

Is a Sustainability Career on Your Green Horizon?

James Hamilton
August 2012 — Report 7

In addition to being vital to many people, protecting the environment has become an important goal for many organizations. A way to achieve this goal is to pursue sustainability, which is using resources to meet present needs without compromising future resources. Although sustainability most often is associated with environmental protection and conservation, it also has social and economic impacts. In fact, many companies adopt sustainability strategies to increase profits, and the environmental aspects become an added bonus.

Sustainability professionals help organizations achieve their goals by ensuring that their business practices are economically, socially, and environmentally sustainable. Sustainability is a diverse field that includes a wide variety of professionals. Sustainability professionals can be business managers, scientists, or engineers; or they can come from other backgrounds. Although their specific career paths might differ, sustainability professionals promote environmental protection, social responsibility, and profitability.

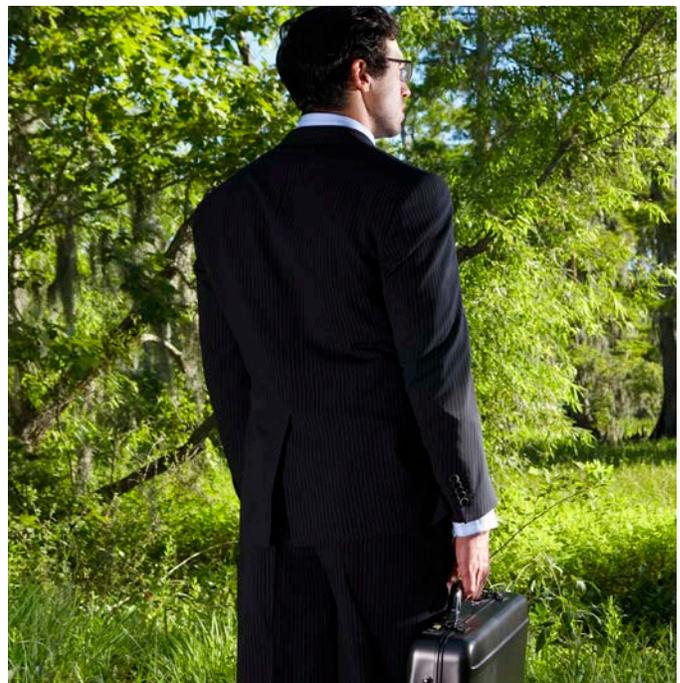
This report provides information on careers in sustainability. The first section explains sustainability, with the next section detailing the reasons behind corporate sustainability. The final section profiles key occupations in sustainability. The information for each occupation includes a brief job description; the credentials such as education, training, and certification or licensure needed to work in these occupations; and wage data.

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What is sustainability?

The most common definition of sustainability comes from a 1987 United Nations (UN) conference. In a report, the UN defined sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”¹

Alternately, according to a report from the National Association for Environmental Management, sustainability is “a term that describes a company’s strategies for acting as a responsible corporate citizen, ensuring its operations are financially sustainable and minimizing its

