

## Two Articles mentioned at the Green Careers Panel:

### Environmental Careers- What You Need to Know (From John Hopkins University Career Center)

#### Overview

Recently the trend towards "green careers", those focused on the environment, has gained prominence. In fact, both *Business Week* ("Switching to Green-Collar Jobs," *Business Week*, January 10, 2008) and *Fortune* ("Great Green Careers," *Fortune*, April 17, 2008) have recently published articles about how to make money with a green career. Environmental careers are hard to distinguish, as each one varies by field. In general, environmental careers are careers that have an environmentally focused specialty within a specific field. Environmentalists encompass a variety of different duties, but in general, whether through research, political activism, etc., they aim to help the public learn the best way to make use of the earth's limited resources. Environmentalists "do research, produce reports, write articles, lecture, issue press releases, lobby congress, fundraise, and campaign. The daily routine depends on the specialty. Environmental researchers measure decay and its pace and patterns...Policy-determining environmentalists determine how behavior can be modified in the future to avoid these problems. Other environmental positions involve office work, policy analysis, lab work, or computer analysis. Some companies sell 'environmentally friendly' goods and services such as recyclable products or products with recycled content."<sup>1</sup>

Most environmentalist careers focus on a specific area within environmentalism, rather than the entire issue. The most common focus areas include land and wildlife, air and climate, water issues including oceans, rivers and watersheds, energy, and health. Regardless of this diversity, what unites all environmentalists is their dedication in those careers to issues related to the environment.

Environmentalists focus on a variety of issues in their work. Some of these include air quality, chemical safety, climate change strategies, endangered species protection, environmentally preferable paper and packaging, genetically modified products, global warming, pollution prevention, transportation, as well as many others.

People in environmental careers tend to work in smaller work environments, as over 50 percent of the non-profit environmental companies have fewer than ten employees. In addition, over 50 percent of companies in the environmental field rely on non-guaranteed sources of income such as federal grants, private donations, or corporate sponsorship, resulting in sometimes severely underfunded work situations.<sup>2</sup>

#### Who They Serve:

In recent years, the popularity of environmentally focused, or so-called "Green Jobs" has grown. Careers related to the environment exist in all sectors: government, non-profit, academic and business. Not-for-profit organizations account for 70 percent of the industry. Their work, aimed at aggressively educating the public about environmental causes, is often done on college campuses, where much of the scientific work is done.<sup>3</sup>

#### Areas of Specialization:

Environmental careers cover a wide range of career fields. Some concern policy, advocacy, and changing behaviors of individuals and groups related to environmental and ecological issues. Others involve scientific research aimed at developing technologies and processes to study aspects of the environment. For example, at the Environmental Protection Agency (EPA) more than half of all employees are engineers, scientists, and policy analysts. A large number of other environmental employees are legal, public affairs, financial, information management and computer specialists.<sup>4</sup>

#### Environmental Administration:

Environmental Administrators help to run environmental agencies and serve as insightful and dynamic leaders in order to make each organization more effective. These professionals have a broad understanding of environmental issues, as well as knowledge of economic, social, and political forces that impact the environment. Many have experience working in various types of organizations, as well as a Bachelors degree in environmental studies. A Masters degree is not required in the field, but is helpful.<sup>5</sup>

**Environmental Scientists and Hydrologists:**

These professionals perform "investigations for the purpose of abating or eliminating pollutants or hazards that affect the environment or plants, animals, and humans. Many other occupations deal with preserving or researching the natural environment, including conservation scientists and foresters, atmospheric scientists, and some biological scientists, science technicians, and engineering technicians. Environmental scientists and hydrologists have extensive training in physical sciences, and may apply their knowledge of chemistry, physics, biology and mathematics to the study of the Earth."[6](#)

**Environmental Engineers:**

Environmental engineers are responsible for designing, planning, or performing engineering duties in order to prevent, control and remediate environmental health hazards by utilizing various engineering disciplines.[7](#) The major fields for environmental engineers include air pollution control, industrial hygiene, radiation protection, hazardous waste management, toxic materials control, water supply, wastewater management, storm water management, solid waste disposal, public health and land management. Environmental engineering requires a B.S degree in engineering, most likely in civil, chemical, mechanical, or environmental engineering. Many have a Masters degree in environmental engineering. A background in both science and humanities is important, for it is necessary for engineers to understand how people and societies function.[8](#)

**Environmental Planners:**

Persons in this career focus on designing "schemes, programs and methods to design for future and present use of space and resources." Environmental planning encompasses a variety of fields such a comprehensive planner, an air quality planner, aviation planner, building or zoning inspector, current planner, growth management planner, recreation planner, water resources planner, or landscape architect, as well as many others. Environmental planners usually have a college degree with an advanced degree in planning.[9](#)

