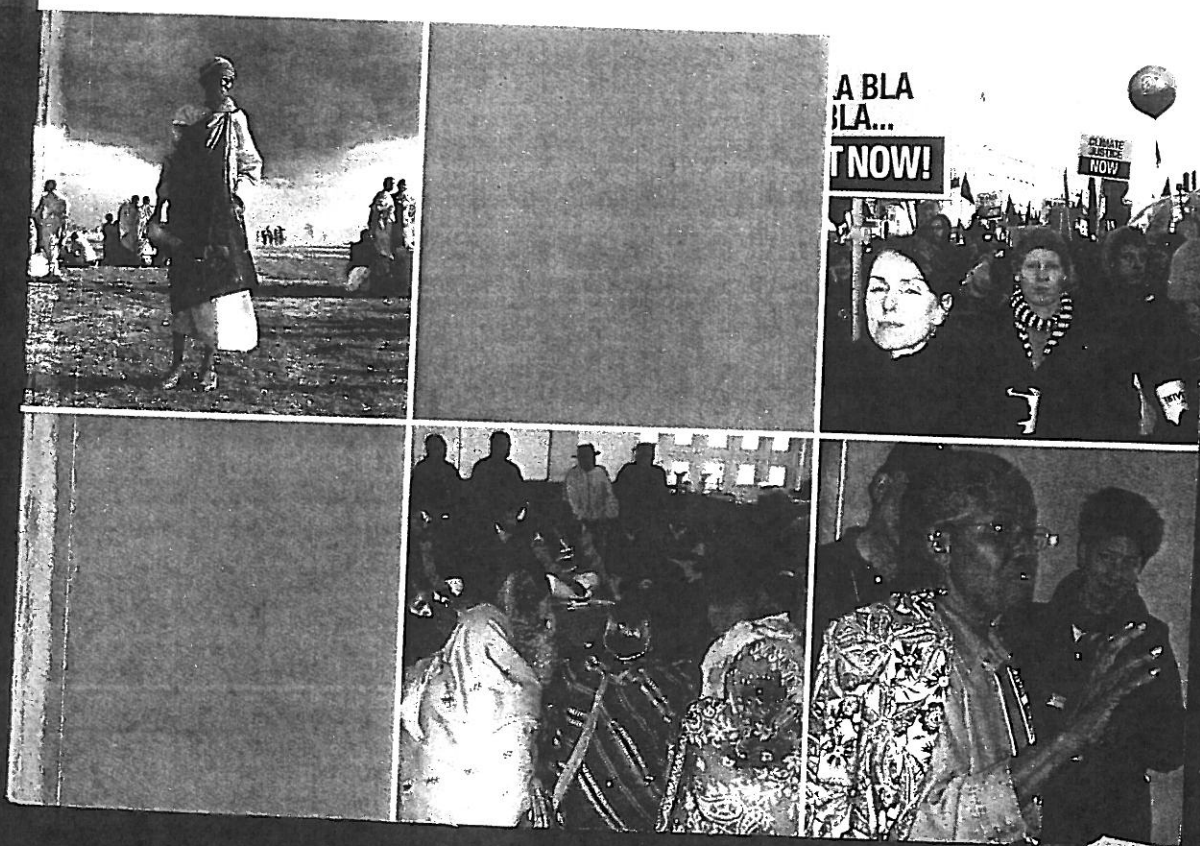


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Gender and Climate Change: An Introduction



CASE STUDY 5.8

WOMEN AT WORK: MITIGATION OPPORTUNITIES AT THE INTERSECTION OF REPRODUCTIVE JUSTICE AND CLIMATE JUSTICE – EXAMPLES FROM TWO INDUSTRIAL SECTORS IN THE US¹

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Introduction

Effectively solving the climate crisis demands that the mitigation and adaptation measures employed align with a justice agenda that improves the circumstances of poor people, people of colour, women, and children. If synergistic efforts to protect the planet and to improve the lives of the most vulnerable among us are made, we will create a sustainable system that asks more of those with the most to give and less of those with least to spare. There is no doubt that, in order to solve the climate crisis, a new economic and political system that is both sustainable and just will need to be constructed.

Women – who have and will continue to bear an increasingly disproportionate share of the climate change burden in coming decades – are central to the success of constructing this new system. The current working paradigm regarding women and climate change focuses on the fact that women, specifically women of colour, are disproportionately impacted by disasters and environmental degradation caused by climate change. In the US, women are 45 per cent more likely to be poor than men (National Women's Law Center, 2006). Low-income women, immigrant women and women of colour will be most impacted by the severe weather events, heatwaves and increases in disease rates that will characterize climatic changes. This paradigm encourages interventions to increase women's capacity to adapt to these changes. While a focus on women and adaptation is a vital undertaking, steps must also be taken to expand our

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comprehension of how women are affected by climate change, its causes and by the solutions to mitigate it. In this case study, the current working paradigm regarding gender and climate change will be expanded by a framework that addresses an intersection of reproductive justice and climate justice. This new framework brings an understanding of the need to include strategies that improve the health and working conditions of women of colour working in low-wage toxic industries as part of climate change adaptation and mitigation. This approach allows us to more clearly identify mitigating solutions that advance both reproductive justice and climate justice.

