generate an Annual Report of its operations and accomplishments; toward this, we have provided a format: the "Sustainability Chapters" used on the Sustainability Website.

The founding members of the task force included:

- **Provost or his/her representative**
  John A. Orr
- **CFO or his/her representative**
  Jeffrey S. Solomon
- **Assistant VP for Facilities**
  Alfredo DiMauro
- **VP for Student Affairs and Campus Life or his/her representative**
  Janet Begin Richardson
- **Director of Public Relations or his/her representative**
  Eileen Brangan Mell
- **Other staff as appropriate**
  Tonya Price; *Director of Marketing and Web Operations*
- **One or more faculty members**
  J. Scott Jiusto*; Asst. Professor, Cape Town South Africa Project Center Director*
  Robert Krueger; *Asst. Professor of Geography, Worcester Community Project Center Director, Environmental Studies Program Director*
  Matthew Ward; *Professor of Computer Science*
- **One or more undergraduate student representative(s)**
  Keilin Bickar; *Computer Science '09*
  Shawn Carey; *Biomedical Engineering '09*
  Christopher Lambusta; *Mechanical Engineering '09*
- **One or more graduate student representative(s)**
  Suzanne Peyser; *Civil and Environmental Engineering*

The goals of the initial Task Force meetings were to define what purpose and involvement it would have in the community and draft an official charge and membership list. Having no web presence, the task force spent a considerable amount of time working with our IQP group to establish the constraints and requirements of the website. The Task Force saw itself as a guiding force for the Sustainability Initiative on campus, serving to encourage other people to live, work, and learn in a more sustainable way. Furthermore, the President's Task Force on Sustainability envisioned itself as the group on campus that had the power to implement policy and initiatives that would promote more sustainable activities.

### 1.3.2 Sustainability Chapters

To organize the efforts of the PTFS and the greater campus community, we formulated three Sustainability Chapters that encompass the most important issues of sustainability as related to WPI. These chapters were: *Facilities*, *Academics*, and *Social Sustainability*.

#### *Facilities*

Though there have been few unified efforts, several departments across the WPI campus have done some work on their own. In 1994, the Department of Plant Services (now Department of

Facilities) started to recycle mixed paper – a common program among universities. Other initiatives by this department include recycling of other materials such as cardboard, metal, electronics, and other wastes. Another entity on campus that has made moves to be more sustainable is Chartwells Dining Services. They have worked to be more sustainable through both their corporate as well as local programs, such as the clean plate initiative that was started several years ago.

### *Academics*

WPI's Sustainability Initiative is dependent upon academics. WPI community members are trying to foster a community that produces innovative ideas and practical solutions to the following questions:

- How can we improve the quality of human life, now and into the future?
- How can we do this in a just and equitable manner?
- How can we do this while living within the limits of supporting ecosystems?

The Projects Program at WPI plays an invaluable role in the Sustainability Initiative at WPI. In fact, this project was based off of the work of several previous groups as discussed below. These projects were all completed by IQP groups in the 2006-2007 academic year, which ensures that the information they reported remained relevant to sustainability at WPI at the time of our project. All three projects provided recommendations to future researchers to allow for expansion upon the work they had done.

The first project, *Technically Green: Environmental Resource Website* project (Kucher, Minakyan and Smith 2007), was the first attempt at creating a sustainability website for WPI. The project group developed a template for a website and collected a number of external resources relevant to the site. Although the site is online, it does not contain content necessary to go public, and was never released to the community at large. However, it did lay significant groundwork for the work that we completed.

The project *Monitoring Electricity Consumption on the WPI Campus* (O'Hara, et al. 2007) focused on studying WPI's energy usage across campus and researching how it could be improved. Included was an analysis of the current energy management system, which, at the time of the project, was making use of broken or missing meters. The IQP team collected data on the electricity monitors on each building, as well as the overall power usage at WPI over a year through monthly intervals. Other data was collected about specific buildings and apartments on campus, but that data is either incomplete, or no longer relevant to any efforts. This project provided motivation for the Sustainability Initiative in that it demonstrated several plausible solutions for how to restore a clearly obsolete system and thus improve the efficiency of WPI's energy usage. The team's final recommendation consists of a set of units networked together into a central server that would allow the energy readings from all buildings to be read

from one place. As of the release of this report, Chris Salter, Director of Project Management & Engineering in Facilities and his staff are actively pursuing this option. Energy monitoring is critical to WPI's sustainability effort because it allows us to track progress in reducing the total usage of power. Any sustainability initiative related to energy consumption would be meaningless if the results could not be compared to the energy usage prior to the initiative.

Additionally, accurate electricity usage data is required to allow researchers to compute the greenhouse gas emissions that result from campus activities. Such data was required for the study *Tracking and Reducing Greenhouse Gas Emissions at WPI* (Haines, Lawton and Steacy 2007), which ultimately sought to measure the greenhouse gas emissions of the school. This task is exceptionally challenging, but there are tools available to assist with the process. The project focused on the use of a spreadsheet-based application called the "Clean Air Cool Planet Calculator" that uses several variables as inputs and analyzes the numbers to give an idea of the greenhouse gas emissions of an organization (CACP 2008). This IQP group managed to collect enough data about the WPI campus to produce results that could ultimately be used to measure the progress of the University.

While a great deal of the academic research at WPI focuses primarily on the environmental aspects of sustainability, the Projects Program also offers opportunities to advocate social equity and economic prosperity.

