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The Environmental Revolution: But does Labour Reap the Benefit from Green Jobs?

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A green economy should be one that is sustainable in two ways: for the environment itself, of course, but also in terms of people's ability to live at a decent material standard and to enjoy basic rights and opportunities at their workplaces¹.

I. Introduction

Not too long ago, the green job movement was expected to be a boon to the economy. It was expected to create an abundance of jobs and improve the well-being of green job labourers by affording them a higher standard of living. But this does not seem to have fallen in place quite as expected. The economic recession, generally, left in its wake a beleaguered workforce whose standard of living was affected by the prevailing conditions. Although the government's economic stimulus package did provide a boost to existing conditions, this was short-lived. The green job movement has had to address other issues besides the recession. There has been some technical wrangling as to what exactly constitutes a green job. This study begins with a definition of green jobs. It focuses on California which is considered the leader in green job creation. Through interviews with experts in the state, this study asks one of the quintessential questions of the green job movement: do green jobs provide labour with an acceptable standard of living?

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¹ Jon T. Geenen, *Journal Sentinel Online*, June 10, 2008.

1. Defining Green Jobs

Green jobs run through the gamut of industries from construction to manufacturing to the oilsands. A report by the Canada-based Pembina Institute asks the following questions in seeking to define green jobs: what sectors are green enough, which workers within a sector are green, what fraction of a worker's time needs to be green to count as a green job and what is the level of quality for it to be considered green (Demers 2011). In *A Green Career Pathways Framework: Postsecondary And Employment Success For Low-Income, Disconnected Youth*, The Corps Network defines green jobs as those that contribute to meeting the goal of achieving environmental sustainability whether new jobs or through retooling of existing occupations (Grobe, O'Sullivan, Prouty & White 2011). New jobs are those like solar panel installers while modifications of existing jobs include construction workers who improve the energy efficiency of buildings by using the newest green building technologies. Some experts have expressed serious reservations about the narrow definition and focus of green jobs. Chris Benner at the University of California, Davis states that the definition of green jobs has been inconsistent and narrow in scope (e.g. jobs in renewable energy and energy efficiency industries, plus maybe recycling). The main point, Dr. Benner feels, is that energy and the environment are important in all jobs and all economic activity and we should be finding ways to promote a green economy in all aspects of our economic activity and in all jobs.

This paper assumes a broad definition of green jobs as all those jobs that are related to energy and the environment. It discusses green jobs that pertain to the clean energy, energy efficiency and renewable energy sectors. It touches on social justice theory and elicits experts' opinions on key issues in the green job labour movement. There is particular emphasis on green jobs in California, considered a leader in the green job movement in the United States. This is explained in the next section.

2. California and the Green Job Movement

Of the 2.7 million jobs in the clean energy economy in the U.S., 338,445 are in California, the most of any state. These jobs have also proved to be the most resilient during the recent economic downturn (Muro, Rothwell & Saha 2011; Pollack 2012). While the rest of California's economy registered a decrease of 7 percent in employment during this time, green manufacturing jobs in the state increased by 1 percent (BlueGreen

Alliance 2012). A report by the Center on Wisconsin Strategy credits the state's strong policy and investment base for this which has resulted in efficiency gains and energy savings, "*The Recovery Act* provided a big new funding source for energy efficiency, but one that added to an already strong base of state and ratepayer funds. California policymakers already had significant experience with energy efficiency industries and markets, and had a long-term orientation to their development that extended well beyond the three-year spend-out of ARRA funds (White, Dresser & Rogers 2012)." A report by the local community organization, Next 10, attributes California's success on the green job front to the creation of an incentive and funding structure by the state government directed to vital research and development, and promotion of the application of new clean green energy technology (Perry 2009).

California lawmakers have also been active in the green movement. California's Global Warming Solutions Act, AB 32, aimed at reducing greenhouse gas emissions, is another example of the state government's commitment. Proposition 39 would require lawmakers to allocate up to \$550 million per year for five years for energy efficiency and clean energy projects in California's public schools, community colleges, universities, and other public facilities. This proposition is covered by prevailing wage legislation and therefore is set up to create good jobs with benefits. An important goal of Proposition 39 is to provide job opportunities and funding for workforce development programs to train disadvantaged youth, veterans, and other workers in California. Not all of the new jobs created by Proposition 39 investments are accessible to disadvantaged workers since many of the jobs require specific skills and experience. Besides a proactive government, California has an involved populous that generally favors products and services that create minimal impact on the environment. Additionally, green businesses have been at the forefront of meeting consumers' demands for everything from solar panels to environmentally-certified building materials (Zabin and Scott 2013).

