

# The Green Economy: What Does Green Mean?

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Everyone is talking green these days. President Obama has made the green economy a pillar of his administration. In early August, the President announced that several Indiana companies were awarded federal grants to advance the development of green transportation. Several reports on the green economy and green jobs have surfaced in the last year. The studies all agreed—the green economy and green jobs will be integral to continued U.S. prosperity.

### It's Not Easy Being Green

The trouble is that researchers, data collectors, and policy makers have yet to settle on a method for identifying what is green. Such a method would need to accurately gauge the green economy's size and rate of growth,

and to identify the jobs associated with it. What is green and how do we measure it?

This definitional issue is not trivial. The industries that qualify as green serve as a benchmark for the size of the green economy today and a gauge to measure the rate by which the economy becomes greener. Getting the definition right helps to guide government policy, research funding, business investment, and hiring decisions.

Here are two definitions from reports that came out this year:

- From *The Clean Energy Economy* (The Pew Charitable Trusts): A clean energy economy generates jobs, businesses and investments while expanding clean energy production, increasing energy

efficiency, reducing greenhouse gas emissions, waste and pollution, and conserving water and other natural resources.

- From the *Michigan Green Jobs Report* (Michigan Department of Energy, Labor & Economic Growth): Industries that provide products or services related to renewable energy, increased energy efficiency, clean transportation and fuels, agriculture and natural resource conservation, and pollution prevention or environmental cleanup.

The reader may have noticed a subtle shift from the first definition to the second. One moves from what the green economy is toward how the green economy is measured. Here is the first sticking point: Some business activities are unquestionably green, say low-input, organic farming. Others are obviously not green, say extracting oil from tar sands. But most green business activities are bundled with those that are not. So then, what is a green business? Who decides? The manner in which economic statisticians collect and categorize data isn't much help either. Organic food processors are no different from other food processors according to the economic accountants that collect and report production and employment data.

There is no green accounting standard when it comes to what to include as a green product or industry and what to exclude. A producer of citrus-based solvents may readily be classified as green. But what about the house painting company that uses the citrus-based solvents instead of mineral spirits?

■ TABLE 1: Comparison of Green Business and Occupation Categories

Michigan Green Jobs Report	The Greening of Oregon's Workforce	Washington State Green Economy Jobs
Renewable Energy	Renewable Energy	Renewable Energy
Energy Efficiency	Energy Efficiency	Energy Efficiency
Pollution Prevention and Environmental Cleanup	Preventing, Reducing, or Mitigating Environmental Degradation	Preventing and Reducing Pollution
	Cleaning Up and Restoring the Natural Environment	Mitigation or Cleanup of Pollution
	Services Supporting Other Categories	
Clean Transportation and Fuels		
Agriculture and Natural Resources Conservation		

Sources: Michigan Department of Energy, Labor, and Economic Growth; Oregon Employment Department; Washington State Employment Security Department

Is that company green? Some researchers and green economy watchers would say yes. Others might wonder whether that citrus-based solvent isn't somehow being double counted as green, once for the firm selling it and the second time for the painting company reselling it to the home owner.

Measuring green on the production side then, has at least two major weaknesses.

1. Most industries produce both green and non-green goods and services, so making distinctions is difficult.
2. It may be spurious to include industries that produce non-green products or services but use green inputs and processes in their production. For example, are a tailor's suits and shirts green if he makes them from organic cotton cloth? His production process is exactly the same irrespective of the type of cloth he uses to make his clothes.

### Measuring Green Jobs

There is another general approach to measuring green—the job side. Several states have conducted green jobs studies. These studies place clean/green economic activity into a few basic categories (see **Table 1**). There are some differences in their classification scheme, but overall, there is a general consensus reflected in these studies about what makes up a green economy. That said, there are different approaches to counting the jobs that make up the green economy.

There are at least two approaches to counting green jobs—an industry approach and an occupational approach. The industry approach counts the number of employees at a firm that, based on the firm's output, makes the economy greener. An approach that uses occupations counts the number of employees at all types of firms with work activities that contribute to the greening of the economy.

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The industry approach is akin to the industry-output side of green production. That is, counting the number of employees at firms that produce green products or services—what one may also call “green-making.” The Pew report used this approach to reckon the number of green jobs.

The industry output approach to counting green jobs—if a firm's products or services are green, then that firm's employees can be considered green—does have its challenges. NAICS<sup>1</sup> industry codes are often not specific enough to separate the core green firms from those that are green-related in a secondary or tertiary sense. Pew used a proprietary database that, in contrast to the standard government-issue industry definitions used to report economic data, allowed researchers to define industries based on specific products.