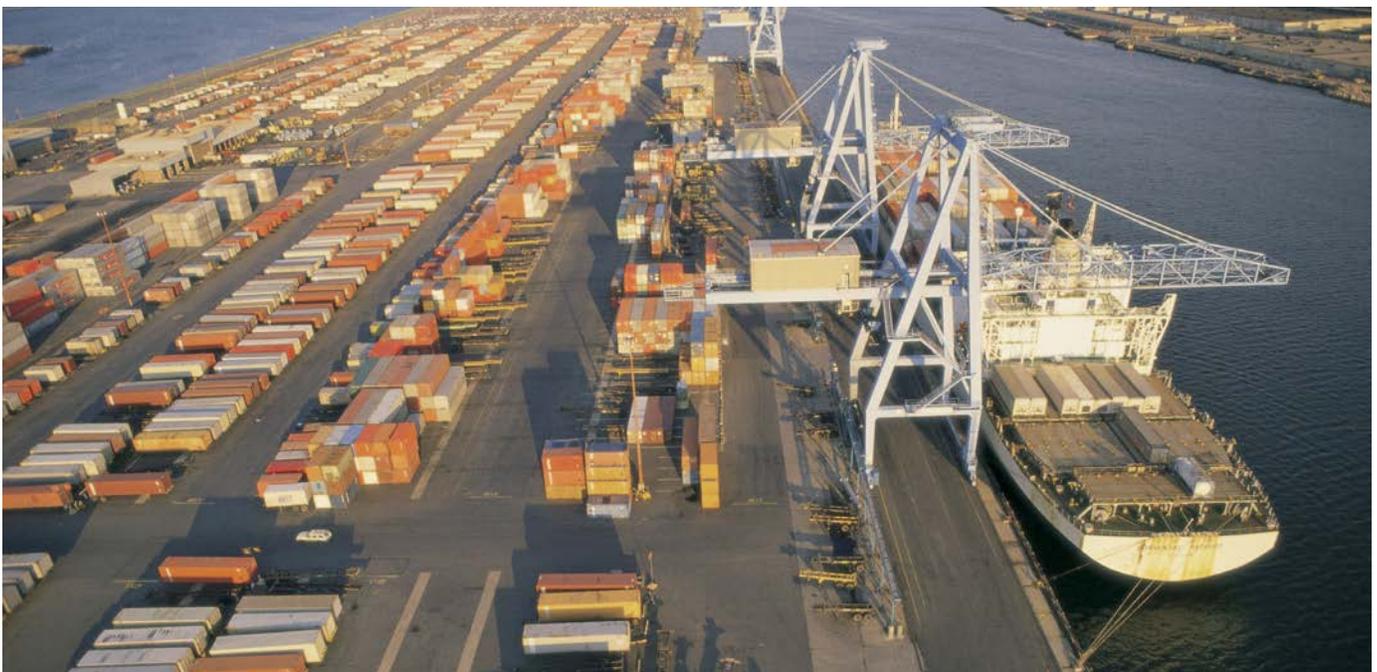


environmental footprint. Sustainability initiatives may include natural resource reduction, supply chain management, worker safety and health initiatives, stakeholder engagement and external reporting.⁷² External reporting involves reporting information on a company's environmental and safety record to the general public, or to government agencies.

The environmental aspect of sustainability focuses on the goals of protecting the environment and the conservation of natural resources. To accomplish these goals, sustainability professionals help organizations, such as businesses, government agencies, and non-profits implement policies to manage the resources consumed and the waste generated by an organization. For example, a sustainability professional might suggest that an organization reduce the amount of packaging it uses when it ships its products, and a reduction in packaging could help the company decrease the amount of raw material it consumes and as the environmental cost of shipping products. Less material used in packaging would cut down on materials cost, as well as weight and space taken up during transport. Since the products would take up less space, there would be fewer shipments. Fewer shipments mean less energy used for shipping products, as well as lower emissions. For example, fewer shipments made by trucks would reduce fuel consumption and lower the amount of exhaust emitted into the air.

To fulfill sustainability's social aspect, sustainability professionals attempt to minimize the negative effects and to promote the positive effects of the organization's activities on stakeholders. Stakeholders are persons or groups, such as employees, customers, and citizens of surrounding communities, who have an interest in the organization and its activities. Sustainability professionals work to ensure that the workplace is healthy for employees and that the products or services the organization provides are safe for consumers to use. Some sustainability initiatives affect more than one stakeholder. Many companies promote corporate responsibility where they will provide pro bono products and services to the needy, or make attempts to lessen their environmental impact. For example, although many companies are required by law to keep emissions below a certain level, a sustainability professional might help a utility company lower its smokestack emissions to an even lower level than required. This additional reduction would benefit the health of workers and local citizens, as well as provide the company with positive publicity to entice new customers and retain current ones.

Sustainability can affect current and future profitability. Whether they work for private corporations, government agencies, or non-profits, sustainability professionals strive to ensure that the costs of implementing a sustainability program are worth the expected benefits. Because organizations would not knowingly implement





sustainability policies that could cause them to become financially unsound, sustainability professionals help a company's leaders understand the benefits of implementing such techniques, by explaining future cost savings. For example, energy-saving techniques, such as installing motion detectors and changing light bulbs require an upfront investment, but result in future savings.

Sustainability issues facing companies today

Many organizations are implementing sustainability measures for a variety of reasons. Sustainability allows companies to increase profits, to manage risks, and to engage stakeholders, such as employees, the local community, and shareholders. By pursuing sustainability, many organizations are able to run more efficiently, improve corporate reputations, retain employees, and have a more positive impact on their communities. In addition, there are other benefits to practicing sustainability. These include minimizing the effects of rising costs for energy; complying with increased regulations at the federal, state, and local levels; and pleasing customers who expect organizations to be environmentally and socially responsible.