Community organizations and local educational institutions have been instrumental in the push for green job advancement in California. The Los Angeles Alliance For A New Economy (LAANE) is one such community organization. Its focus has centered around building labour-environmental community coalitions and creating good middle class jobs. Its advocacy responsibilities include working with utilities, namely, the Los Angeles Department of Water and Power to invest in energy efficiency and renewable energy by doubling its budget for energy efficiency programs. This is particularly needed in Los Angeles which has seen the proliferation of low-paying jobs. Working Partnerships is another

such organization that builds partnerships with community, labour and faith groups to improve the lives of working families in the Silicon Valley. Strategic Concepts in Organizing & Policy Education (SCOPE) has a similar mission and focuses on unionization, sustainability and assisting lower income communities of color. It also conducts employer-paid training for green jobs. Global Green USA's mission is to foster a global value shift to create a safe and sustainable future. In doing so, it aims to reconnect people with the environment, create green jobs, increase social equity, and inspire people to take meaningful individual action. Universities have also contributed to the green job movement by promoting energy efficiency. The California Lighting Technology Center at the University of California, Davis is responsible for accelerating the development and deployment of energy-efficient lighting and day-lighting technologies. The Donald Vial Center on Employment in the Green Economy at the University of Berkeley works to promote the green economy in California by carrying out research related to the labour markets, workforce development and workforce policy and by engaging with policymakers and advocacy groups to provide technical assistance and education.

This intricate network of advocacies in California shares a common goal: to advance the green job movement and improve the welfare of 'green' labour. Since much of these efforts focus on the energy industry, this next section discusses on the clean energy, energy efficiency and renewable energy sectors of the resources industry.

3. Clean Energy, Energy Efficiency and Renewable Energy

The energy industry is paramount to today's economy in a number of ways. A report by the Economic Policy Institute claims that utility jobs tend to be over 50 percent more green intensive than any other sector (Pollack 2012). The building industry, whether it be new construction, weatherization or retrofitting, plays an important role in the green job movement. A report by the Center On Wisconsin Strategy elaborates on this point, "We have long argued that the construction industry, the keystone for building energy efficiency, is an overlooked area with potentially decent jobs and clearly articulated training pathways organized on a classic earn and learn model — registered apprenticeship. Building relationships with community-based organizations and improving access to and retention in the building trades for low-skill, low-income workers is a strategy that makes sense (White, Dresser & Rogers 2012)."

Much of the focus, over the last few years, has been on energy efficiency upgrades of homes around the country. The aforementioned study found that the 100 million plus homes in the U.S. account for roughly 23 percent of the country's energy use and carbon dioxide pollution. The purpose of retrofitting them is to reduce global warming and produce energy savings. Economically, it benefits consumers (by lowering energy costs) and workers with a lower level of education by creating jobs since it is labour-intensive (White, Dresser & Rogers 2012). A report by the Center For American Progress backs this up stating that retrofitting just 40 percent of the residential and commercial building stock in the United States would generate as much as \$64 billion a year in cost savings for U.S. ratepayers (Hendricks, Campbell & Goodale 2010).

García-Alvarez and Varela-Candamio delineate innovative mechanisms such as feed-in-tariffs and government finance mechanisms like environmental tax penalties or the incentive of lower taxes to encourage renewable energy (Garcia-Alvarez & Varela-Candamio 2012).

Energy efficiency and renewable energy are both crucial to the green job movement and work effectively, in tandem, to produce green job growth and energy savings. A report by the Energy and Resource Group at the University of Berkeley outlines the importance of renewable energy, "...placing support for renewables in a broader context of support for clean energy measures, including energy efficiency and sustainable transportation will greatly augment economic and employment benefits." The report cites the example of a consumer installing a solar PV system and retrofitting his home to be energy efficient. Research has shown that complementary policy measures for both energy efficiency and renewable energy are required to achieve these goals. One study found that such a policy involving federal investment of \$300 billion made over 10 years to increase energy diversity, investment in industries of the future, high performance building promotion, and to rebuild public infrastructure was projected to create half a million jobs in the renewable energy sector alone and 3.3 million jobs overall. Kammen, Kapadia & Fripp (2004) emphasize the advantages of the shift from fossil fuels to renewable energy, "Embedding support for renewables in a larger policy context of support for energy efficiency, green building standards, and sustainable transportation will greatly enhance net positive impacts on the economy, employment and the environment."

