

ATMAE WHITE PAPER
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Job Creation

in a

Green Economy

DEVELOPING THE 21ST
CENTURY WORKFORCE

Dr. Carol Haddad, Eastern Michigan
University



The Association of
Technology,
Management, and
Applied Engineering

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Introduction/ Summary

States and communities traditionally reliant on durable goods manufacturing for large-scale employment have experienced economic hardship since the 1980s. During that period, three prominent researchers at MIT explained the reasons for U.S. industrial decline, and charted a course forward that included building a highly-competitive labor force (Dertouzos, Solow, and Lester, 1989). Nearly 2 decades later, the global economic crisis of 2007-10 erupted, with a devastating effect on the labor market. It has been estimated that “5.5 million jobs were lost in the five quarters through the end of 2009 as a result of slower GDP growth” (Swagel, 2009).

Background/ Problems

During that period, some political leaders began to conceive of job creation in the “green economy” as a win-win proposition – environmentally and economically. In May 2009, the Michigan Department of Labor and Economic Growth sponsored a green jobs conference attended by about 1400 policy makers, business leaders, educators, and others. The Michigan Green Jobs Report 2009 presented data collected by surveying Michigan employers about current and projected green jobs, reviewing existing labor market data to determine the numbers, wages, and educational requirements for green jobs, and convening focus groups of “employers, industry experts, and educators representing various segments of the green economy” (Weaver, 2009, p. 11). The specific industries examined were: agriculture and food systems, environmental resource management, green construction, recycling, solar, and wind (p.12). The surveyed employers classified existing green jobs in those industries into 6 “core areas:

- clean transportation and fuels
- increasing energy efficiency
- pollution prevention and environmental cleanup
- agriculture and natural resource conservation
- renewable energy production; and
- green jobs not assigned to a core area (p. 13).

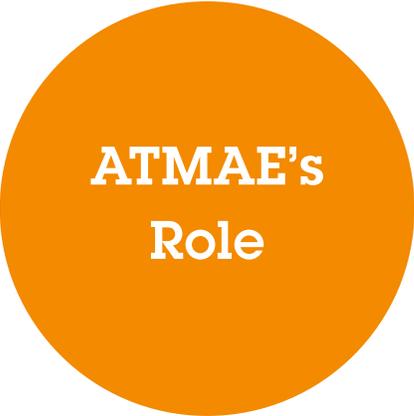
Numerically, the Michigan study showed the greatest green job hiring (for new and replacement positions) among the following occupations: landscape and grounds workers, industrial engineers,

electricians, mechanical engineers, and carpenters (p. 48). The jobs expected to have the greatest growth in percentage terms were: industrial engineers, surveyors, industrial engineering technicians, architects, landscape architects, and sales representatives. Job projections were highest among those positions requiring higher-to-moderate educational attainment (p. 50).

Green industries cannot be viewed as a panacea for economic and job dislocation. The city of Toledo, for example, leveraged its expertise in glass making to become a leader in solar panel research and production (Toledo turns to solar panels, 2008). Yet within a few years, Toledo's solar companies faced structural challenges, including stiff international competition from China (McCartney, 2012). Nationally, though, it seems that "greener industries grow faster than the overall economy" according to a survey published in 2012 by the U.S. Department of Labor's Bureau of Labor Statistics, and subsequent analyses suggest a strong positive relationship between "green intensity and the growth in jobs" including in the manufacturing sector (Pollack, 2012, pp. 1 & 9).

The expansion of green jobs has been boosted by certain federal and state policies. A significant piece of legislation was Congressional Passage of the American Recovery and Reinvestment Act (ARRA) of 2009, commonly referred to as the "stimulus package." Opportunities in the stimulus package exist for the funding of education programs designed to prepare workers for careers in energy efficiency and renewable energy industries. That funding is channeled through the US Department of Labor's (DOL's) Employment and Training Administration in the form of State Energy Sector Partnership and Training Grants.

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ATMAE's Role

ATMAE has a vital and unique role to play in preparing students and workers for green technology jobs, given its member presence in the education and private industry sectors. Universities and community colleges have programs in renewable energy, sustainable resource management, environmental studies, and a host of other areas relevant to a growing green economy. Labor unions and industry associations are collaborating to prepare workers for green technology jobs, as is the case with the Electrical Industry Energy Training Center in metropolitan Detroit – a partnership between the International Brotherhood of Electrical Workers, Local 58 and the Southeastern Michigan chapter of the National Electrical Contractors Association. K-12 schools offer foundational courses to promote sustainability awareness and knowledge. Yet all of these efforts exist primarily in piecemeal fashion, with little if any inter-institutional cooperation and collaboration.

ATMAE might use its accreditation mechanism to encourage regional linkages so that community colleges and technical schools, universities, and even high schools work together to design education and training programs that offer progressive skill sets, portability of credits earned, and opportunities for career laddering. ATMAE might also expand the focus of its Certified Technology Manager program (CSTM) to include competencies in green technology management (e.g., energy consumption, waste reduction, recyclable product design).

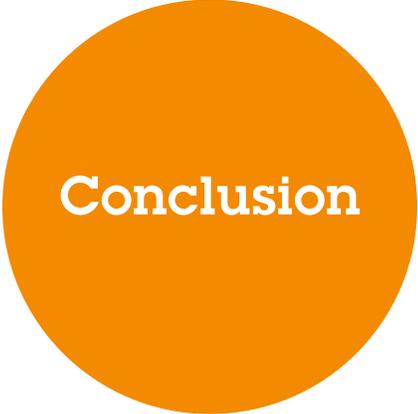
Moreover, ATMAE's divisions and focus groups can work nationally on sectoral and demographic approaches to workforce preparation. Sector-specific efforts might be led by the Construction Division, the Electricity, Electronics and Computer Technology Division, the Manufacturing Division, and the Nanotechnology Focus Group. The sectoral skills councils in the Canadian steel and electrical-electronics industries have demonstrated the value of tripartite collaboration (industry, labor, government) in labor force and skills standards development (Haddad, 2003; Employment and Social Development Canada, 2013).

Women and minorities need not lag behind in the green economy. A recent report by the American Association of University Women (AAUW) found that women who obtain bachelor's or master's degrees in STEM fields often begin their education at community colleges, as do students of color

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ATMAE’s national office may be in a position to identify and publicize grant opportunities – private and governmental – through its Insider publication and other dissemination resources. In short, ATMAE is well positioned to take a leadership role in workforce development for the green economy that is here to stay.



Conclusion

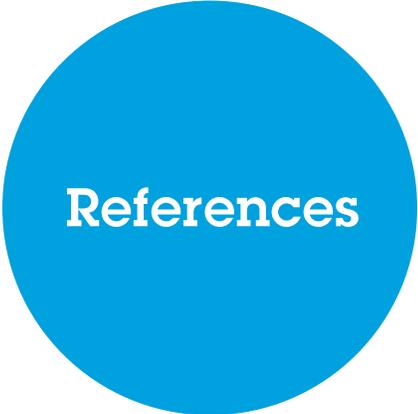
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Author Information

Dr. Carol Haddad, Professor
School of Technology Studies, Eastern Michigan University
Ypsilanti, MI 48197; chaddad@emich.edu