Prices for oil, natural gas, coal, and other energy sources have been volatile over the past several decades. Most prices have been on an upward trend with significant fluctuations. Experts believe that U.S. energy prices

will continue to climb, because of a limited supply of energy sources (due to a wide range of factors) and increased demand from other countries, particularly China.³

Increasing costs have led many firms to seek ways to cut back on the amount of energy used in everyday operations. Companies have been finding new ways to do more with less. This includes reducing the amount of energy used for production and other operations, in addition to finding alternative sources of energy. Alternatives include wind, solar, and biofuels (fuels derived from renewable sources, such as corn, grass, or algae).

Federal and state governments have been enacting climate change regulations. The U. S. Environmental Protection Agency has recently been granted the authority to regulate greenhouse gas emissions,⁴ and many states have enacted legislation to limit carbon emissions with the goal of reducing their carbon output. Companies in these states will be under increasing pressure to reduce their carbon footprint (the amount of carbon a company releases into the atmosphere), or face increased regulation and possible fines for their emissions.

Consumers are increasingly paying attention to companies' environmental records. Consumers base decisions on products or services to purchase at least partially on environmental factors. Companies that have a positive environmental record can appeal to these environmentally sensitive consumers. In addition to consumers, many environmentally conscious businesses and other organizations prefer to work with, or purchase, goods or services from organizations that also are conscious of the

environment. Thus, by implementing sustainability measures, companies will be able to appeal to more customers.

A study entitled “2009 Greening of Corporate America” surveyed large firms to find out about their sustainability practices. It was a follow-up to a 2006 study.⁵ Three quarters of respondents in 2009 reported that they were engaging in sustainability activities, double the percentage from the 2006 study. Sixty-one percent of respondents in 2009 reported having a person or team dedicated to sustainability. The 2009 study also found that 70 percent of firms employed three or more sustainable practices, with the most common being waste management and recycling. These findings illustrate that sustainability is adopted increasingly as corporate practice. Concerns about corporate impact on the environment and local and global communities are being incorporated into strategic business decisions. Sustainability is becoming part of how companies do business in the United States, rather than being viewed as a cost.

Who are sustainability professionals?

A job in sustainability encompasses the concept of stewardship—the responsible management of resources. Sustainability professionals seek to improve an organization’s environmental, social, and economic impact. Some have specific titles such as sustainability manager and director of corporate responsibility. Sustainability professionals in other roles may have had experience as industrial managers, logistics (transportation, storage, and distribution) managers, environmental scientists, civil engineers, or recycling coordinators, among others. Many of these workers are dedicated to sustainability, but some may have sustainability responsibilities, in addition to their primary job duties. These workers might implement corporate recycling programs, install equipment to increase efficiency, and monitor processes to ensure their proper function.

There is no set career path for jobs in sustainability; these jobs have varying responsibilities across different organizations. For many organizations, sustainability is ingrained in their cultures and is the responsibility of many employees. Thus, these organizations may not have dedicated sustainability staff, but still pursue sustainability.

Many large corporations, some non-profit organizations, and some government agencies employ sustainability professionals. Some organizations do not employ their own sustainability professionals, but still seek advice on sustainability practices. Such organizations frequently hire consultants from sustainability firms to offer specialized skills and services, as well as additional temporary manpower for specific projects.

The Bureau of Labor Statistics (BLS) currently does not have data on the number of workers involved in sustainability activities. However, data on employment related to the use of environmentally friendly technologies and practices are available from the Green Technologies and Practices survey.⁶ Although many different workers may be involved in carrying out day-to-day sustainability operations, the BLS definition of a green job involved in green technologies and practices is one whose primary duty is related to the use of environmentally friendly production processes. Workers must spend more than half their time involved in researching, developing, maintaining, installing and/or using technologies or practices to lessen the environmental impact of their establishment, or in training other workers in these technologies and practices to be considered in a green job.

Management Occupations

Sustainability managers come from diverse backgrounds, have different job titles, and perform a broad range of duties. Sustainability managers are responsible for developing and implementing an organization’s sustainability



plans and presenting these plans to senior staff. They might also be responsible for ensuring that an organization is in compliance with environmental, health, and safety regulations. Many sustainability managers rely on their public relations and communications skills to work with concerned citizens in local communities.

Managers typically work in an office environment. Some may work long hours and travel frequently for meetings and other business operations.