Investment in 'green' energy underscores its potential importance and relevance to economic growth. While its advancement has garnered the attention of policy-makers, more work is needed on the labour front in

terms of developing policies and strategies for the betterment of the green job worker.

II. Conceptual Framework

While this study mainly focuses on the standard of living of workers in green jobs, the broader theme of this study is socio-economic justice. There are a number of theories that have contributed to the foundation of labour law chief among those being social justice theories. Jost and Kay (2010) define social justice as a cluster of measures that control political and other decision-making with regard to preserving the basic rights, liberties, and entitlements of individuals and groups. From a labour perspective, these address issues such as the minimum wage, safety regulations, maximum hours of work, the outlawing of discrimination against particular groups, and the recognition of trade unions for the purpose of collective bargaining. There are a number of social theorists who have laid the groundwork for modern labour law. These include:

1. John Stuart Mill

Utilitarians like John Stuart Mill (2002) advocated equal opportunity for all 'admitting no power or privilege on the one side, nor disability on the other.' Ho (2011) contends that Mill's utilitarianism was actually a standard of morality where the ultimate goal was the happiness of the greatest number of people. He called for the accommodation of minorities so that the majority would not end up being a dictatorship. An example of utilitarianism in today's working world is equal rights for women and minorities.

2. John Rawls

The premise behind Rawls' *Theory of Justice* is that social justice is achieved by first correctly organizing society's major institutions as this determines how basic rights, opportunities, income and wealth are distributed. Croucher, Kelly & Miles (2012) discuss the Rawlsian concept of social contract and describe collective bargaining as a tool that would help parties to such a contract agree on the rules that would benefit both sides. This involves reflective equilibrium where a consensus is reached through dialogue and mutual judgement. While inequalities in pay are acknowledged, the less privileged are protected.

3. Stephen Leacock

Leacock urged governments to extend social reforms, such as the minimum wage and unemployment insurance, without pushing the industrial machine to its breaking point. While establishing and raising the minimum wage was, for a long time, considered an economic impossibility, Leacock proclaimed that the minimum wage law should be a part of the code of every community, “The wage as paid becomes a part of the conditions of industry. It is probable that at any particular time and place, the legislative minimum wage cannot be very much in advance of the ordinary or average wage of the people in employment. But its virtue lies in its progression. The modest increase of to-day leads to the fuller increase of to-morrow. Properly applied, the capitalist and the employer of labour need have nothing to fear from it. Its ultimate effect will not fall upon them, but will serve merely to alter the direction of human effort (Leacock 1920).”

Based on the foundation of these theoretical perspectives, the crux of the next section of the paper will focus on the impact of green jobs on women and minorities, collective bargaining (unions), wages and worker benefits.

III – Methodology

The study uses both primary and secondary data to answer the research question. These include both American and foreign sources such as government documents, academic publications and research studies from community organizations and academic research centers. It then deploys responses from telephone interviews with experts in California to probe findings from the literature review and provide recommendations from them. These experts include Goetz Wolff at the University of California, Los Angeles, Carol Zabin from University of California, Berkeley Labour Center, Jessica Goodheart from the Los Angeles Alliance For A New Economy, Louise Auerhahn from Working Partnerships USA, Walker Wells at Global Green USA and Elsa Barboza from Strategic Concepts in Organizing & Policy Education. The questions were based on the green job movement in California:

1. What are the impediments to the creation of green jobs? How can these be overcome?
2. How have green jobs changed organizations’ approach to training?
3. What changes have green jobs brought to unionization?
4. How have green jobs impacted the lives of labour in terms of:

- i) health insurance coverage and compliance with safety laws; ii) wage theft prevention/minimum wage increase/living wage provision; and iii) affordable housing availability and better transportation?
5. How have green jobs affected minority and women workers/workers from low income communities?
6. What effect have green jobs had on economic recovery, that is, has it had made a difference to aggregate employment?
7. How would you rate the investment in green jobs? How would you evaluate the return on this investment?

The data analysis software, NVivo, was used to conduct an analysis of the responses which leads to the next section.