### *Social Sustainability*

Through WPI's campus activities, learning, and project center experiences, students can work to ensure that all people are afforded justice and have the opportunity to achieve economic, environmental, and social well-being. Community engagement is a critical component of the WPI undergraduate education. Faculty and students have the opportunity to engage in community research projects through WPI's various project center experiences. A key goal of these project experiences is to promote so-called *civic learning*. The goals of civic learning are to provide a platform for students and faculty to engage in the democratic processes of a community, exploring the problems it faces, appreciating the richness of its diversity, learning about the time commitments and energy required to enhance community life, and, most of all, learning how to work collaboratively. These goals can be accomplished through "lending" a community our expertise. Critically, however, it involves developing a process of learning with a community about their issues and developing solutions that reflect community values and promote an inclusive society.

## 1.4 Effective Communication

When creating communications for public dissemination, there are many factors that must be considered. Especially in a situation where scientific facts are going to be posted for review by

a scientific community, significant effort must be taken to make sure all communications are written with care.

The content of a website, like that of other pieces of writing, must have accountability (Wang 2004). Data and analyses posted online must be appropriately cited from reputable sources. Often, making website content accountable is accomplished by simply including a link to more information on the subject. Other times, website users may find that it is more useful to have contact information of the author or even the raw data itself. For the purpose of comparison from one site to the next, content must be consistent with established norms for publishing. This is vital for the information to be understood as there would be no reference by which a visitor could gauge what the information means without comparison. Utilizing any of these means to cite website content ultimately provides a more credible and useful site.

Communications that are written on a website also need to be written in an appealing manner. While the quality of the writing has little bearing on the actual content of a site, website visitors are much more likely to read content that is well written and logically presented. Communicating in this way also conveys professionalism, which helps to further establish credibility.

Web communications should be relevant (Wroblewski 2005). People visiting a WPI website dedicated to sustainability presumably want to learn more about sustainability and WPI's efforts to improve the environmental, social, and economic status of our local and regional communities. Care must be taken to only include content that is relevant to the content of the site; other, unrelated information ultimately debases the overall message of the site. Additionally, keeping sections isolated from each other is not essential, but dividing content logically may help guide a user through the website to find what they want.

One of the most appealing features of websites is that they allow for interactivity among users and developers. Not only does this help the user, but it also helps the site developer in his task to collect, organize, and present information. Examples of interactivity in sites include filtering items of a database or submitting information to the creator of the site to be posted. Other interactive functions are discussion forums where users can communicate with each other. While the content of a website may be what gets a visitor to come once, interactivity is what will cause a visitor to revisit the site.

### 1.4.1 Principles of Good Website Design

The design of a website is very important to how useful it can be to visitors. Websites must convey all the relevant information while at the same time not overloading the user with excessive text. It is important to consider that visitors to a website may be using different

browsers or types of computers. Therefore it is necessary to make sure all visitors to the website can access the content, and to make it look similar to all users.

Consistency is critical to making a website usable as most visitors will just leave a site if they cannot find what they want in a few seconds. The navigation of a website is the most important part of this, as visitors basically have to learn how to use every site they visit (Wroblewski 2005). When the navigation scheme of a site changes from page to page, the visitor can get confused and frustrated with the site. While images are useful to present data and improve the overall "feel" of the site, the essential navigation and content of a site should be in text in order to make the site as accessible as possible to all users.

Finally, a website should be appealing and professional looking to all visitors. After anticipating who the audience will be as well as what kind of content they expect or hope to find on the site, it is necessary to subsequently create and organize content that will be understandable to all users of the site (Cool 2005). In addition to appearing well-developed, the site should utilize good coding practices and be created in a professional way so as to adhere to W3C web standards (W3C 1999).

A good homepage will be visually appealing to users as well as being informative. The page should be a portal to the rest of the site, but still include the same functionality as the other pages to keep consistency. The homepage should have content that is updated routinely so visitors will return to the site; a good way to do this is with news items for upcoming events. A static page is only interesting the first time, while a dynamic page will keep users interested and encourage them to visit other pages of the site (Powazek 2006). The homepage should also be somewhat of an introduction or summary of the entire site, enticing the visitor to further explore the website.

### 1.4.2 Website Development

Development for the World Wide Web is unlike any other development platform. Releases are made early to the public, and changes are often made live with development cycles being as small as a few minutes between releases. Changes will also be seen by everyone that visits the site so mistakes cannot be recalled from a specific group if they are made. On the other hand, minor contextual errors on the web can be easily fixed – without developer assistance – by any layperson with experience using computers; it is not necessary to patch or recreate a master plan.

Other advantages to development on the web are that as many people can be involved with the process as desired, though it is optimal to have only a select few review what content will actually go live to keep consistency with the rest of the site. There are many models for developing pages for the web, some as basic as editing the source html files (Sebesta 2008), all

the way up to complex fully fledged content management systems. The method used varies among sites, so the best option is chosen at the discretion of the creators.

### *Content Management System*

One system that is used across the WPI community to manage academic, department, and event websites is the RedDot Content Web Management System. Our team received fundamental training in its usage before taking on the responsibility of becoming "editors"; that is, it was our responsibility to populate and update the site. The RedDot system can be accessed through www.wpi.edu/CMS and once logged in it is fairly easy to start editing. First, you have to locate the page you wish to edit in the directory. Then you can edit content by clicking on the small red dots in the upper right hand corner of the section. The system does not allow a section to be edited by different users at the same time, saving you from wasting time on the same content. Once any changes are complete they need to be submitted to the "work flow" so that an approver can review the changes and confirm they are valid. After they are confirmed the site is updated immediately.

