It’s Getting Easier to Be Green: Jobs in Green Science

“People well versed in environmental topics, or productive in developing methods that lighten the environmental footprint, will be highly sought, key players in the development of the new economy—and well rewarded.” — Mario Mettich, communications manager for environmental health and safety at Con Edison.

Green jobs are red hot. For scientists, an expanding employment spectrum deals with the survival of people, plants, and planet. By Carol Milano

Whatever you’ve studied—physical science, medicine, engineering, any life science from agriculture to zoology—qualifies you for some kind of environmental job. Many don’t require Ph.D.s; most will utilize, and often expand, your skills and training.

Which green problems catch your attention—pesticides in foods, new recycling possibilities, fossil fuel alternatives, causes of polar ice melt? The list is as endless as the approaches. Here are some examples:

Greg Koch of Coca-Cola leads an international team of over 300 groups involved in the integrated global water strategy he helped establish. They strive to reduce the amount of, and safely recycle, water used to manufacture Coke’s beverages, and replenish community water supplies through locally relevant projects.

As vice president for research at the Environmental Working Group, Jane Houlihan oversees scientists at the Washington, D.C., nonprofit’s busy labs. Their thorough reports about consumer product safety—from sunblock to toys to bottled water—garner wide attention.

Kathy Loftus, national energy manager for Whole Foods Market, coordinates energy procurement and management. She supervises green design, construction, and maintenance for Whole Foods’ 270 sites, and helped develop the US Green Building Council’s coveted certification for supermarkets.

New York City Department of Environmental Protection ecologist John McLaughlin leads a project exploring urban oyster beds as natural water filters. Challenges include introducing shellfish restoration in locations as unlikely, and possibly uninviting, as wastewater treatment plants.

Skills and Specialties

Green jobs typically involve a range of proficiencies. The ability to conduct research in widely varied roles and settings, in labs or on location, is clearly a critical skill. Scientists study particular environmental factors, seeking ways to identify, predict, and lessen negative impacts. Through monitoring and evaluating activities, scientists track algal blooms, rainfall shifts, frog survival, air quality, possible toxins in decomposing trash—anything affecting or resulting from an environmental factor. Findings are sometimes controversial, requiring some skill in communicating with the public and media, too. Scientists in a specific green area might need to design, develop, and implement problem-solving approaches. These may be local and short-term, like testing water quality, or as widespread and complex as reducing greenhouse gas emissions. Training, educating, and communicating is of increasing importance these days; employees and the public need updates on new findings and approaches. Environmental health and safety (EHS) managers often handle internal training, while outreach specialists—typically at government or nonprofit organizations—inform citizens and spur support for environmental improvements.

Where the Jobs Are

Every employment sector now has environmental concerns and green jobs:

Academia: Besides faculty and research positions, some universities have prominent environmental affiliates, like Scripps Institute for Oceanography (University of California, San Diego), or Strategic Energy Institute (Georgia Institute of Technology).

Industry: Amidst efforts to reduce energy use and pollution, EHS is a rapidly growing profession. Fortune 500 corporations have become leaders in seeking national environmental reforms. One example, the outdoor clothing maker, Patagonia, was an early adapter of green technologies for its buildings and products.

Government: Municipal, state, and federal departments regulate everything from emissions to agriculture to water safety. California Department of Toxic Substances scientists explore innovative dioxin cleanup—even bioremediative mushrooms. The Recycling Bureau at New York City’s Department of Sanitation conducts an ambitious composting program.

The list of green science jobs is as endless as the approaches.

Kathleen Sayce

UPCOMING FEATURES

The Road to Diversity in Science: Are We There Yet? — April 24
Careers in Biotech and Pharma — May 8
Diversity Feature: Asian American Scientists — May 29

www.sciencecareers.org/businessfeatures

1509
Nonprofits: Thousands of associations, organizations, and foundations handle green issues through advocacy, education, research, recreation, or a combination of these. Nonprofits can be small and local like Sustainable South Bronx, or high profile and nationally active like the Environmental Defense Fund, or global innovators, like the Bill & Melinda Gates Foundation.