IV. Analysis of Results

The industrial shift to a low-carbon and resource-efficient economy was expected to result in an increase in the number of green economic activities and environmental services like reforestation and waste management. In order for this shift to yield green job growth, an OECD report recommends the compensation of workers, who are moving from declining to growing firms, with income and employment security, the development and promotion of eco-innovation through education and training, and the creation of a conducive tax and benefit system to better support employment (Organisation For Economic Cooperation and Development 2012). Rosenberg (2010) adds that such policies must be put in place early in the transition to green jobs with the involvement of the labour force. Stillwell and Primrose (2010) argue in favor of government action in this regard, "...such green jobs are not natural, inevitable phenomena that arise from laissez-faire market principles. Rather, their growth is facilitated by government policies that support the restructuring of economic and industrial processes to achieve ecological ends. It is therefore pertinent to ask what is currently being done and how the potential for marrying job creation with ecological goals could be expanded in particular sectors and regions."

There are many factors that determine the sustainability of the green job movement and the quality of the green workforce. These are discussed next.

1. Training

Training is vital for those employed in green jobs. Some of the experts interviewed for this study felt industries are now carrying out their business in a greener way through the work of carpenters, electricians etc. and this has to be integrated into the training of these professionals.

Take the construction industry, for example. Certifications are essential for those working in green building jobs. According to an estimate by the Sustainability Education and Economic Development (SEED) Center, green buildings will support nearly 8 million workers in a range of occupations including construction managers, carpenters, electricians, architects, truck drivers and cost estimators, among many others (Younger 2012). McCoy, O'Brien, Novak and Cavell (2012) stress the importance of hands-on and on-the-job training. They also suggest green job training include other members of the organization such as finance, marketing, accounting, and management professionals. They emphasize the need for organizations to go beyond credentials by creating performance standards. In California, training is essential under Title 24 to achieve building efficiency standards.

A couple of the experts interviewed cited the Utility Pre-Craft Traineeship at the Los Angeles Department of Water and Power (LADWP) as a well-developed traineeship for green job workers. The duration of this program is 18 months. During this time, trainees receive general training in LADWP procedures and job-specific training that includes extensive instruction on safety, appropriate work procedures, and relevant policies. It pays a living wage of \$16 per hour as well as health benefits. The goal of the program is to meet current staffing needs and also to create a pool of workers to replace retirees. Trainees are members of IBEW Local 18 union and are given the opportunity to pass the civil service exam in order to stay with the Department (Strathmann 2012).

Besides training, education is instrumental in developing a good quality green workforce. Younger (2012) quotes a McGraw-Hill Construction study to re-affirm this point, "Training is essential for getting and maintaining green jobs; 30 percent of green job workers say they needed additional training when they started, and most report that formal education and training programs will continue to be needed." With the assistance of grant money, community colleges across the country have begun offering certificate programs for various green jobs. Besides this, non-profit community-based and for-profit institutions now offer workforce-development programs. Potts (2010) notes that these programs have suffered from a lack of demand and a lack of training standards.

2. Equal Opportunities for All

Green jobs are expected to create unprecedented opportunities for workers from low-income communities, women workers and workers from ethnic minority backgrounds. Green jobs also open the labour market to more workers without a college degree. Workers with different educational backgrounds can avail of green jobs depending on the nature of work. Workers at a lower educational level have more access to jobs within greener industries. A report by the Economic Policy Institute provides a reason for this, “Nevertheless, education has played a role in the increasingly divided economy. For example, in 1979 wages for workers with a college degree were 40 percent higher than the wages for those with only a high school degree. By 2011, this pay disparity had risen to 76 percent (Mishel et al. 2012). If we want economic policy to work for the nearly 70 percent of American workers without a four-year college degree (U.S. Census Bureau 2012), green investments offer an option (Pollack 2012).” In the same vein, one expert disclosed that green jobs, such as those created by the Los Angeles Department of Water and Power, provide hope to lower income communities. The bottom line is the provision of a living wage, public sector, unionized job with a pension. The experts interviewed generally pointed out that green jobs have certainly benefited minorities and women. There are many organizations that have helped facilitate this such as the Los Angeles Black Worker Center (BWC) in Los Angeles. Its mission is to increase access to quality jobs, reduce employment discrimination, and improve industries that employ Black workers. Among the many goals of the center is the promotion of economic and racial justice for all of Los Angeles. This includes developing policies and corporate practices that advance equality in the labour market and decent jobs in the Black community. One of the experts interviewed noted that the Los Angeles public sector has been involved in outreach work with the junior colleges in the city to reach out, inform and train workers from these communities.