# Chapter 2: Methodology and Results

The fundamental goal of the Sustainability Initiative at WPI is the design, implementation, and maintenance of a high quality sustainability program for WPI. The individual focus of our IQP group was the research, design, and development of a Sustainability Website for WPI. The purpose of this website is to educate the community, both on campus and abroad, about crucial sustainability initiatives happening at WPI while also serving as an annual reporting tool for the university. This section will describe the steps our team took and what we consider the most important aspects for properly establishing a comprehensive sustainability program.

While our work on this task began on September 4, 2007 and concluded on April 29, 2008, we foresee this program being continued well into the future. We believe that through our efforts and the efforts of our colleagues, the Sustainability Initiative at WPI will continue to grow and contribute to the creation of sustainable, high quality of life on the WPI campus, in the state of Massachusetts, and across the globe.

Our team was able to successfully complete our goal through the implementation of the following objectives. We aimed to:

- Facilitate the development of the President's Task Force on Sustainability, including the establishment of effective communication with key players
- Identify previous and existing sustainability efforts at WPI
- Benchmark successful websites launched by other institutions
- Develop and launch an official sustainability site for WPI
    - Effectively communicate the goals of the Sustainability Initiative
    - Promote interactivity and community involvement via forums (online and live)
    - Present meaningful data clearly through well-designed graphics
    - Provide raw data for continued research
- Establish a means of Annual Reporting
- Maintain the dynamic state of the Sustainability Initiative

The following sections will discuss how our IQP team approached and addressed these objectives.

## 2.1 Facilitate Development of President's Task Force on Sustainability

Early in our IQP, when trying to identify our project objectives, we were approached with the opportunity to work with the newly created President's Task Force on Sustainability. The Task Force was comprised of faculty, staff, and a group of student representatives (see *Background* for description). Once joining the committee and discussing the most urgent issues, it became evident that the committee needed a way to communicate to the campus community and other institutions where exactly WPI stood on issues regarding sustainability. It was decided

that a website was the most effective way to accomplish this. We felt that developing the new sustainability website would be a valuable contribution to the committee and thus, we defined one of our primary objectives as website development. There were several guidelines that would need to be followed to ensure that the new website was consistent with WPI's other current websites so as to appear professional and legitimate.

At this point we began to work closely with Tonya Price, Director of Marketing and Web Operations, and the WPI web operations team. We began the initial stages of web development with the web operations team, discussing what features we wanted on the site and how it should be organized. These issues will be further addressed in the *Website Development* portion this chapter.

Another key player in not only the website development but also the sustainability committee's formation and progress was Alfredo DiMauro, Assistant VP of Facilities at WPI. We worked with the Facilities staff to obtain raw utilities data (waste, electricity consumption, etc), populate the site with information regarding WPI's current practices, and promote the new "Bottles and Cans" recycling program. As discussed in the background section, establishing lines of communication between the Facilities staff and our team was essential to allow us to acquire relevant data for presentation on the site. All information on the "Bottles and Cans" program can be seen in the Background section as well as on the WPI Sustainability website.

### 2.1.1 Establishing Effective Communication

As has already been discussed, a significant part of this project was establishing communications with people in the WPI community. Though the website was the most prominent communication vehicle, there were many other channels of communication throughout the WPI community and even within the Task Force and IQP team that needed to be set. Often this included communicating with the appropriate people to get the information needed for research and to get certain objectives accomplished.

When the sustainability website went live, there was also the added responsibility of handling emails sent to green@wpi.edu (an email address linked at the bottom of every page on the website). As the site had become an official WPI site, it was important for all communications to the public to be very professional and consistent with the views of WPI.

Communicating with the right person is not always as easy as finding a name on the Internet. One of the most challenging parts of getting information was actually getting a time to talk with people as many of the members have busy schedules. For most of the research communications, members of Facilities were the most helpful as they had the raw data. As one of our advisors was Alfredo DiMauro, Assistant VP for Facilities, this process was made easier as he knew who in Facilities was best to talk to.

For each part of the project there were different people who had relevant information. The first major section of the website that we completed was the *Waste Management* chapter. The Facilities staff member most knowledgeable in this area was Terry Pellerin, Assistant Director of Buildings and Events. He was able to provide us with data for both WPI's recycling and trash programs through the Institutional Recycling Network and Waste Management, respectively.

The people most familiar with the implementation of an energy monitoring system for the WPI campus were Chris Salter – Director of Project Management and Engineering, and Norman Hutchins - Mechanical Operations Supervisor. As this part of the project required a great deal of interaction with members of Facilities, personal meetings were arranged to encourage development of this system.

The IQP team that had previously worked on electricity monitoring had corresponded with Chris Salter, but as their project was concerned with researching options rather than actually implementing them, they did not look into a number of crucial criteria including what vendors WPI uses and how the installation could actually be achieved. When the specifics of implementing a previous project were brought to Mr. Salter, he explained how the current system works and how it could be integrated with an energy monitoring system to make it more convenient. As he knew far more about the current systems at WPI than our team, he set up meetings to talk with vendors and push the project forward.

After the task force decided to make the website a specific aim of the Sustainability Initiative, we began to communicate with members of the marketing and web communications department. In order to start development of the official site, we first met with Tonya Price in marketing to discuss what content would be on the site, and how it would be laid out. This process was expedited due to our work in developing the website on our own, during phase one of website development outlined below. The main issues were the technical details of how the content would be put up, and how the layout we wanted could be made to fit with the template system used by WPI.