**Environmental Education and Communication:**

These professionals aim to help people to appreciate and understand the natural world around them. They may serve as a community affairs manager, a community activist, an environmental policy analyst, a teacher, environmental journalist, eco-therapist, or museum education staff member, as well as many other careers. People in this field have college degree as well as a background in sciences and communication skills.[10](#)

**Environmental Health Specialists:**

"Environmental health specialists use a broad background of scientific, technical, and behavioral knowledge and skills to investigate, evaluate and eliminate environmental conditions that may be harmful to people or communities. After studying the health problems and needs of the community, they plan and implement control programs in a variety of areas including ambient and indoor air quality, food, water and wastewater, noise, hazardous substances, solid wastes, land use, pests, and housing." Most environmental health specialists have a Bachelor's degree. [11](#)

**Environmental Science and Protection Technicians:**

Environmental Science and Protection Technicians perform "laboratory and field tests to monitor the environment and investigate sources of pollution, including those that affect health." These professionals collect samples of gases, soil, water, and other materials for testing and take corrective actions as assigned. They are usually under the direction of an environmental scientist or specialist.[12](#) This is a common entry-level position in the environmental fields.

**Environmental Policy and Advocacy:**

"Today's environmental managers and policy makers are focused on pollution prevention and integration of environmental considerations into economic and social decision-making."[13](#) In general, they are focusing on how social institutions and structures impinge on the environment, and subsequently research and develop new policies and legislation to help rectify the situation.[14](#) Professionals in this field are involved in policy and scientific research, environmental education and advocacy, regulatory and legislative design, technical assistance to government agencies for planning and management, regulatory compliance and enforcement, and entrepreneurial development in environmental products and services. Entry-level positions in this field can be found in government, private, international, research, nonprofit and non-governmental organizations. In most cases, a graduate degree is required in this field, but programs in public policy, environmental management, and public health or law can provide some of the necessary skills.[15](#) Environmental advocates

work to “influence public policy in social, economic, political, and cultural spheres in order to bring about justice and positive change in human rights and environmental issues.”<sup>16</sup>

## **Breaking into Environmental Careers**

### **What Employers Want:**

A must have for any environmental career in whichever sector is an understanding of the issues involved in environmentalism, such as degradation, conservation, recycling, and replenishment. While an academic background is not always required, it is definitely preferred. Some employers look to employ those who have focused their studies on environmental science.<sup>17</sup> Those who wish to go into careers focused on research and technology tend to have backgrounds in science, technology, engineering, or math. Those who wish to have a career focused on policy, education, outreach, or advocacy have varied backgrounds in things such as economics, law, social science, humanities, and public health. Employers look for people who have been involved in environmental projects, whether through research, classes, internships, or volunteer work. Nearly all environmentalists profess that a desire to better the world is a key characteristic in becoming an environmentalist. Many say that if their job did not pay, they would do the work regardless. This dedication to the issues and the job is important to employers in the environmental field.

### **What They Hire Undergraduates to Do:**

As stated above, most undergraduates are hired as environmental technicians or other positions that do not require an advanced degree, such as an environmental educator, administrator, and other fields. Entry-level positions in environmental careers are usually highly competitive and require a rigorous set of interviews in order to assure the employer that they are hiring people who can fill a number of roles and who are dedicated to hard work. Entry-level employees use many skills, “from interviewing and writing, to organizing events or mailings to raising funds, to scientific testing in a laboratory environment.” It is generally expected that entry-level employees will continue their education. Employees beginning their work in an environmental career usually tend to paperwork and phone calls. “New environmentalist learn the specific concerns of their companies, acquire contacts needed to get information quickly and accurately, and assist in the ongoing educational process. Specialization happens right away.” As environmentalists continue in their careers, their responsibilities increase, and by ten years into the career many have attained the title of vice president or its equivalent or have moved on to other industries.<sup>18</sup>

## **Learn More about Environmental Careers**

### **Resources:**

[CareerTV Videos](#)

[Environmental scientists and hydrologists: Occupational Outlook Handbook](#)

[Environmental engineers: Occupational Outlook Quarterly](#)

[Green Careers: Wetfeet Insider Guides](#)

[Guide to Environmental Careers: Vault](#) (access all vault resources through the link in J-Connect)

[Environment: Spotlight on Careers](#) (To access from off-campus, use the password and link in J-Connect)

[What's Up in the Environment](#)

[Environmental/Environmental Scientist: Princeton Review](#)

### **Industry /Professional Organizations:**

[American Academy of Environmental Engineers](#)

[Environmental Protection Agency](#)