Hemmati (2009) calls for strengthening the involvement of women in climate change in order to achieve gender equity and for drawing upon the expertise of women in the decision-making process, “Climate change is the crucial issue today, a fact that is becoming more apparent every year. We will not be able to master the huge challenges associated with climate

change without ensuring justice and there is no true justice without gender justice.” An expert interviewed for this study stated that green jobs have

generally been male dominated but the composition of training programs is gradually changing with the entry of women.

3. Investment

The main opportunity for investment in green jobs is in the reduction of energy use in new and existing buildings. While residential and commercial buildings are responsible for 40 percent of all U.S. energy consumption, the industrial and technology sectors account for 70 percent of it. By renovating buildings in order to make them more energy efficient, the retrofitting industry would provide employment for skilled workers such as labourers, electricians, sheet metal workers, engineers, and architects. When energy efficiency retrofits are combined with renewable energy, such as solar and geothermal systems, it is expected to create even more direct jobs in manufacturing and installation in an effort to pump clean power back into the grid. A report by the Apollo Alliance shows the importance of both public and private investment, “Expanding public and private investment in energy efficiency and distributed power is the cheapest, fastest way to reduce rising energy costs, curb greenhouse gas emissions, and create a new generation of high quality green-collar jobs. We need to move our building sector into the clean energy future by adopting aggressive efficiency standards for new and existing buildings, and by providing resources to homeowners and the public and private sectors to meet and exceed these standards (Apollo Alliance 2008).” The public sector can provide an impetus to green job creation by promoting green infrastructure investment and even directly financing infrastructure projects such as power grids to promote new renewable energy sources. The private sector has an equally important role to play by injecting much-needed investment capital, providing the benefits of a more competitive environment and supporting the operational performance of government-run utilities with technological and managerial expertise (OECD draft 2012).

Some of the experts that were interviewed felt that overall, investment in green jobs has been good especially in California. One of the experts felt that the return on investment has to be evaluated in due course by also taking into account social costs and benefits. Another expert felt that indicators such as the number of green jobs created, the level of training and the ability to connect to lower-income communities should be used to evaluate performance and determine the return on investment. One expert disclosed that a million dollars of investment results in 6-10 green

jobs. Experts also acknowledged the contribution of the *American Recovery and Reinvestment Act* to the green job movement. The California Advanced Lighting Controls Training Program (CALCTP), which has benefitted from this investment, is a statewide initiative aimed at increasing the use of lighting controls in commercial buildings and industrial facilities.

4. Unions

Collins, Bray and Burgess (2010) credit the shift towards sustainable production systems and green jobs to the efforts of unions. Byrd and Widenor (2011) also see the importance of unions in the proliferation of green jobs. They contend that through vigorous lobbying, unions have been able to secure funding of clean energy projects, specifically, for on-the-ground green jobs creation and training. In California, the Swanton Berry Farm, became the first organic farm to have a union contract. The result is better conditions for workers where they are paid an hourly wage, receive health insurance, a pension plan, paid vacation, and paid holidays. They are also automatically set up to earn a financial stake in the company via an Employee Stock Ownership Plan.

Daruwala (2011) touts the advantages of union support in creating good quality green jobs as well as the efforts of community organizations such as Blue Green Alliance and Apollo Alliance which specialize in, in her words ‘repainting union jobs green.’ However, Obach (2004) warns, “Labour unions and environmental movement organizations are among the most powerful social movement sectors in the United States. When they are capable of acting together they can advance policies that protect both working people and the natural environment. Yet divisions between these two actors can yield environmental devastation and attacks on the interests of workers and their unions. The creation of a just and sustainable economy depends on the ability of these two social movement sectors to come together to advance this common goal.”

The experts interviewed generally felt that the green job movement has helped create awareness of the significance of unions. A green job is not necessarily a good quality job but the collective bargaining power of unions can help change this. The union of electrical workers called The Brotherhood Of Electrical Workers is one such example. Yet, there is a long way to go. There have been some unionized jobs created in big solar farms but very few, if any, in the renewable energy and energy efficiency sectors. Only some of the work that is contracted out has been unionized.