Quasi-public: Privately-owned, government-regulated companies like Detroit Edison or the Port Authority of New York/New Jersey provide essential services including water, electricity, and transportation. Their scientists explore newer, cleaner, more affordable energy sources.

Profiles in Green: It's All About the Science
Botanist Kathleen Sayce is the bank scientist at Shorebank in Ilwaco, Washington, a 12-year-old financial institution committed to a sustainable economy. Known for her work as science director at a local waterfront alliance, she was invited to apply, joined the bank in 1998, and helped develop evaluation criteria for loans.

“We consider where an applicant is now, the environmental impacts of how they do things, and steps they can take toward their goals,” Sayce explains. “When our evaluation shows problems we consider important, we can help solve them, starting with simple actions like more recycling or better windows for daylighting.”

Reporting directly to Shorebank CEO (and Ph.D. physicist), David Williams, Sayce sets her own work schedule and annual goals. One-third of her time is at client meetings, often about developing more efficient, cost-effective energy use. Scientific training is “important background for a lot of our processes. If you don’t keep anchored in the science, you’ll get lost,” Sayce and Williams believe.

Sayce says she’s been surprised at how easily traditional scientists “cross over to insurance, finance, brokerage, or analytic work. Scientific training gives you comfort with numbers and logic.” Sayce finds. “I love the job and the pace—never knowing day to day what I’ll be asked to work on.”

Profiles in Green: Forecasting Climate Change
No one was hiring biogeologists when Ron Neilson completed his Ph.D. during the 1980s recession. Before climate change became a global issue, a series of academic jobs led him to merge population biology and pipeline ecology. Using math and computer skills, he developed systems models showing 150 years of climate variability.

When 1986 legislation funded a national climate change research facility at the US Environmental Protection Agency’s Portland, Oregon, environmental lab, Neilson called to offer a seminar on Northwest acid rain. It was a success; he instantly volunteered another, on climate change and vegetation. “When I wandered in, my [current] job was ending,” he recalls. “They were looking for someone to hire. With my huge perspective on jet streams, weather, and global currents, my visit became a job interview, with an immediate offer.”

As chief scientist, he established nationwide cooperative agreements for massive case studies among 50 institutions. Displeased with EPA politics, he moved to the US Forest Service’s Corvallis, Oregon, research lab. As their bioclimatologist, Neilson and several postdocs he’d hired developed one of the first—and statistically most accurate—biogeographic climate models. Adapted by other nations, NOAA, and the Weather Channel, Neilson’s model is now used to forecast seasonal forest fire risks.

“I don't think I could have built [this] research infrastructure and capability on soft money,” he reflects. “It took the guaranteed support I get from federal agencies. I'm very happy with my great freedom as a federal employee.”

Profiles in Green: Listening to the Oceans
Scuba diving heightened Nancy Rabalais’s marine biology interests during high school, in coastal Corpus Christi, Texas. She surveyed natural reef sea squirts for her Master’s, gave beach walks and slide shows as a national park seashore naturalist, and assessed Texas’s continental shelf while a research associate. Seasick on large boats and disliking small ones, Rabalais found a land-based marine specialty for her zoology Ph.D.: fiddler crabs.

Increasing involvement in invertebrate taxonomy and community ecology led her in 1983 to a job at a statewide nonprofit, exploring oil and gas development’s effects on marine ecology. She became Louisiana Universities Marine Consortium’s executive director in 2005. “It’s a real chance to help LUMCON grow,” Rabalais reflects. “We try to increase ocean literacy, for example. Our Bayouside Classroom for middle school kids won a National Science Foundation award.”

Rabalais team-teaches biological oceanography at Louisiana State University, and continues her own research on Mississippi River-Gulf of Mexico interactions, forming the world’s second largest dead zone. Serving on many boards and panels, she travels frequently for LUMCON. “This is an exciting time for ocean and marine biology. They’re a growth opportunity—or should be: oceans drive climate. People moving to coasts put more pressure on coastal habitats. Ecology isn’t one estuary or gulf—it’s global,” she declares.