## 2.2 Identify Previous and Existing Efforts at WPI

A great deal of work had already been done both on and off campus by WPI students, faculty, and staff toward the ultimate goal of creating a more sustainable society. The distinctiveness of Worcester Polytechnic Institute has put the school in a position to become a leader in the movement. Specifically, the Projects Program, which fully integrates Cortese's criteria into WPI's curriculum, plays a critical role in the development of a sustainable campus. This program has allowed students to research issues of sustainability on-campus, across the country, and abroad, laying important groundwork for the sustainability movement at WPI. A significant component of a WPI education is the Interactive Qualifying Project (IQP), in which the emphasis is placed upon utilizing science and technology to address societal issues on

campus, in the city of Worcester, and throughout the world. By nature of the project, many IQPs focus on problems related to sustainability. As has been discussed, key accomplishments of recent IQPs include recommendations for the development of a sustainability website, an analysis of WPI's energy management system, and an initial assessment of WPI's greenhouse gas emissions. Further, a number of prominent student organizations on campus strive to increase awareness and address issues such as social inequity and environmental preservation. Additionally, the Department of Facilities at WPI has coordinated recycling and energy management programs for many years.

## 2.3 Benchmarking

Before we could begin development of the website, it was important to assess what had already been accomplished by previous groups on campus and at other Universities in order to find areas to improve and expand upon. The first item we reviewed was an Interactive Qualifying Project titled *Technically Green*. The mission of the *Technically Green* project was to develop proposals for a formal environmental policy, committee, and annual report for the WPI administration to consider. The team completed these goals by establishing a website on a WPI user account that served as a location to compile all of their research and recommendations. This site became our starting point from which we would eventually launch our own site dedicated to WPI's sustainability efforts. Our next step was to establish what makes a website successful. We explored about 15 websites devoted to campus sustainability to determine what techniques and information would be required to make an effective sustainability website. There were many different approaches that universities have taken but all focused on three main components: a mission statement, policies, and programs. One great example of a sustainability site we found was the University of Florida site. With the information we gathered from this research we developed criteria that our website should meet in order to make it valuable. These requirements included:

- Relevant information
- Consistently updated
- Ability to easily expand
- Ease of navigation
- Appeal to a variety of audiences

The annual College Sustainability Report Card, provided by the Sustainable Endowments Institute, also influenced what information was put on the website (SEI 2007). This report card is an independent evaluation of campus operations investments. We wanted to include as much information as possible regarding their requirements. After receiving an overall grade of D- in the 2008 report, the committee set a goal to improve this over the coming years and felt that the website would clearly display WPI's accomplishments. We wanted to be sure that the

site was well populated to avoid making it look as though we did not address something. Equipped with this information, we began to piece together the website in Phase I of website development.

## 2.4 Website Development

### 2.4.1 Phase I

The website development took place in two stages. First, we gathered relevant information and designed a website independently (outside of WPI's management). Figure 4 is a screenshot of our preliminary website design. The four square icons across the top addressed the four aspects of sustainability on which we wanted to report at WPI. The homepage was dedicated to informing the audience about the University's mission as well as any upcoming events. The top icons would then link to their respective topics and provide information on WPI's policy, programs, and relevant data as well as a list of previously completed work in the area that was done by WPI students and faculty.