Gregory et al. (1999) points out that the extent of union involvement in environmental protection is limited as evidenced in organizations such as the World Wildlife Fund, Greenpeace and Friends of the Earth which “together with green initiatives from other ‘new social movements’, have built a new policy field to which the unions, in the main, do not belong...The extent to which unions can become part of this environmental corporatism is likely to depend on the issues to which they commit themselves and the transparency and force of their shift towards an economic model which promotes sustainability as the domain objective”.

5. Impact of the Recession

In order to counter the recession, presidential candidate, Barack Obama, committed to a clean-energy plan that included biofuels, hybrid cars, low-emission coal plants, and renewable sources such as solar and wind that was anticipated to create 5 million green jobs. *The American Recovery and Reinvestment Act of 2009* earmarked \$90 billion for projects involving wind farms, solar installations, natural gas fueling stations, biofuel research, and a \$5 billion weatherization project for low-income homes. This was expected to give a boost to construction and other jobs related to these projects (Boudway 2012). While it is difficult to predict the exact amount of green jobs created, anecdotal evidence suggests some jurisdictions have put these funds to good use (Mayrl & Mattera 2010). According to a Brookings Institution study, the green economy grew faster than the rest of the U.S. economy during the recession, at a rate of 8.3%. Those sectors that grew fastest were solar thermal, the wind power industry, solar PV and biofuels. Moreover, these provide more opportunities and better pay for low-skilled workers. In California, these jobs have proved to be more resilient to the economic downturn (Muro, Rothwell & Saha 2011).

Some of the experts interviewed felt that green jobs have not led to economy recovery. Only about 10,000 jobs have been created in California during this period compared to 300,000-400,000 jobs lost in construction and the carbon reduction industries (Mattera 2009). Some of the experts spoke about the benefits of *The Recovery Act* which resulted in the creation of short-term specialized jobs and also invested in training to teach workers the skills required in emerging industries such as energy efficiency and renewable energy. The consensus among the experts was that the economic recovery package has been helpful. Investment in

building retrofits, for example, have resulted in keeping building costs down and the money saved can now be used for other purposes.

6. Standard of Living for Workers

For the purpose of this study, the provision of health insurance, affordable housing and a living wage constitute worker standard of living. Each of these are detailed below.

i) Health insurance is a necessary benefit for society. Research shows that the uninsured have shorter life-spans than the insured for a number of reasons. They are more susceptible to diseases due to irregular screenings which presents difficulties in monitoring chronic conditions such as diabetes. Shorter life spans result in tens of billions in lost health capital every year. The costs of the uninsured are transferred to society through lower worker productivity. Research has shown that the benefits to society of having more healthy individuals outweigh the costs of providing health insurance whether it is public or private. Another study advises, “The disparity in care between the insured and uninsured violates principles of democracy and equality and should not be financed by public dollars (Eisenhauer 2006).”

On a different note is the safety of workers in green jobs. A report by the European Agency For Safety And Health At Work discusses how this can be accomplished, “With regard to prevention, at the workplace level, risk assessment remains the key to devising adequate prevention measures that take into account the specificity of the green job considered and the workers involved.” With rapidly changing technologies used in the workplace, the report recommends input from technical staff to establish suitable occupation safety and health strategies and policies (Bradbrook, Duckworth, Ellwood, Miedzinski, Ravetz & Reynolds 2013). One such example is the UCLA Labour Occupational Safety and Health Program provides worker education and training in Southern California.

ii) Wage theft occurs when wages are not paid to workers that are legally owed to them and assumes different forms such as not paying workers for overtime or paying them less than the minimum wage. Illegally deducting money from workers’ pay checks, paying them late, or simply not paying them at all also constitute wage theft. Besides robbing workers of much needed income, wage theft also results in loss of tax revenue for the state

or county (Hernandez & Stepick 2012). Wage theft often prevents workers, especially low-income workers, from earning a living wage.

iii) Affordable housing for workers is also of utmost importance for worker well-being and the government could play a role in shaping policies for its provision. Geography plays an crucial role in this process since geographic areas such as cities, neighborhoods and block groups vary widely in their ability to provide affordable new housing. Generally, a unit is considered affordable if no more than 30% of the household's monthly income is needed to cover monthly housing costs (Feldman & Nissen 2006).

