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| How Do Environmental Engineers Affect Environmental Sustainability |
| GSWLA Senior Project Proposal |
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Introduction

Environmental Engineers are one of the “up and coming” fields of engineering. At first, when asked,” What kind of engineering fields do you know of?” One may say one of the multiple other branches like, Civil Engineers or Mechanical Engineers. Well, the necessity of Environmental Engineers is on the rise, due to the increased carbon dioxide emissions, deforestation, the depletion of aquifers, etc. The role the Environmental Engineers play is quite simple. In my eyes, they are the guidance counselors for the world. They diagnose the issues going on in the environment and create new ways to make the human population, more sufficient and more sustainable. So, specifically, how do Environmental Engineers affect environmental sustainability? One may believe this answer to have a simple answer, but in reality their actions are not merely a “regurgitated college lesson,” but real people caring about their environment and doing something to preserve it.

Literary Review

Environmental Engineers are a group of people that utilize the fields of biology and chemistry to solve environmental issues. These issues include water and air pollution control, recycling, waste disposal, and public issues. They use their expertise to enhance their hazardous-waste management studies in which they evaluate the significance of the hazard, and provide a proposal for how the problems can be fixed. Environmental Engineers hold an estimated 54,000 jobs. This represents 3.6% of the jobs held by engineers. Their employment areas usually include universities and firms, government agencies, and testing facilities, and at multiple other corporations.[[1]](#endnote-1)

Engineering has increased the health quality of life in the last 50 years. They have accomplished this by developing better water supplies, municipal sewer systems, and wastewater treatment procedures. With the linear growth in the auto industry, the increased study of air pollution has become prominent due to global necessity. The carbon dioxide fumes emitted from the tailpipes of automobiles contribute to global warming. The environmental engineers study the effects of the pollutants and come up with ideas to prevent or eradicate the problem. They either provide input for the newer, more fuel efficient automobiles, or they observe and provide constructive criticism for future designs. [[2]](#endnote-2)

As the progression of the modern era continues, we are coming to the realization that the resources that were once bountiful in the past are now diminishing. Due to this scarcity, the price of these resources is increasing also. These resources are being stripped from the environment with little to no replenishment. As energy use continues to escalate, the engineers are obligated to find varying sources of resources and limit the damage done to the environment.[[3]](#endnote-3)

Due to the shift from the use of fossil fuels, the education of future engineers is doubted to contain lessons for the use of fossil fuel based products. As implicated previously, Engineers are to create new forms for energy. It only makes sense that fossil fuel based sources will probably become scarce anyway. Their education will consist of using cleaner, more variant resources like air and water. With this information, the change in the health of the environment will become noticeable, and will further progress the thought of a more sustainable lifestyle.[[4]](#endnote-4)

The discipline of civil and environmental engineering addresses issues such as protecting the natural environment globally, improving the quality of life for humankind, and ensuring the safety and security of human society from an engineering perspective. The major roles played by civil and environmental engineers include developing the necessary infrastructures for humans to live safe, culturally fulfilling lives, and realizing policies that make it possible for human beings to live alongside nature, all based on engineering ethics. [[5]](#endnote-5)

Fossil fuels and nuclear technologies have been a major source to the environmental health since the 1970’s. The have thousands of thermal, natural gas and oil powered plants scattered across the world. The carbon gas emissions and non-degradable nuclear waste produced by these plants have caused serious environmental problems such as the greenhouse effect leading to a virtual chain reaction of ozone depletion followed by global warming and climate change. These methods of energy production have been deemed unsustainable and greatly expensive. Environmental Engineers lead the way into a more sustainable future by diagnosing the problems set forth, and begin their work and research to establish a base to resolve this issue.[[6]](#endnote-6)

Usually, the topic of environmental sustainability is touched on generically throughout everyday life. For example, when many people are confronted with the aspect of environmental sustainability one may simply think of “tree huggers” or “Save the dolphins,” but few actually know what is actually being implemented. QED Connect, Inc. announced that its joint venture partner, Sofame Technologies Inc., has been awarded a contract from Butterball, a producer of turkey products in the U.S. Steve Valesko, VP of Engineering was also quoted saying, "Butterball is dedicated to being a good steward of the environment, and is pursuing many innovative environmental initiatives surrounding resource conservation, pollution prevention, and upgrades to environmental sustainability.” This statement is supported by the statistic, “The equipment, which operates at 96 percent efficiency, combines condensing recovery of waste heat from existing boilers with a new direct contact condensing burner to heat water.”[[7]](#endnote-7)