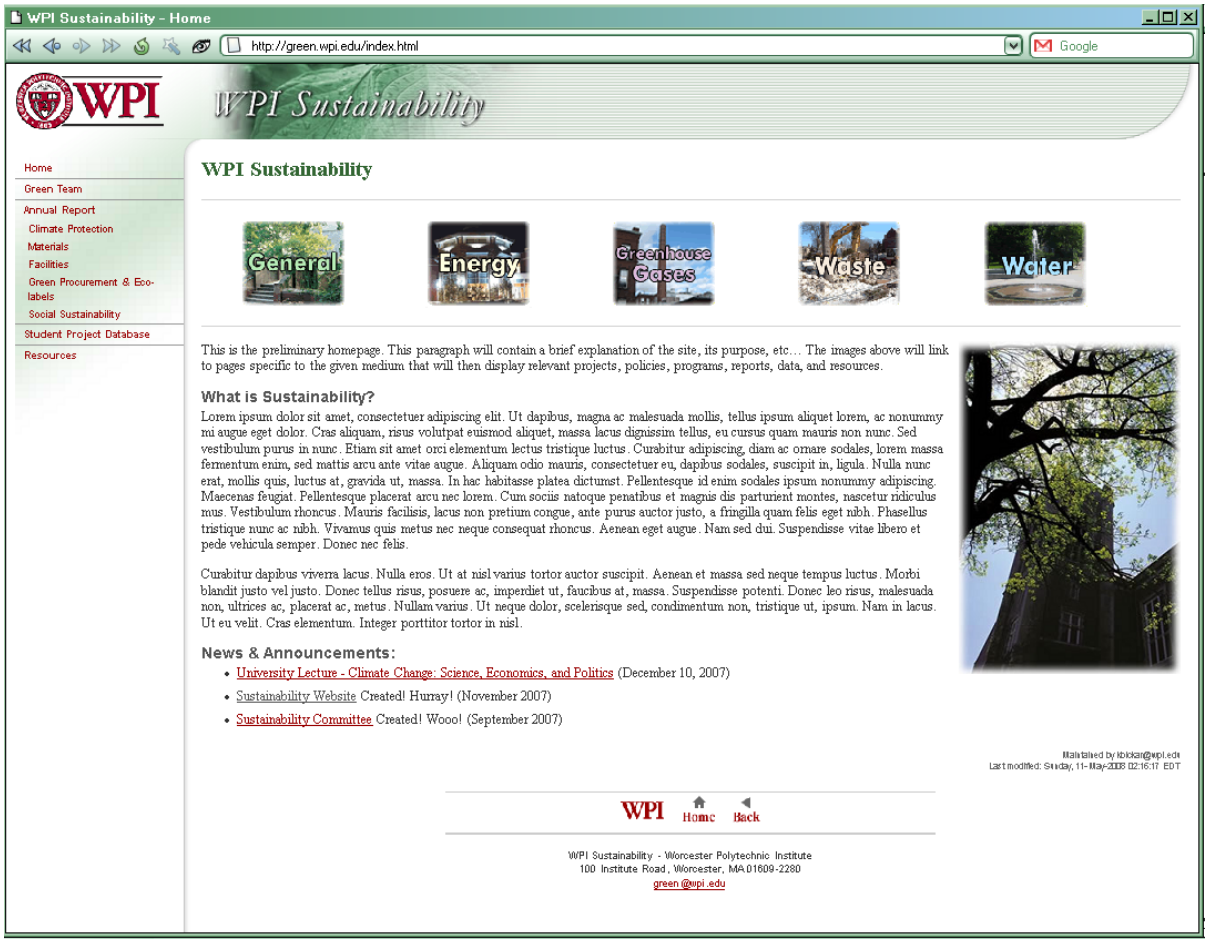


**Figure 4: Homepage of the WPI Sustainability Website, Phase I**

This site was ultimately transitioned to a more standardized approach (analogous to the format of other WPI websites), but the content and layout still had useful aspects. A large portion of the work we did on this phase was accumulating all of the WPI projects that had been done on sustainability, both on campus and abroad, that covered the following topics: Energy, Greenhouse Gases, Waste, Water, and General Sustainability. We separated them into these categories and provided a brief description of the project as well as a link to the full report. Upon the completion of our IQP in April of 2008 the project data base was incorporated into the new site in order to provide our audience with a reference tool for accessing data as well as a better sense of how far-reaching WPI's sustainability efforts are.

### 2.4.2 Phase II

As our team became more involved with the PTFS, we were urged to develop an "official" site. We then set our focus on developing a site that blended into WPI's CMS. We would also expand upon our original definition of sustainability. As was discussed in the Background section, it can be widely debated what the "correct" definition of sustainability is. The Task Force decided it wanted to encompass more than just environmental issues. The new site would continue to raise awareness and educate about environmental issues while also focusing on the social and economic factors of sustainability. The new site was launched on March 17, 2008 along with WPI's new Enhanced Cans and Bottles Recycling Program. As can be seen in Figure 5, the final site consisted of five chapters, the concept of which we based upon our Phase I design of using square icon-links to summarize the organization and facilitate navigation.


**Figure 5: Homepage of the WPI Sustainability Website, Phase II**

These web chapters were analogous to and in fact, expanded upon the "Sustainability Chapters" of *Facilities*, *Academics*, and *Social Sustainability* previously discussed. The homepage was dedicated to conveying WPI's definition of sustainability and the University's commitment to sustainable practices. There were also areas at the bottom of the page to post upcoming news and events related to sustainability on and around the campus. The *Climate Protection*, *Materials Management*, and *Facilities* chapters each contained information on the University's current policies, practices, and programs, as well as acquired data. The policies that were created by the Task Force were ultimately quite broad because the University did not have any official policy regarding issues of sustainability. The remaining two chapters, *Social Sustainability* and *Academics*, tackled the social and economical aspects of sustainability and how they relate to WPI's projects program and curriculum.

To address the need of a website to effectively communicate information to its audience, an additional component of the sustainability website was a Microsoft SharePoint site consisting of additional data and discussion forums. Users have the opportunity to obtain more advanced and complete data than what is shown on the sustainability site, which broadens the appeal of the website and expands the targeted audience. Figure 6 shows the detail of the *Quick Links*

section of one of the chapter pages; by clicking on the "Data" or "Join the Discussion" links, users were directed to a SharePoint site dedicated to WPI's Sustainability Initiative. The development and features of this site will be further discussed in a later section.

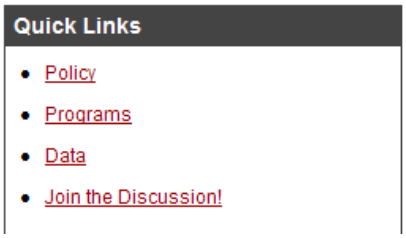


**Figure 6: Detail of Quick Links section on the WPI Sustainability Website**

Overall, we feel the website conveyed, both to the on-campus and global community, WPI's commitment to becoming a sustainable campus as the university has been making progress in many areas and continues to implement new initiatives. Also, we feel as though the site has been set up in a way that allows for as much future expansion as is needed. It is important to note that the Task Force did review the site at essential stages, but there has not yet been a formal review of the site by a focus group.

## 2.5 Annual Reporting

We decided that in order to effectively gauge the progress of the sustainability initiative at WPI the website would also serve as an annual reporting tool. The way in which the site is organized allowed us to chronologically log all of the new programs running on campus. Each year, the President's Task Force on Sustainability plans to release an assessment of the previous year's activities. This report will discuss (1) what the Task Force set out to accomplish, (2) what the Task Force achieved and why it was successful, (3) what the Task Force failed to do and why, and (4) what the Task Force plans to do the upcoming year. Also included in this report will be key data including:

- Waste data
- GHG emissions data
- Electricity consumption
- New academic programs relating to sustainability
- Community responses including recommendations and other feedback

## 2.6 Maintaining the Dynamic State of the Sustainability Initiative

One of the most important aspects of keeping the website successful is to ensure that it is constantly evolving. The initial purpose of the Sustainability website was to effectively communicate goals, whether they were past, present, or future. Arguably the most important facet of launching the website was inviting comments and suggestions through discussion forums. This allowed us to listen to how the community felt and get them involved, which also

helped to spread awareness about sustainability. It was also important to make sure the WPI community found the site appealing and useful. We sought to accomplish this task by setting up forums for each Chapter listed on the site, thus allowing the WPI community to suggest changes and offer new and innovative ideas for future initiatives.