Chief executives include high-level positions, such as chief sustainability officer, environmental vice president, and director of corporate responsibility. These executives develop and direct sustainability strategies. According to *The New York Times*, “The titles vary, mixing and matching “chief” and “vice president,” “sustainability” and “environmental,” making it impossible to track how many people fill the role. But whatever they are called, the new environmental chiefs—many of them named in the last 2 years—wield extraordinary power.”⁷ However, certain models are becoming common. A chief sustainability officer is a stand-alone position that coordinates sustainability strategy and activities. A vice president of sustainability is a top leader that is responsible for reducing the environmental impact of a company, its operations, and its products. Some companies use a team-based approach where a cross-functional team addresses issues of sustainability.

General and operations managers work to ensure that sustainability strategies are implemented in day-to-day operations and that any sustainability measures are incorporated into the production process.

Industrial production managers plan, direct, and coordinate the production activities required to produce a vast array of manufactured goods. These managers may also be responsible for improving the industrial production process and to find ways to reduce waste and improve efficiency, while remaining in budget.

Transportation, storage, and distribution managers are vital to finding ways to reduce waste and make movement of goods more sustainable, because transportation, storage, and distribution are very energy-intensive and require many resources. This could include changing the shipment of certain goods from trucks to trains, ships, or other more efficient methods of transportation. They may also improve the flow of goods to cut down on storage

time, which lowers the need for warehouse space, and saves energy associated with storage. Logistics managers are included in this occupation.

Credentials

Chief executives and industrial production managers typically have at least a bachelor’s degree. That degree can be in a variety of fields, but business management, environmental science, and engineering are the most common. Several newer programs offer degrees or certificates in sustainability or environmental management. Many larger organizations prefer that senior managers also have a graduate degree, such as a Master of Business Administration (MBA), or a master’s degree in the field in which the manager works. General and operations managers typically need an associate’s degree to enter the occupation, but transportation, storage, and distribution managers may enter with a high school diploma. In addition, these managers need several years’ experience working in their field before they become managers.

Wages

BLS does not have wage data specifically for sustainability occupations. The table below shows median annual wages in May 2011 for management occupations that include sustainability professionals. The wages shown are median annual wages for the United States as a whole; wages vary by employer and location.

Selected management occupations	Median annual wages, May 2011 ¹
Chief executives	\$166,910
General and operations managers	95,150
Industrial production managers	88,190
Transportation, storage, and distribution managers	80,860

¹ Occupational Employment Statistics data are available at www.bls.gov/oes. The data do not include benefits.

Science Occupations

Scientists who work in sustainability devise technical solutions for reducing waste and cutting costs. They assist in the development of strategies to increase safety and to reduce the risk of illness and injury for a company’s employees. Some scientists often serve as advisors to sustainability managers and are involved in

performing research to minimize a company's environmental impact. Many sustainability scientists also serve as consultants, working as technical experts at firms that specialize in providing sustainability services to companies that do not have their own sustainability staff, or those who need specialized knowledge to implement sustainability strategies.⁸ Many people with a science background move into management positions and become top-level decision makers in the business community. They use their technical knowledge to guide an organization toward more sustainable practices and are frequently promoted to top-level management positions.

Occupations in scientific research and development have become increasingly interdisciplinary, and as a result, it is common for biological scientists, chemists, materials scientists, and engineers to work together as part of a team. Most scientists work in an office or laboratory and also spend some time in manufacturing facilities with engineers and other specialists. Some scientists, such as environmental scientists or conservation scientists spend a large portion of their time working outdoors, studying the natural environment.

Atmospheric scientists study the effects of air pollution and the effects of a company's operations on the overall environment.

Biochemists and biophysicists study the chemical makeup of organisms. They may also study the effects of pollution on these organisms and determine ways to reduce the impact of pollution, as well as ways to reduce its effects.

Chemists and materials scientists develop new chemicals or materials that have a lower environmental impact than materials used in current operations.

Conservation scientists manage the use and development of natural resources. They advise landowners on the use and management of their land and may design and implement programs that make the land healthier and more productive. Some will work to conserve and restore public and private lands.