[The American Council for an Energy-Efficient Economy \(ACEEE\)](#)

[Natural Resources Defense Council](#)

[Sierra Club](#)

[Wildlife Conservation Society](#)

### **Career Areas:**

[Agriculture, Zoology and Environment Jobs](#)

[Career Fields Dealing with the Environment: UWO](#)

[Environmental Career Guide](#)

[Environmental Career Profiles](#)

[Environmental Health: CDC/Association of Environmental Health Academic Programs](#)

### **Industry Websites:**

[The Center for a Livable Future](#)

[CREST](#)

[Environmental Literacy Council](#)

[National Environmental Trust](#)

[Natural Resources Defense Council Environmental Groups Links](#)

[State Environmental Agencies](#)

[The Woods Hole Research Center](#)

### **Related Career Fields**

**Public Health:** <http://www.phf.org/>

**Agriculture Careers:** <http://www.khake.com/page39.html>

### **Endnotes:**

1. <http://www.princetonreview.com/Careers.aspx?page=1&cid=61&uidbadge=%07>
2. [ibid](#)
3. [ibid](#)
4. <http://www.epa.gov/epahome/aboutepa.htm>
5. <http://www.uwosh.edu/es/jobs/uwo-created-web-pages/administration>
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7. <http://www.bls.gov/opub/ooq/2001/Fall/art02.pdf>
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15. [dev.sais-jhu.edu/career-services-content/resources/Sector\\_Information/2006\\_APSIA\\_Sector\\_Profiles.pdf](http://dev.sais-jhu.edu/career-services-content/resources/Sector_Information/2006_APSIA_Sector_Profiles.pdf)
16. <http://www.environmentalprograms.net/guidance/env-advocacy/>
17. <http://www.princetonreview.com/Careers.aspx?page=1&cid=61&uidbadge=%07>
18. [ibid](#)

## Top 10 Green Jobs for the Future

An explosion of public works funding could lead to a boom in greentech jobs in the future, writes Editor-in-Chief Michael Kanellos.

by: [Michael Kanellos](#)

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Advertisement

Will there be a lot of jobs in greentech in the future? Yes. Just look at the bronze plaques at the golf course or at the library.

If you live in the U.S., there's a good chance that a very large portion of your public works -the parks, the government buildings, some high schools, the swimming pools, the public art works and plazas that people actually like-bear plaques commemorating that the structures were built by the WPA, the CCC or some other new deal agency.

And, even if you can't stand Franklin Roosevelt, you have to admit he did a pretty good job. I don't think I've ever met anyone who doesn't like New Deal Futurism.

We're about to go through the same process again. The country is teetering on financial disaster, many people are unemployed, and a new president has said he will spend heavily on public works (see [Greentech Predictions for 2009](#)).

So where are the jobs? Well, my top 10 fields are:

**1. Construction:** Forget trying to encourage your kids to go to medical school. They will only graduate to complain about having to squeeze in two colonoscopies at lunchtime to make ends meet. The big money in the next decade will be in construction. More than 34 companies have applied to build 24 gigawatts worth of solar thermal plants in California alone, and that doesn't even count photovoltaic systems. Desalination plants are on the books in San Diego, Australia and the Mediterranean (see [Can Greentech Make Housing Cheaper](#) and [New \\$100M Green Building Fund Launches](#)).

There is going to be a building boom that will rival the New Deal, the armament process in World War II, the interstate highway system of the 1950s, and the explosion of universities and suburbs in the '70s. My favorite green company these days is probably Webcor, the contracting giant.

Take it from me. Get your kids a hardhat and teach them to spell "change order," "cost overrun," and "rush premium" at a young age.

**2. Sustainability Officer:** Right now, most sustainability officers are there accidentally. He or she organized a recycling drive once, got tagged as a lefty and was appointed by default. But it will become a more regular title in companies. And it's a good job. Basically, it involves sitting at a desk and listening to representatives from biofuel, solar, wind, HVAC and virtualization companies grovel for your business. "Your air side economizers displease me," you will announce. It will be the equivalent of being an IT manager in the '80s with a key difference: You won't get fired over sudden, catastrophic network crashes.

**3. Biologist:** Back in the 1999 and 2000, futurists such as Jim Clark and Steve Jurvetson talked about how synthetic biology and genetics would influence the development of industrial products. Audience members would nod their heads but mostly just faked actually understanding what was going on. Now we know. Genomatica, which started in pharma, has bred microorganisms to produce industrial chemicals while Marrone Organic Innovations uses microbes as pesticides. Microbes are also moving into semiconductor manufacturing through companies like Cambrios. Microbes are essentially little chemical factories that run on sunlight and garbage instead of fossil fuels. They work in fetid conditions and at the end of the day you can split them open and sell their entrails for cash. Try to do that with your new hire from Penn State (see [Amyris: We're Better Than Biodiesel, Ethanol or Gas](#)).