The occupational approach to counting the number of green jobs is akin to the industry-input side of green production. That is, irrespective of a firm's output, count the number of green jobs based on whether the occupational activities of the job make production greener. In other words, the green economy demands or uses certain types of green jobs as labor input (with certain sets of green skills) and those jobs are counted as green. When summing up the number of green jobs, the Michigan Green Jobs Report used the industry-input approach as the central method for counting green jobs in the state.

(Michigan did report green-related employment numbers based on an industry-output definition, but this was not the showpiece number or method).

To better understand the effect of choosing one approach over another, consider the differences between the Pew and Michigan reports' summaries of the green economy in the state of Michigan. The Pew report counted 22,674 green jobs in 2007, less than 1 percent of total employment. The Michigan report counted 96,767 green jobs in 2008, just under 3 percent of total employment. Their respective green activity distributions are shown in **Figure 1** and **Figure 2**.

Pew reported a 2007 total of 19,340 clean energy jobs in Oregon, or 1.1 percent of total Oregon employment, while the Oregon study counted 51,402 green jobs, also 3 percent of total employment. The Oregon report does not break down its jobs figure by core green area.

For Washington State, Pew's total was 17,013 jobs, or roughly 0.6 percent of total employment. The state's report found 47,194 green jobs, or 1.6 percent of total employment. A categorical breakdown is found in **Figure 3** and **Figure 4**. Here, again, Pew finds the majority of jobs in conservation and pollution mitigation. While the Washington study reports the majority of jobs providing energy efficiency, Pew finds only 7 percent coming from this category, indicating that many of the energy efficiency jobs that

the state counted were in non-green businesses.

The choice of industry versus occupational approach explains why the two types of studies reported such different green job totals. Limiting a study's scope to just businesses that produce green products or services excludes green-related jobs at traditional firms. If a motor vehicle manufacturer hires an engineer trained in energy efficient design, this job would not be counted in the Pew study, but would have been counted in the state-based studies. While the

occupational approach makes the green job total more comprehensive, the data collection method used to count these jobs leaves more room for ambiguity and loose interpretation in the final results.

### Methodological Limitations

Different definitions of the green economy, and their corollary approaches, require different methods of identifying and quantifying green jobs and the green economy. For instance, as long as one can identify a firm's line of business

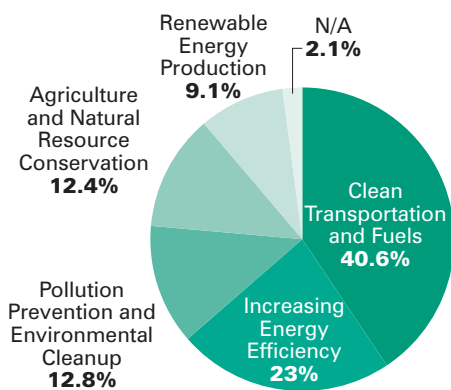
as green, that firm's employees can be considered green from the industry-output approach. This is how Pew arrived at their figures. They searched for firms that met their specific guidelines for green classification, and added those firms' employment figures to the green jobs total.

Conversely, the Michigan, Oregon, and Washington reports' industry-input approach required a survey as its primary means of information-gathering. This is because firms may have employees with the same Standard Occupational Classification (SOC) code, but not all of them may be green.

At first glance, the Pew method seems more valid and reliable. By using an industry-output approach to the green economy, Pew was able to apply a stricter standard for qualifying firms as green, and was able to apply that standard consistently. In addition to calculating green jobs and businesses, Pew provides other useful green statistics that offer valuable insight. Along with the number of jobs and businesses in the green economy, Pew reports on venture capital funds, patents, and federal and state policies such as financial incentives, renewable energy portfolio standards, energy efficiency resource standards, and cap and trade programs.

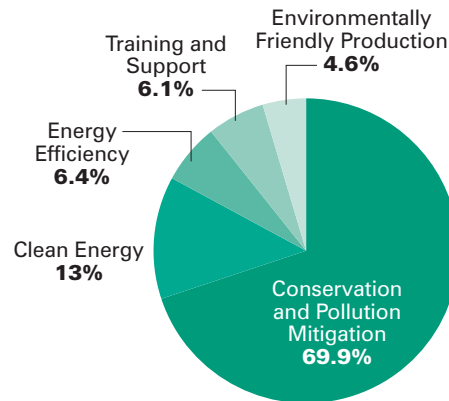
The state-based surveys' chief drawback is that interpretation of what constitutes a green job is partially left up to the survey respondent. The Michigan survey question asks the respondent to estimate the number of employees who have one of the study's core green job areas as their "primary focus." It is up to the respondent to determine if an employee's primary focus is "increasing energy efficiency" or simply turning off the lights at the end of the day. This opens the reliability of the results into question. Instead of asking for the "primary focus," the Oregon survey instructs respondents to list jobs as green only if work in one of the green categories