To accomplish this we were in contact with Tom Collins, Windows Systems Administrator, who was able to set up a Microsoft SharePoint site for us. While going over our needs from the site with Tom, we discovered that SharePoint could be a very complicated and customizable tool. Our goal was to simplify the site so it was not intimidating to new users. Because of the recent availability of SharePoint at WPI most of our visitors would be new to its design. We eliminated most of the available features and launched it simply as an area for WPI community members to leave feedback on the site or any other sustainability related issues. Figure 7 shows a screen shot of the forums.

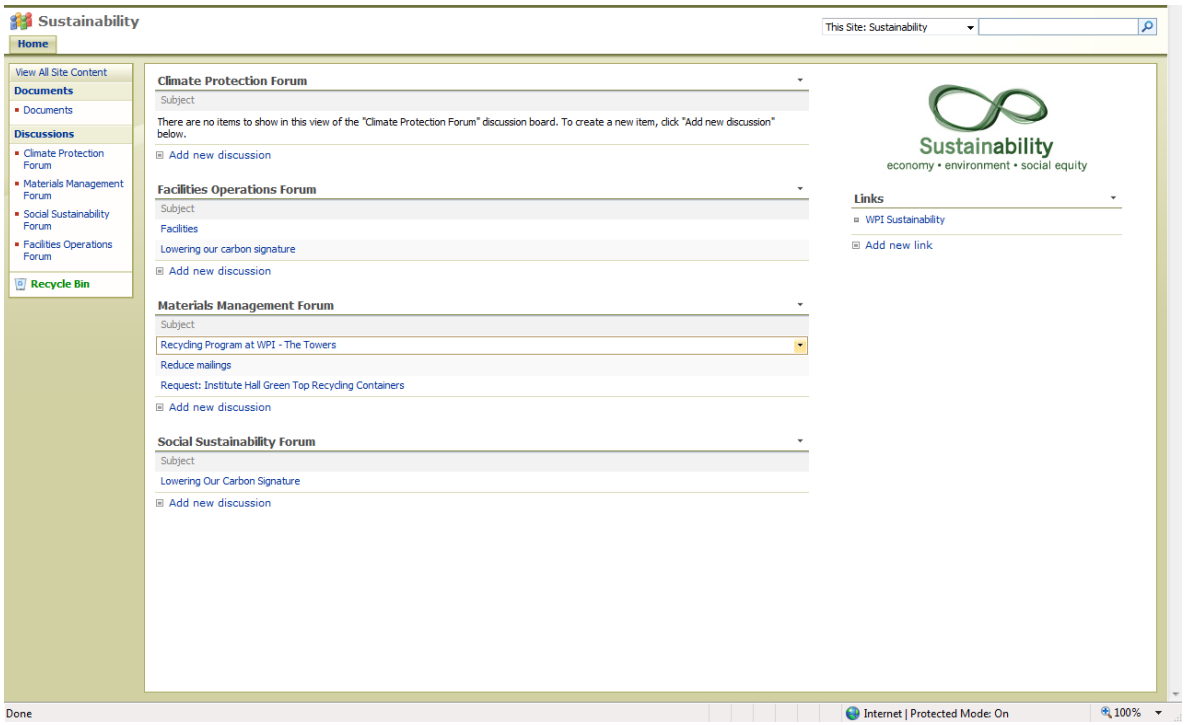


**Figure 7: WPI Sustainability Forum Homepage on SharePoint**

The screenshot in Figure 8 is from the "Climate Protection" page and is an example of the types of information presented throughout the Sustainability Website. Ideally, in the future, WPI will have new, more robust and responsive means by which to collect sustainability-related data. For example, if a new electricity monitoring system for the campus is installed, the Sustainability Website could potentially provide real time energy usage data from across the campus similar to Williams College (Williams 2008).