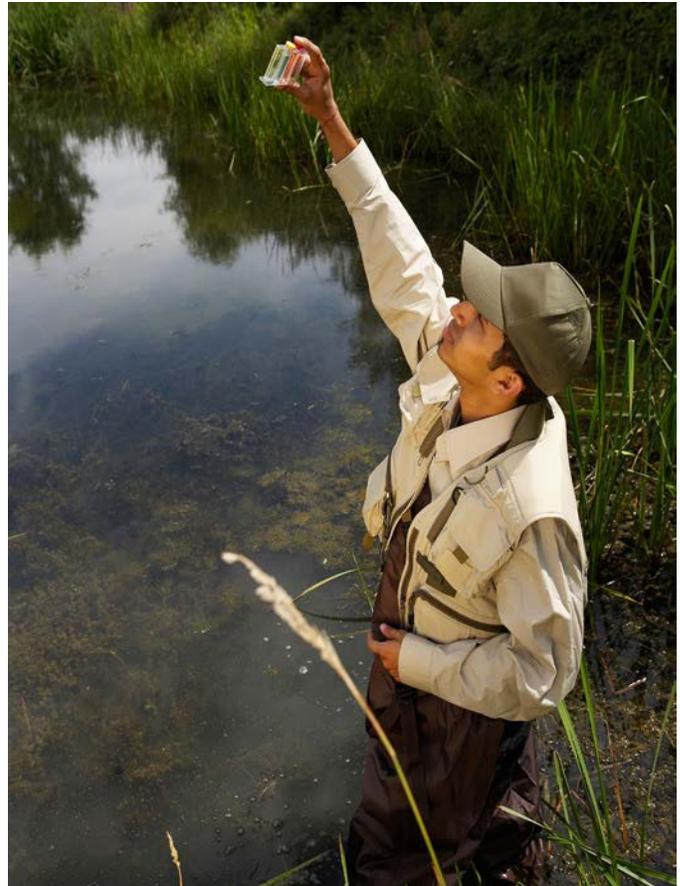
Environmental scientists use their knowledge of the natural sciences to protect the environment by identifying problems and finding solutions that minimize hazards to the health of the environment and the population. They

analyze measurements of air, food, water, and soil to determine the way to clean and preserve the environment.

Microbiologists study microscopic organisms, such as bacteria and viruses. Many bacteria or other microscopic organisms can be used to clean up pollution, or using bacteria, yeast, or other microbes to develop new biofuels, the need to use fossil fuels can be reduced.

Natural sciences managers are both managers and lead scientists. They oversee the efforts of scientists working on sustainability issues. For example, if there are multiple scientists, such as a chemist, atmospheric scientist, and an environmental scientist working on a large project, the science manager will oversee and coordinate the efforts of the other scientists.

Soil and plant scientists study local plants and the soil that supports them. They look for diseases or chemicals present in the plants and soil that results from pollutants and study ways to remove these pollutants and to prevent further pollution.



Credentials

The typical entry-level education for the scientist occupations above is a bachelor’s degree, except for biochemists and biophysicists, who typically need a doctoral degree to enter the occupation. Also, although a bachelor’s degree may be sufficient to enter many of the scientist occupations, a master’s or Ph.D. may be needed to conduct research and develop new products. Scientists working in sustainability frequently have degrees in environmental science, chemistry, or one of the biological sciences.

Wages

BLS does not have wage data specifically for sustainability occupations. The table below shows median annual wages in May 2011 for scientist occupations that include sustainability professionals. The wages shown are median annual wages for the United States as a whole; wages vary by employer and location.

Selected science occupations	Median annual wages, May 2011 ¹
Atmospheric and space scientists	\$89,790
Biochemists and biophysicists	79,230
Chemists	69,760
Conservation scientists	59,530
Environmental scientists and specialists, including health	62,920
Materials scientists	84,600
Microbiologists	65,230
Natural sciences managers	114,770
Soil and plant scientists	58,940

¹ Occupational Employment Statistics data are available at www.bls.gov/oes. The data do not include benefits.

Engineering Occupations

Engineers who work in sustainability devise technical solutions for reducing waste and cutting costs. They also might be responsible for developing methods to increase safety and to reduce the risk of illness and injury for a company’s employees.

Engineers are employed by a variety of organizations, including manufacturers, government agencies, and consulting firms. Most engineers work in offices or laboratories; but they may travel frequently to other worksites, such as industrial plants and construction sites.

Chemical engineers work to minimize the environmental impact of chemicals used by a company in production processes. These engineers may focus on using renewable resources to produce chemicals that are not derived from fossil fuels, or on developing chemicals that are biodegradable and do not result in pollution of the environment.