Some of the experts interviewed felt there was no concrete progress made with regard to improved health care, better opportunities for affordable housing or raise in the minimum wage for workers as a result of the green job movement. But there was some impact on wage theft. Some of the work brought in-house through the greening of jobs, has prevented wage theft, felt an expert.

V. Discussion

The growth in green jobs has been affected by a number of factors. First of all, only five percent of the country's energy is from renewable sources. Secondly, cheap energy prices compound the problem because it results in a lower profit margin for suppliers. Thirdly, many private sector companies have still not found their footing in the aftermath of the recession. This has prevented them from taking risks especially in new industries like the alternative energy sector. Manufacturing job losses and a drop in turbine installations are some of the direct consequences of the recession. Hence, those facilities producing primary turbine parts, like blades or towers, are operating below capacity and are therefore, will hire fewer wind technicians in the near future. All this has subdued the market for green energy and adversely affected demand for it (Potts 2010).

While the federal government's stimulus plan aided green job growth, its projections were not met. A study by the Government Accountability Office revealed that the Department of Labour was forced to initiate training programs for green jobs prior to determining the scope of and demand for such jobs. It spent about \$500 million in stimulus funds to support more than 100 training programs across the U.S. It did achieve some level of success as the number of participants exceeded

expectations. On the other hand, when 60 percent of training programs had ended, only 55 percent of participants were placed into jobs (Yehle 2013). It has been suggested that this stimulus money would have been better spent if directed towards struggling companies who would employ those being trained in green jobs (Younger 2012). The push towards green jobs has to come from a number of fronts. Hess (2012) presents a scenario in which, if by 2038, 40 percent of energy in the U.S. would come from renewable sources, there would be a 35 percent reduction in electricity consumption due to retrofitting and 30 percent of transportation would use alternative fuels, then green job growth, under these conditions, would constitute 10 percent of all new jobs.

Workers are the ones who reap the benefits when more good quality green jobs are created. The experts interviewed for this study provided solutions to remove the barriers to green job creation. One of the interviewees felt that economic rewards should be provided to corporations as an incentive to create green jobs. Public policies must play a role in the green job movement in creating standards and re-arranging power due to the profit-seeking motivation of corporations. Another interviewee felt that the creation of green jobs depends on the amount of investment and meeting renewable energy goals. However, it creates a barrier when people across the political spectrum don't believe in climate change. A third interviewee opined that there is an opportunity to create green jobs in transportation. At the moment jobs are becoming green rather than new ones being created. More money is needed for green industries to grow such as for retrofitting.

The state government of California has set ambitious goals for energy efficiency in buildings. Yet another interviewee asserted that there was a lot of excitement about green jobs but it didn't create the expected results. But the increased interest should be used as a chance to create better training and apprenticeship opportunities for workers. Overall, the impact has been positive but small. There has been a lot of 'fluff and cheerleading' but the task at hand is to build models for the green job movement that are going to work. It takes a lot of time and effort to create a good model like the one created by the Department of Water and Power. Another interviewee opined that it is time to move from green jobs created by government subsidies to those that are created by the market. When government funding is involved, there is an expectation from unions that the resulting jobs will be unionized. Therefore, workers will be paid at the prevailing wage which is a higher wage resulting in fewer green jobs created. This is not the case when funding is received from private sources. The private sector has had minimal involvement in

training which has been put in place by labour organizations and junior colleges. There is much potential for green job creation in energy retrofits. More importantly, the focus should be raising the standard of living of green jobs workers. This can be done by providing suitable benefits for workers such as health care and safety, affordable housing and transportation, and a living wage. When it comes to health care coverage, California has taken the lead in extending coverage to low-income workers. President Obama's *Affordable Care Act* (ACA) stipulates that employers hiring 50 or more workers who work at least 30 hours/week on the job must offer health benefits coverage or pay a penalty. California was among the first states with a state-based health insurance exchange under the ACA. This exchange, Covered California, is a virtual marketplace that provides citizens and legal immigrants the option to purchase subsidized health insurance if they earn up to 400% of the federal poverty line. The criterion for those who fall under this plan is that they should not have access to affordable employment-based coverage nor should they be eligible for Medi-Cal or other public coverage. Covered California health plans are also available to small employers through the Small Business Health Options Program (SHOP). This represents a significant increase in coverage with minimal cost to the state. An effective outreach strategy will only increase the number of those enrolled in this plan (Lyte et al. 2013).