Another incompetence to the environment is the automotive industry. The automotive industry is a key source of perniciousness of the environment. All of the automobiles set on the roadway emit carbon dioxide which, in turn, endangers our air quality and living conditions. However, this trend has become apparent. Many companies are crating newer, more fuel efficient automobiles to aid the environment, or more so their company. Ford Automotive has recently released their 12th annual sustainability report titled "Blueprint for Sustainability: Driving Change." Sue Cischke, Ford group vice president, Sustainability, Environment and Safety Engineering stated that," The Blueprint for Sustainability encompasses a wide range of efforts at Ford to provide sustainable transportation around the world." [[8]](#endnote-8)

Intertek, a leading global provider of quality and safety solutions participated in International Conference and Exhibition on Green Buildings along with its partner International Association of Plumbing and Mechanical Officials (IAPMO). These companies came together to propose ideas for the construction of many ecologically friendly buildings in India. Speaking at this event, Rajesh Saigal, Managing Director, Intertek India said, "Indian infrastructure is on verge of a revolution contributing to India's growth and progress, hence, there is a vital need to provide the impetus and the organizational infrastructure to raise quality levels across the industry. We at Intertek offer total solution for green buildings which help them to consume less water, optimize energy efficiently, conserve natural resources, generate less waste and provide cost effective healthier spaces for occupants, as compared to a conventional building."[[9]](#endnote-9)

One last environmental burden is water waste. "It's time for a new approach,'' said R. Rhodes Trussell, an environmental engineer and founder of Trussell Technologies Inc., in Pasadena, Calif. The number of emerging contaminants is outstripping the country's resources for assessing the risks, he said. Emerging constituents of concern aren't new. They've been an issue since the beginning of the environmental era 45 years ago, Trussell said. However, science keeps identifying new compounds that could pose risks, most of which are unregulated. (These statistics were conducted for the water that isn’t used for humans, like drinking water and bathing water.) [[10]](#endnote-10)

1. <http://www.careercornerstone.org/pdf/env/enveng.pdf> [↑](#endnote-ref-1)
2. <http://www.secondnature.org/history/writings/speeches/role_engineers.htm> [↑](#endnote-ref-2)
3. <http://www.engineergirl.org/Object.File/Master/9/624/Shulman_Jennifer.pdf> [↑](#endnote-ref-3)
4. <http://www.naturaledgeproject.net/Documents/ICDPaper-Final.pdf> [↑](#endnote-ref-4)
5. <http://www.sci.waseda.ac.jp/english/global/faculty/creative/index05.html#Cutting> [↑](#endnote-ref-5)
6. <http://isesco.org.ma/english/publications/Renewable%20Energy%20Technologies/Renewable.pdf> [↑](#endnote-ref-6)
7. <http://go.galegroup.com/ps/retrieve.do?sgHitCountType=None&sort=DA-SORT&inPS=true&prodId=GPS&userGroupName=va_s_128_0920&tabID=T003&searchId=R1&resultListType=RESULT_LIST&contentSegment=&searchType=BasicSearchForm&currentPosition=1&contentSet=GALE%7CA269090581&&docId=GALE|A269090581&docType=GALE&role=ITOF&docLevel=FULLTEXT> [↑](#endnote-ref-7)
8. <http://go.galegroup.com/ps/i.do?&id=GALE%7CA259010175&v=2.1&u=va_s_128_0920&it=r&p=GPS&sw=w> [↑](#endnote-ref-8)
9. <http://go.galegroup.com/ps/i.do?&id=GALE%7CA271107431&v=2.1&u=va_s_128_0920&it=r&p=GPS&sw=w> [↑](#endnote-ref-9)
10. <http://go.galegroup.com/ps/i.do?&id=GALE%7CA154155969&v=2.1&u=va_s_128_0920&it=r&p=GPS&sw=w>

    Research Design

    The processes of their work may be complicated. One can guess that it starts with a hypothesis, where most ventures begin. Then the materials must be acquired. What needs to be done is, the broad subject, needs to be subdivided into smaller parts for a more detailed analysis. Some question would include: “What factors of a business venture allow you to priorities one venture over another,” or “What are the overwhelming concepts of another firm that sway you into partnering with another firms?” Another topic that should be analyzed is the firms’ efficiency. Are they themselves eco-friendly? One limiting factor I predict that may occur is asking the question why some projects are deemed more important than others. It may be related to company secrets, or the economy, or any other lurking variables.

    Action

    I plan to attain two internships. I have been in contact with Mr. Clay Bernick a employee of the City of Virginia Department. I plan on hearing back from him about some places to intern. I have had my eye on two firms; Barney Environmental, Inc. and Davis Environmental Consultants, Inc. They are both located in Virginia Beach which is convenient and allows me to easily navigate around the area. My action relates to my research paper because I want to become an Environmental Engineer in the future. This is just a good reason for me to get a preemptive view into my intended profession. This will positively affect me in that at get an early look into my future profession. Once I confirm that I want to do this for the rest of my life I will possibly be able to create more sufficient ways to conserve resources and energy.

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