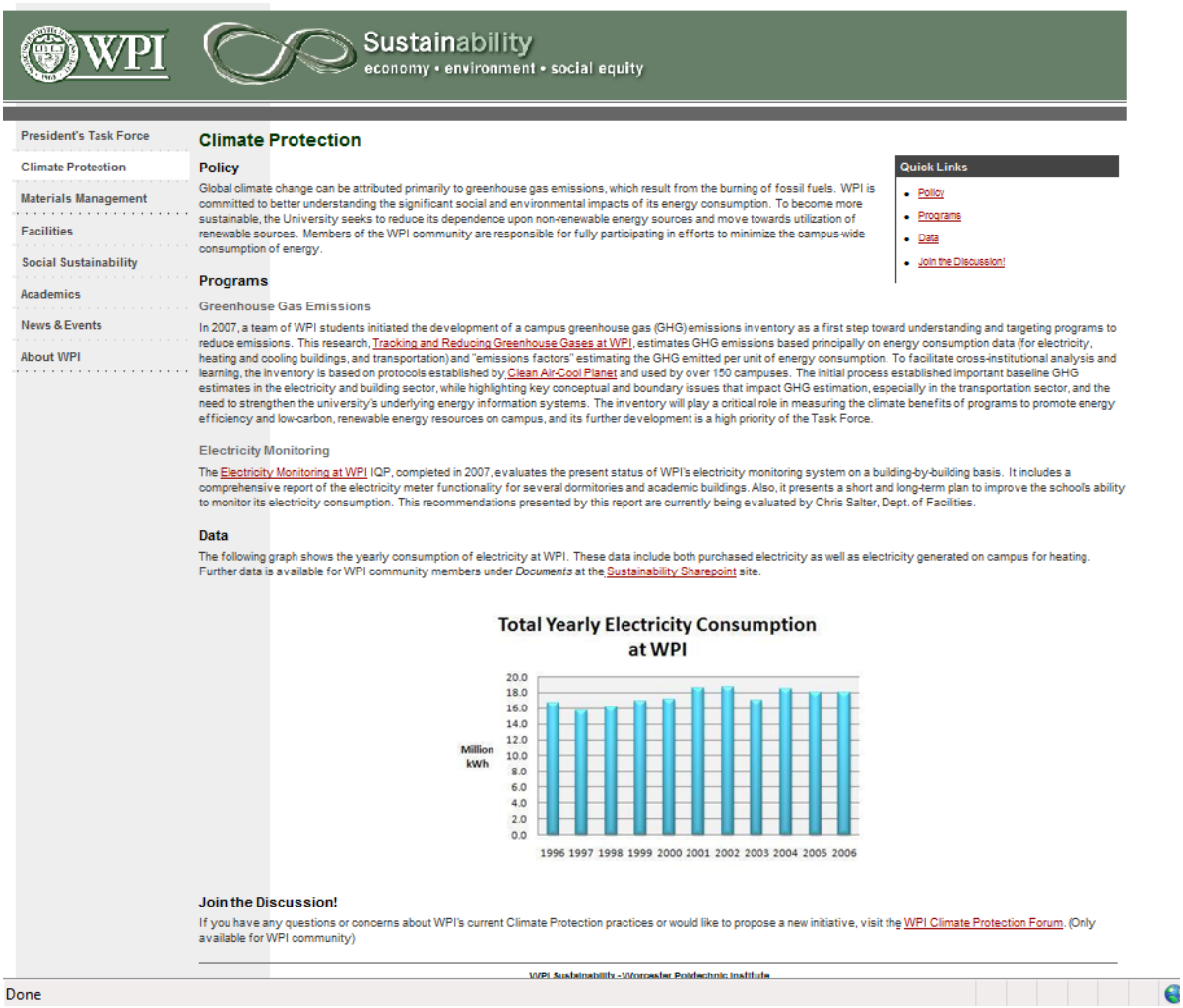


**Figure 8: Sample Page of Final Website**

# Chapter 3: Discussion and Recommendations

In only a single academic year, the Sustainability Initiative at WPI has showed encouraging progress and several crucial steps have been taken. Our IQP provided several integral contributions including:

- Design, development, and launch of *WPI Sustainability Website*, including:
- Sustainability SharePoint site for WPI community
    - Means for dissemination of raw data (electricity, emissions, waste, etc)
    - Discussion forums
- Volunteer form on Sustainability Website

Key accomplishments of the overall Sustainability Initiative include:

- Appointment of President's Task Force on Sustainability
- Launch of WPI Sustainability Website
- Launch of enhanced *Cans and Bottles Recycling Program*
- Live discussion forums
- President's Task Force on Sustainability-sponsored IQPs in the 08-09 academic year
- Association for the Advancement of Sustainability in Higher Education (AASHE) membership

While these achievements represent significant successes, there is still room for expansion and improvement. Throughout our project, we have had a number of experiences that have led us to develop the following recommendations:

## 3.1 Sustainability Officer

In order to improve sustainability efforts campus-wide, we suggest appointing a Sustainability Officer to delegate responsibility between committee members and improve overall communications. The Environmental Association for Universities and Colleges (EAUC) provides a guide that discusses a sustainability officer's role, duties, qualifications, and qualities as well as many other aspects. By implementing cost-saving sustainable practices, the Task Force will be able to reason the importance and value of such an Officer. The appointment of this individual would allow for more appropriate allocation of the workload associated with Task Force membership. This would especially alleviate a great deal of the supplementary work given to the Assistant VP for Facilities and would allow for better coordination among the Task Force.

## 3.2 WPI President's Task Force on Sustainability

The President's Task Force on Sustainability is a critical part of the Sustainability Initiative at WPI. As such, it is imperative that the PTFS continues its active role in the promotion and

dissemination of a sustainability-driven mindset throughout the WPI community. From a logistical angle, in an effort to make the most of the Task Force meetings, we suggest implementing a standard format for meeting proceedings. As of the end of the 2007-2008 school year, the Task Force was meeting for only 2 hours per month. In order to continue to appropriately address the University's sustainability interests we recommend the following:

- More frequent meetings or longer meeting times
- Designation of sub-committees, with committee chairs

It is also important to maintain forward progress; to this end, we propose that the Task Force implement at least one new initiative per year. If the Sustainability Initiative itself is to be sustainable, constant advancement must be made lest this initiative deteriorate just as so many similar sustainable endeavors have done in the past. By inviting students, faculty, and staff to participate in roundtable discussions and/or focus groups, the President's Task Force on Sustainability can continue to serve the interests of the WPI community

## 3.3 WPI Sustainability Site Development

To ensure that the sustainability site remains informative and credible it is imperative that a sub-committee consisting of one student editor and one faculty/staff approver who are in charge of all inquiries and issues. Our IQP team encountered some complications with too many editors and approvers, so limiting this to as few people as possible is a good plan. Toward this, management of the site was turned over to Tonya Price, WPI's Director of Marketing and Web Operations. Plans were made to employ a work study student in the 08-09 academic year to assume the responsibility of website maintenance. This student should fully understand the workings of the RedDot CMS and should be aware of the following responsibilities of the Sustainability Website Webmaster:

- Forums

  Checking the discussion forums on the SharePoint site daily for new threads and replies is crucial. After reading the new posts, it is important to send a reply via email to the posting user so they know that the Task Force appreciates their interest and concern. Furthermore, it may be necessary to forward the message to the responsible individual (i.e. Facilities-related comments and inquiries directed to Alfredo DiMauro).
- News and Events section of Sustainability Website

  To maintain the dependability of the Sustainability Website, notification of sustainability-related News and Events should be sent to the Webmaster. The most recent news and nearest events should be displayed on the Sustainability homepage. Past events should be removed from the "Upcoming Events" section and archived in a "Past Events" section.