Profiles in Green: Heeerrrrre’s... Mario
As EHS communications manager at Con Edison in New York, Mario Mettich updates the company’s 1,400 employees on environmental initiatives and important procedures, like handling hazardous substances safely.

For the quasi-public corporation’s annual report—featuring environmental consequences of company operations—his data-gathering, coordination, and writing take six months. He produces and writes a monthly Intranet video news magazine, ghostwrites safety and environmental speeches, and organizes an annual environmental forum conference for Fortune 500 executives. “I’m the Johnny Carson of EHS,” jokes Mettich.

His physics degree “acquaints me with the scientific method when evaluating data, providing a very broad foundation. Many...”}

Continued »
physics principles are in applied technologies like engineering or process controls,” observes Mettich, whose first job was editing an American Institute of Physics journal. He later became marketing communications vice president at an electronics manufacturer.

Mettich sees the EHS role growing continually, across industries. “My peers at ABC, Colgate-Palmolive, or Disney all work on the same issues. The mission of environmental specialists remains [consistent]: conducting sustainable practices.”

Profiles in Green: The Human Factor

“Climate change is an intellectually stimulating sector, very complex, with many possibilities for how this will come together,” says Heather Kaplan Coleman, senior policy adviser on climate change for Oxfam America. “I see it crossing many fields—a global humanitarian issue and an energy issue.”

Working at a Washington, D.C., advocacy center in 1997 inspired her to seek some green experience. By 2001, “I knew why I was interested in the environment—it was about changing the way we think about and use energy in the United States. I became more interested in human communities, not just animals and air.” Instead of pursuing federal climate-related jobs after earning her Master’s, Coleman chose regional and state climate policy, “where the action has been.”

She built her reputation at a regional air use consortium and a think tank, Environment Northeast. When Boston-based Oxfam America began addressing climate issues, “they had no one with climate change or policy experience, and found me,” recalls Coleman, who was eager to move into international negotiations. “It’s a hugely expansive, eye-opening learning experience, bringing a different perspective to people around the world, seeing that we can support those who need to adapt. How do we get the developing world on track with us? This is much more advocacy-based than what I’d been doing, more analytic.”

Job Hunting

It’s an exciting time for green employment, reports Frank DeSafey, vice president of Sequence Staffing, an environmental and engineering placement firm in Roseville, California. “We’re busier than ever, and don’t see any lack of money. The world’s limited amount of resources means shortages, pollution problems, and more competition for land, water, and other natural resources. They’re all becoming critical.”

Already, Sequence Staffing is recognizing specific environmental areas with new opportunities for scientists. Geologists, environmental chemists, and engineers are needed for remediation programs, which face challenges like water purification and decontamination of brownfields. They’re developing innovative biochemical processes that go beyond carbon, filtering, and dilution.


Any environmental science background can open several doors. One is at the intersection of agribusiness and recycling, where waste management and water reuse are two rapidly growing examples. Another evolving sector is sustainable building practices. Both residential and commercial buyers are increasingly asking for green(er) buildings, with recycled materials and a smaller environmental footprint. Aside from environmental science, employers in these areas welcome land use or chemistry experience.

Renewable energy is on a fast track, too, with everything from biofuels to nuclear to hydropower being explored. Each energy source requires its own gamut of specialists, and demand is surging. In 2008, the solar energy field employed 35,000 people in the United States. If the US Department of Energy pursues its goal of 20 percent wind power by 2030, Desafey forecasts increases in this field of 10 times the current 50,000 jobs. Specialists needed for windpower positions include ecologists, climatologists, and electrical engineers.

As early environmental specialists’ retirements create significant mid-level demand, especially for project managers, Sequence seeks people with technical degrees and management experience. With periodic hiring freezes, federal agencies have relatively few younger employees, notes Neilson, anticipating some upcoming opportunities for scientists.

Even in a thorny job market, prospects in the green sector remain (at least relatively) encouraging. And many professionals working in green fields discover that their rewards go well beyond the paycheck. Rabalais of LSU is often called to Capitol Hill to review bills or testify before Senate and House committees on natural resources. “My testimony has helped lead to appropriations,” she says with pride. “My job is very fulfilling. I never expected this when I was chasing around fiddler crabs!”