**4. Chemist:** Serious Materials, the green drywall guys, substitute chemical catalysts for heat in their manufacturing. Green cement maker Calera and Cal-Star Cement do something similar. Skyonic uses chemistry to sequester carbon dioxide. In the 1980s and '90s, students flocked to electrical engineering and computer science because computer companies offered the best financial rewards. In the future the hot engineering departments will be chemical and mechanical.

**5. Land Use Planner:** Otherwise known as a CCA Weenie. But let's be serious. To cut down on transportation, more people will have to live in dense urban environments, and that will take planning. A city shaped only by the forces of the market and individual freedom looks like New Delhi. ("Who says I can't put a slaughterhouse here? What happened to property rights, dammit!") A city that agrees to live under the regulatory thumb of planners and committees looks like Tokyo. Downside: A career in planning means spending time in lots of meetings.

**6. Garbage Consultant:** Recycling, biomass and trash will be sources of: 1.) energy; 2.) raw materials; 3.) precious metals; and 4.) materials for household furnishings in the future. Just look at the TV market. In 2008 and 2009, John Shegerian, CEO of Electronic Recyclers (ER), one of the largest e-waste recyclers in the U.S., told me a while back. The glass in an old tube TV consists of about 22 percent lead.

Even without the digital TV mandate (which kicks in on February 17, 2009), the e-recycling business is booming. Roughly 65 million pounds of e-waste was recycled in 2005 in California alone after the state passed a recycling law and the figure shot up to 120 million pounds in 2006. More than 200 million pounds was hashed in 2007. Cue up the "Sanford and Son" theme.

**7. Interior Designer/Building Operations Manager:** LEED-certified buildings and homes sell and rent for more than their non-LEED counterparts. AMD's uber-LEED Lone Star campus has become a selling point for recruiting. Building to LEED-certified standards can also be cheap: It only adds around 2 percent to the total costs, according to, among others, Paul Holland at Foundation Capital. (Remember that stat -- it comes in handy.)

The trick is navigating the design issues to get LEED points without blowing the budget. Hence, your job will be to determine whether counters of ground up paper pulp or recycled bottle glass make the most sense.

**8. Interface Designer:** Software, meet the rest of the house. Tendril, Greenbox and several other startups stand to make big bucks selling easy-to-use software for thermostats and the other currently "dumb" devices in your home. Cars will get an interface workover too. Ford retained Ideo to redesign its dashboard on its hybrids to increase fuel economy. Nissan has the eco-pedal, a gas pedal that vibrates when excess acceleration begins to erode gas mileage.

**9. Foot Massager:** Another Tokyo thing. In the next few decades, more people will have to move to cities. Cities are naturally stressful and green, open spaces get minimized. Plus, if global warming persists, you really won't want to hang out in the sweltering outdoors: It'll be too easy to catch malaria. Thus, people will find ways to relax indoors. Expect a boom in spas, odd interior exercise spaces and the like. Flat-screen TV inside a sauna? Perfectly normal in 10 years. It sounds like something out of "Soylent Green," but once you got past all of the unwashed masses outside of Charlton Heston's apartment, the future looked sort of cool.

**10. Food Scientist:** Judging by the newspapers, there are two types of eaters in America: The obese and those poisoned by e coli. The whole food chain will get reworked in the next 20 years (see [Killing to Be Green](#)). Food will get made more locally and expect to eat a lot more algae supplements. (Hey, it's Soylent Green again.) The real upside to this one is that you will be popular. I don't think I've been to a party in the last five years where people didn't discuss the latest snack food from Trader Joe's.

**Cool Climate Jobs** ([www.coolclimatejobs.com](http://www.coolclimatejobs.com)) is a new and exciting online job resource for careers in climate change, renewable energy, and other green collar industries. Jobs with NGOs, non-profit organizations, local and national governments, as well as private industry from around the world are featured on the site. Current job posting categories include:

- Carbon Capture and Storage
- Carbon Footprinting and Inventory
- Carbon Trading and Finance
- Climate Adaptation
- Climate Policy

- Climate Science
- Communications
- Consulting
- Energy Efficiency and Innovation
- Green Building/Architecture
- Renewable Energy Installation
- University Lecturing and Research
- And more...

New jobs are posted all the time so check frequently, subscribe to the RSS feed, and join the Facebook Group. The site is also optimized for i-phone mobile web.

As the only career website in the U.S. devoted exclusively to the climate and renewable energy industry, Cool Climate Jobs provides one-stop browsing for job seekers.