- "green@wpi.edu" alias

  Website users are directed to address inquiries to this email alias; therefore, checking this email daily is essential. By replying to questions and concerns quickly, interactivity and credibility will be maintained. As with the discussion forums, it will be necessary to forward messages to the appropriate person so that they can better address concerns.

For added simplicity and in an effort to open feedback to a broader community we would suggest that the forums be moved from the SharePoint site directly to the main WPI Sustainability site. Finally, the "WPI Project" database should be revised to include more effective means for the user to sort and filter the projects.

## 3.4 Annual Reporting at WPI

WPI's recent membership in the Association for the Advancement of Sustainability in Higher Education gives the University a unique opportunity to participate in a new program they are piloting called STARS – Sustainability Tracking, Assessment, and Rating System. This is significant because WPI can be an important part of the effort to develop credible and comparable sustainability indicators that other universities can use to track their progress and compare their results with other institutions.

## 3.5 The IQP

The nature of our IQP was unique, but we have some key recommendations for project work that we developed from our experiences. Allocating the team's responsibilities into individual tasks is important to ensure efficient progress. We accomplished this to some extent; for example, one of our team members was especially proficient in web design so many web-related questions were deferred to him. As a recommendation, one person could be responsible for maintaining the team's correspondences (dealing with emails sent to the team), and depending on the other tasks of the IQP team, the other students can fulfill those appropriately. Furthermore, maintaining effective communication among the team and with any advisors and collaborators is crucial.

Overall, there has been a great deal of work accomplished at WPI that serves as the groundwork for the continuation and expansion of the Sustainability Initiative. The recommendations provided above address only *some* of the potential growth for such an important and pervasive effort. Effective Sustainability Initiatives foster interest and encourage interactivity among campus community members. The appointment of the President's Task Force on Sustainability and the development and launch of the Sustainability Website are critical first steps taken at WPI towards the goal of a more sustainable campus, community, and society.

# References


Association for the Advancement of Sustainability in Higher Education. *About AASHE.* 2008. http://www.aashe.org/about/about.php.

Campbell, Scott. "Green cities, growing cities, just cities? Urban planning and the contradictions of sustainable development." *Journal of the American Planning Association*, 1996: 296-312.

Canadian Public Health Association. "Human and Ecosystem Health." Ottowa, 1982.

Carlson, Scott. "In Search of the Sustainable Campus." *The Chronicle*, October 20, 2006: A10-A16.

Clean Air-Cool Planet. *Campuses for Climate Action.* 2008. http://www.cleanair-coolplanet.org/for_campuses.php (accessed 4 2008).

Cool, Heidi. *Web Development Blog.* July 25, 2005. http://blog.case.edu/webdev/2006/01/25/building_your_site_the_front_page.html (accessed April 20, 2008).

Cortese, Anthony D. *Association for the Advancement of Sustainability in Higher Education.* 3 2003. http://www.aashe.org/resources/pdf/Cortese_PHE.pdf.

Egan, Timothy. "The Greening of America's Campuses." *The New York Times*, 1 8, 2006.

Global Perspective Program. 3 2008. http://www.wpi.edu/Academics/GPP/index.html (accessed 4 2008).

Haines, Adam, Tim Lawton, and Brandon Steacy. "Tracking and Reducing Greenhouse Gas Emissions as WPI." 2007.

Kucher, Katrina, Anita Minakyan, and Charles E. Smith. "Technically Green: Environmental Resource Website." 2007.

O'Hara, Christopher, Maximillian Hobson-Dupont, Max Hurgin, and Valerie Thierry. "Monitoring Electricity Consumption on the WPI Campus." 2007.

Powazek, Derek. *A List Apart.* January 30, 2006. http://www.alistapart.com/articles/homepagegoals.

Sebesta, Robert W. *Programming the World Wide Web.* Boston: Pearson Education Inc, 2008.

Sustainable Endowments Institute. *College Sustainability Report Card 2008.* 10 24, 2007. http://www.endowmentinstitute.org/sustainability/ (accessed 4 24, 2008).

Tierney, John. "Betting on the Planet." *The New York Times*, December 2, 1990.

Univerity of Florida. *Mission and Guiding Principles of the University of Florida's Office of Sustainability.* 11 13, 2007. http://www.sustainable.ufl.edu/mission.html (accessed 4 24, 2008).

United Nations. "Report of the World Commission on Environment and Development." *UN Documents.* 12 11, 1987. http://www.un-documents.net/a42r187.htm (accessed 4 2008).

United Nations. "World Population Prospects, 1998 Revision." 1998.

United Nations Environment Programme. *Pressures on the environment.* 2008. http://www.unep.or.jp/ietc/Publications/Integrative/EnTA/AEET/5.asp.

Wang, Ling. "Making Sustainability Accountable." *IEEE.* 2004. http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=01299679

Williams. *Home.* 2008. http://www.williams.edu/resources/sustainability/index.php.

World Wide Web Consortium. *Web Content Accessibility Guidelines 1.0.* 5 5, 1999. http://www.w3.org/TR/WCAG10/ (accessed 4 24, 2008).

Wroblewski, Luke. *Visual Communication & Web Application Design.* April 2005. http://www.lukew.com/resources/articles/VCFWAD_April2005.pdf (accessed April 2008).