**FIGURE 1: Michigan Report Job Categories for the State of Michigan—Industry Input Framework**



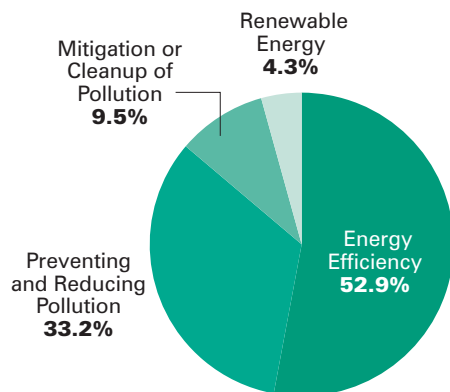
Source: IBRC, using Michigan Bureau of Labor Market Information and Strategic Initiatives data

**FIGURE 2: Pew Report Job Categories for the State of Michigan—Industry Output Framework**



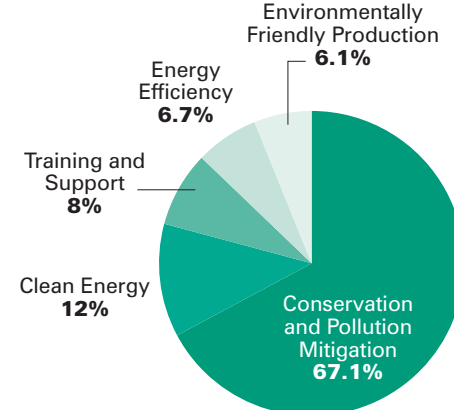
Source: IBRC, using Pew Charitable Trusts data

**FIGURE 3: Washington Report Job Categories for the State of Washington—Industry Input Framework**



Source: IBRC, using Washington State Employment Security Department data

**FIGURE 4: Pew Report Job Categories for the State of Washington—Industry Output Framework**



Source: IBRC, using Pew Charitable Trusts data

was essential to the job. This difference hardly seems to alleviate the problem of ambiguity though.

The occupational (industry-input) approach may have great potential in the future. There may be emerging green occupations, but to date, most are without an SOC code. Indeed, one might think that unambiguously green jobs would require special certifications that could clearly identify the position and its skill set as green. Yet, based on responses gathered from employer focus groups, the Michigan study found that most new green jobs would require in-house training, in contrast to external certification. Employers predominantly want employees with basic skills. If this is true, then a discussion of well-defined green skills might be somewhat unproductive, since the main skills employers are seeking are not unambiguously green.

### **An Alternative Approach to Measuring the Green Economy**

If measuring the scope and growth of the green economy is more than a fad, then devoting significant federal analytical resources to rigorous, consistent analysis is required. The preferred method would likely be a “green economy satellite account” produced by the U.S. Bureau of Economic Analysis (BEA), in collaboration with other federal statistical agencies. The BEA currently releases economic statistics for several satellite accounts.

The Travel and Tourism Satellite Account (TTSA), for example, measures the size of the travel and tourism “industry.” Producing the TTSA requires some analytical gymnastics not unlike what is required to define and measure the green economy. There really isn’t a travel and tourism industry as such. Industries are defined in terms of their production. Travel and tourism, on the other hand, is based on the consumer. On a weekend trip, a

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tourist will eat at a restaurant, sleep at a hotel, golf, rent a car, and take a guided tour. In this example, the tourist consumed the output of five distinct industries with five distinct production processes.

The same experience and talent that BEA has gained developing the TTSA, the Transportation Satellite Account and the future Research and Development Satellite Account could also be applied to measuring the green economy. In this way, green economic activity—the dollar-value and the number of jobs—would be defined rigorously and measured consistently over time.

### **Measuring Green Occupations**

A green economy satellite account does not preclude or replace an occupational survey. The Bureau of Labor Statistics (BLS) currently conducts the Occupational Employment Statistics (OES) Survey. The data from the OES help to evaluate many elements of labor dynamics. And, because occupations can be linked with educational and training needs, these data can help inform training programs that develop the skill and knowledge sets needed for the future. The green jobs surveys conducted by Michigan and the other states are similar to the OES survey.

As it happens, the Obama Administration has sought funding in the FY 2010 request for BLS to produce a new series on “green-collar” jobs, addressing the need for detailed data on these rapidly evolving industries and occupations. Specifically, the BLS will produce

new data measuring employment and wages for businesses whose primary activities can be defined as green, and produce information on the occupations involved in green economic activities.

### **Conclusion**

Measuring the green economy and green jobs is a path with many conceptual and analytical pitfalls. While we may be keen to be green, we may find, like Kermit, that it isn’t easy.

### **Note**

1. North American Industry Classification System

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