Civil engineers are involved in green building and designing structures that will operate efficiently, reduce pollution, and decrease carbon output.⁹ They also design water supply and sewage treatment facilities.

Environmental engineers use the principles of biology and chemistry to develop solutions to environmental problems. They are involved in water and air pollution control, recycling, waste disposal, and public health issues.

Health and safety engineers strive to prevent harm to people, property, and the environment by applying their knowledge of systems engineering and workplace health and safety factors. Using this specialized knowledge, they identify and measure potential hazards, such as the risk of fires and the dangers involved in handling toxic chemicals. They also recommend appropriate loss-prevention measures, according to the probability of harm and potential damage.



Industrial engineers determine the most effective ways to use the basic factors of production—people, machines, materials, information, and energy—to make a product or provide a service. Industrial engineers look for ways to improve efficiency, and implement these strategies to make a company produce more with less.

Credentials

Engineers usually have a bachelor’s degree in an engineering field. Engineers that focus on sustainability usually have work experience in fields that can be applied to sustainability programs. Licensure as a professional engineer (PE) is desirable and often required, depending on an engineer’s specialty. Entry-level engineers work under the close supervision of senior or supervisory engineers and may assist senior engineers on sustainability projects.

Wages

BLS does not have wage data specifically for sustainability occupations. The table below shows median annual wages in May 2011 for engineering occupations that include sustainability professionals. The wages shown are median annual wages for the United States as a whole; wages vary by employer and location.

Selected engineering occupations	Median annual wages, May 2011 ¹
Chemical engineers	\$92,930
Civil engineers	77,990
Environmental engineers	79,050
Health and safety engineers, except mining safety engineers and inspectors	75,470
Industrial engineers	77,240

¹ Occupational Employment Statistics data are available at www.bls.gov/oes. The data do not include benefits.

Other sustainability occupations

In addition to managers, scientists, and engineers, many other occupations are involved in the sustainability field. These include accountants and auditors, business operations specialists, and compliance officers.

Occupations in this group work mostly in an office environment but may travel to worksites to conduct inspections and to make cost estimates.

Accountants and auditors measure the impacts of sustainability programs. They determine the monetary savings and costs associated with these programs and may measure non-monetary aspects, such as environmental performance and the amount of waste reduction.

Business operations specialists is a broad category that includes recycling coordinators and energy auditors. Recycling coordinators coordinate recycling programs for governments and private firms. Firms recycle many of the materials used in production and operations, such as excess packaging, office paper, used chemicals, and scrap metal.¹⁰ Energy auditors, also known as energy raters or energy consultants, help prevent energy waste by inspecting buildings to find areas of air leakage and advising customers on how to fix and prevent leaks.¹¹

Compliance officers examine, evaluate, and investigate eligibility for or conformity with laws and regulations. They ensure that organizations are in compliance with environmental, health, and safety regulations and may prepare reports or recommendations as to how a company can comply with proposed regulations or meet higher standards than regulations require.

Cost estimators accurately forecast the cost, size, and duration of sustainability projects. They develop the cost information that business owners and managers need to decide on the profitability of sustainability projects.

Human resources specialists are responsible for the workforce needs of an organization. They may keep track of how workers are complying with sustainability practices. They may be responsible for producing training programs on corporate sustainability.

Logisticians analyze and coordinate an organization’s supply chain—the system that moves a product from supplier to consumer. They find ways to reduce the amount of waste in the process of storing and transporting goods. Increased efficiency in these areas will reduce waste, emissions, and costs.

Occupational health and safety specialists and technicians help prevent harm to workers, property, the environment, and the general public. They may design safe work spaces, inspect machines, and test air quality. In addition, they may look for chemical, physical,



radiological, and biological hazards. They communicate frequently with management about the status of health, safety, and environmental programs. Occupational health and safety specialists typically have more responsibility than technicians. Technicians may be responsible for small aspects of occupational safety and health, or they may assist specialists with their duties.

Credentials

Accountants and auditors need at least a bachelor's degree in accounting or a related field. Certification within a specific field of accounting is desirable, and most organizations expect accountants to be Certified Public Accountants (CPAs).

Recycling coordinators typically need at least a bachelor's degree in a field related to recycling, such as environmental resources management or environmental education to enter the occupation. In some states, for example, New Jersey, recycling coordinators must be certified; in others, optional certification is available. There are no formal education or training requirements for energy auditors, but some states require prospective energy auditors to take specific courses or earn certification.