Better affordable housing options can be offered to workers through increased funding, better land use regulations and innovative programs. Options to fund affordable housing include a county-wide jobs-housing linkage fee which is levied on new commercial, industrial, and retail development to build affordable housing for the jobs created by new development. Other funding options include a housing trust funded by a permanent local revenue source and by private funding if this is not feasible. In selecting suitable sites for affordable housing, the selection process should consider a number of factors with access to transportation being the chief among them. As part of a city's smart growth strategy, keeping equity in mind, reform efforts could include the selection of adequate sites, overlay zoning that offers incentives for higher density affordable housing development and stronger inclusionary zoning ordinances which requires higher in-lieu fees from developers who opt out of building affordable units on-site. Innovative programs such as state-chartered limited equity co-ops (LECs) that offer the possibility of homeownership, where members can take advantage of mortgage interest and property tax deductions from their federal income taxes, can also be explored (Rhee 2003).

One way to ensure a living wage for workers is for cities to attach wage standards to their economic development subsidies. These can be done through community benefits agreements or by enforcing prevailing wage laws such as business assistance living wage laws. These require businesses receiving public subsidies to pay workers wages above the poverty level. While these standards have been successful, critics claim that they prevent businesses from hiring more workers. Thus, they help some workers at the cost of hurting others. There are those who also claim that labour standards attached to business agreements deter investors by sending them an anti-business message. Advocates claim that these do not impact economic development outcomes and wage standards can be used as a tool to create jobs of greater quality without sacrificing jobs (Lester & Jacobs 2010).

VI. Conclusion

The green job movement hasn't come very far and in some jurisdictions, it is at the very beginning of its creation. There are, of course, exceptions to this. California has been a befitting example of fostering a culture conducive to the growth of green jobs through favorable public policies, adequate investment and governmental incentives for investment, the promotion of green energy technology and environmentally-conscious residents. The question, in this case, is whether and how this can be sustained. This certainly seems to be a challenge especially in the clean energy, renewable energy and energy efficiency sectors. Besides building weatherization and retrofitting, there is little growth in other sectors of the energy industry. Additional investment is needed and a lot of it – as one expert pointed out a million dollars of investment only creates 6-10 jobs. Given the low prices of energy, energy suppliers are unlikely to make such an investment and risk running at a loss.

Not all in this study proved negative about green jobs. The green economy grew faster than the rest of the U.S. economy during the recession. In California, green jobs created in sectors such as biofuels were more resilient to the economic downturn. However, compared to the number of jobs lost in the state, the impact of green job growth was miniscule. In some ways, the impact of the recession advanced the progress of the green job movement. The stimulus package allowed the private sector to use its money to make other investments but several questions still persist. How will green job growth be affected once the stimulus money is spent? With its sole focus on profit margins, can the

private sector be relied on to invest in green job growth? Can the public-private sector reach an agreement on the co-promotion of green jobs? In some ways, the impact of the recession also impeded progress in the green jobs movement. Those jobs created with the stimulus money were unionized and therefore, paid at a higher wage which resulted in fewer jobs created, this study found.

This study has, to a certain extent, proved that the future of green jobs in the clean energy, energy efficiency and renewable energy sectors of the energy industry is up in the air. The success of the green job movement here will depend on two factors – how much can green jobs grow in the future and how they will affect the standard of living of workers. This paper has already discussed the former. Workers' standard of living will be influenced by the level of training, the collective bargaining power of unions, opportunities for minorities, women and low-income workers. Training programs will have to be catered to the demands of the job market and meet established standards. While the influence of unions does not benefit every green endeavor, this study cites proof that unionized jobs have led to enhanced benefits for green job workers. Increased opportunities for low-income, women and minority workers in the workforce are dependent on green job growth. The more green jobs created, the more work opportunities for these sections of the population. The social justice theories of Mills, Rawls and Leacock address ways to raise the standard of living of workers. Several of these apply to the context of green jobs. In keeping with the philosophy of these theories, states should find innovative ways to cater to the health and safety of workers, ensure the prevention of wage theft and provide them with a living wage, and satisfy their affordable housing needs. States like California have made a concerted effort to do so. This paper has listed a number of ways how this can be accomplished. Now is the time for other jurisdictions to follow suit in achieving the growth and sustainability of green jobs and a higher standard of living for the green job worker.

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