Compliance officers typically have a bachelor's degree in any number of fields, and some may have a law degree. Compliance officers also need a period of on-the-job training that may last up to 1 year. Compli-

ance officers must be familiar with many local, state, and federal regulations and laws.

Cost estimators can have a bachelor's degree in a variety of fields, including construction management, business management, engineering, and information technology. A cost estimator is typically promoted to this position with several years of work experience in construction, business, or manufacturing. Expertise gained through experience is used to make judgments about how much projects or processes should cost.

Human resources specialists should have a bachelor's degree in human resources or a related business field. There are many professional organizations that specialize in human resources that offer courses and some certification programs.

Logisticians can qualify for positions with an associate's degree, but most organizations prefer to hire workers who have a bachelor's degree. Logisticians typically need work experience in a field related to logistics or business.

Occupational health and safety specialists need at least a bachelor's degree in occupational health, safety, or a related field; some positions require advanced degrees. All specialists are trained in applicable laws and inspection procedures through some combination of classroom and on-the-job training. Certification is often voluntary through several organizations, including the Board of Certified Safety Professionals. Some employers

may require that occupational health and safety specialists be certified.

Occupational health and safety technicians typically need a high school diploma to enter the occupation. They usually receive on-the-job training, along with formal education on how to conduct the correct tests and to recognize common problems.

Wages

BLS does not have wage data specifically for sustainability occupations. The table below shows median annual wages in May 2011 for the other sustainability occupations listed above. Wages shown are median annual wages for the United States as a whole; wages vary by employer and location.

Selected occupations in the sustainability field	Median annual wages, May 2011 ¹
Accountants and auditors	\$62,850
Business operations specialists, all other	64,030
Compliance officers	60,740
Cost estimators	58,460
Human resources, training, and labor relations specialists, all other	54,310
Logisticians	71,910
Occupational health and safety specialists	66,270
Occupational health and safety technicians	46,030

¹ Occupational Employment Statistics data are available at www.bls.gov/oes. The data do not include benefits.

Notes

¹ *Our Common Future: Report of the World Commission on Environment and Development* (United Nations, 1987), <http://www.un-documents.net/ocf-02.htm#1>.

² *Driving ESG Reporting Progress through Dialogue: Key insights from NAEM's Measuring Corporate Sustainability Conference* p. 4 (National Association for Environmental Management, June 2011), <http://www.naem.org/resource/resmgr/Docs/cp-2011-naem-driving-esg-rep.pdf>.

³ Winston, Andrew, *Green Recovery* (Harvard Business Press, 2009), p. 21-25.

⁴ Advance Notices of Proposed Rulemaking: Regulating Greenhouse Gas Emissions Under the Clean Air Act" (U.S. Environmental Protection Agency, 2011), <http://epa.gov/climatechange/anpr.html>.

⁵ "2009 Greening of Corporate America" (New York, McGraw-Hill Construction, 2009), p. 2-5 <http://analyticsstore.construction.com/index.php/2009-greening-of-corporate-america.html>.

Conclusion

This article has examined various occupations in sustainability. If the growth of sustainability continues, more organizations will employ sustainability professionals. The benefits of this growth should be noticeable in many sectors of U.S. industries, from services, such as finance and health care, to manufacturing and construction.

Sustainability professionals have a broad range of education and experience levels, mainly in science, engineering, and business management. Although many of the occupations with sustainability responsibilities require at least a bachelor's degree, there are opportunities for individuals with a wide variety of work experience and knowledge.

As sustainability becomes more widespread, new opportunities to contribute to the field will arise. A new market focused on sustainability should build job prospects for more future workers.

⁶ For more information on the BLS Green Technologies and Practices Survey, see www.bls.gov/gtp.

⁷ "Companies Giving Green an Office," *The New York Times*, July 3, 2007, www.nytimes.com/2007/07/03/business/03sustain.html.

⁸ For more information on scientists and engineers working on environmental issues, see BLS article from *Occupational Outlook Quarterly*, Summer 2009, www.bls.gov/opub/ooq/2009/summer/art01.pdf.

⁹ For more information on careers in green construction, see www.bls.gov/green/construction/.

¹⁰ For more information on recycling coordinators, see BLS *Occupational Outlook Quarterly*, Winter 2010-11, www.bls.gov/opub/ooq/2010/winter/yawhat.htm.

¹¹ For more information on energy auditors, see www.bls.gov/green/energy_auditors/energy_auditors.pdf.