The grassroots community-based organization Asian Communities for Reproductive Justice (ACRJ) has begun to develop and work within the intersection of reproductive justice and climate justice (ACRJ and WHJI, 2009). Before working within this intersection, ACRJ developed a reproductive justice framework that is described in detail in *A New Vision for Advancing Our Movement for Reproductive Health, Reproductive Rights and Reproductive Justice* (ACRJ, 2005).² Reproductive justice in the workplace includes having a healthy and safe work environment, access to health care, freedom from discrimination and the ability to earn a living wage with dignity and respect. Climate justice addresses the inequalities caused by climate change. Climate justice ensures the freedom and equality of all people by addressing the unequal oppression created and/or exacerbated by climate change, such as sexism, racism, classism and xenophobia.³

Healthy workplaces: Healthy women, healthy Earth

When looking at the causes that both contribute to climate change and harm the reproductive health of women of colour workers in low-wage toxic industries, an opportunity transpires to identify and implement strategies that advance both reproductive justice and climate justice. Because women of colour tend to work in mid-market industries (Ortiz, 2006) a focus on such industries is called for in order to identify strategic opportunities for working at that intersection.

The importance of mid-market industries

Efforts to mitigate climate change have focused on energy producing industries and the transportation sector. It is also critical to investigate secondary industries that depend on fossil fuel energy production.

These industries that have indirect or 'secondary' greenhouse gas (GHG) emissions, and collectively are as dirty as the top emitters, are called mid-market companies (David and Lucile Packard Foundation et al, 2007). Reducing the emissions of mid-market companies has been identified as one of the top five most important strategies to reduce global warming by multiple experts (David and Lucile Packard Foundation et al, 2007). If mid-market industries don't alter their products and demands for energy, oil refineries and coal plants that are major sources of CO₂ emissions will continue to produce the same supply.

Understanding the life cycle of chemicals

Though mid-market industries do not directly emit significant amounts of GHGs, they have a greater than expected impact on global warming through GHG emissions released in the full life cycle (extraction, production, distribution, use and disposal) of the primary chemicals and materials used to make their products. Life cycle assessments (LCAs) can provide measurements of the impact of the entire life cycle of a chemical or material on particular environmental aspects such as energy consumption, GHG emissions or water contamination. LCA is a way to measure the GHG emissions from the products and supplies used by industries on top of the emissions from the production process.⁴

In the following low-wage industries with predominantly female workforces, climate change mitigation opportunities can also improve reproductive justice: the semiconductor industry and the nail salon industry.

The semiconductor industry

The semiconductor assembly industry⁵ is a low-wage top-emitting industry that primarily employs women of colour. The industry is classified by the US Environmental Protection Agency (EPA) as one of the top six industrial processes that contribute to global warming (US EPA, 2010). Current semiconductor manufacturing processes require the use of high global warming potential (GWP) fluorinated compounds, including perfluorocarbons, trifluoromethane, nitrogen trifluoride and sulfur hexafluoride, collectively termed perfluoro compounds (PFCs) (US EPA, 2009). PFCs have been identified as some of the most potent GHGs measured (US EPA, 2010).

(Smith et al, 2006). Comprehensively defining reproductive and cancer risks of women working in the semiconductor industry has been difficult because the US semiconductor industry has not supported access for independent studies (LaDou and Bailar, 2008).

In the case of the semiconductor industry, if we would identify the reproductive health impact as the sole focus of workplace change, then it could be determined that a better ventilation system is needed to decrease workers' exposure to chemicals. But when we look both ways and in addition to reproductive justice take into account the semiconductor industry's contribution to global warming, we are prompted to seek more comprehensive solutions that eliminate or reduce the hazardous chemicals that are harmful to women workers and the environment with specific attention towards decreasing GHG emissions.

The nail salon industry

The second industry this case study will apply the reproductive justice and climate justice framework to is the nail salon industry. Nail care is the fastest growing sector in the beauty industry, generating more than US\$2.8 billion in sales annually in the US in 2000 (US Census Bureau, 2002).⁶ These salons provide a critical source of employment for women of colour. According to Federmann et al (2006) in California alone, there are approximately 8300 nail salons and more than 300,000 people licensed to work in them. The majority of the nail salons in California are owned and staffed by Vietnamese women (Federmann et al, 2006).

Nail salons use a large range of unregulated (in the US) chemicals in products for nails as well as products mandated for use in cleaning the salons. The chemicals used include solvents, hardeners, fragrances, glues, polishes, and dry/curing agents. In addition to the chemicals in the cleaning products they are required to use, these chemicals pose risks to the health of nail salon workers, the environment and the climate. Climate change contributors used in nail salons are acetone, aluminium, ammonia, petrochemicals, magnesium and phenols. If life cycle assessments of the chemicals used in nail products and cleaning materials were to be conducted, the assessment of the industry's GHG emissions would substantially increase as compared to figures in the traditional use analysis.

Volatile organic compounds (VOCs) are chemicals used in nail salon products that contribute to global warming through their role in

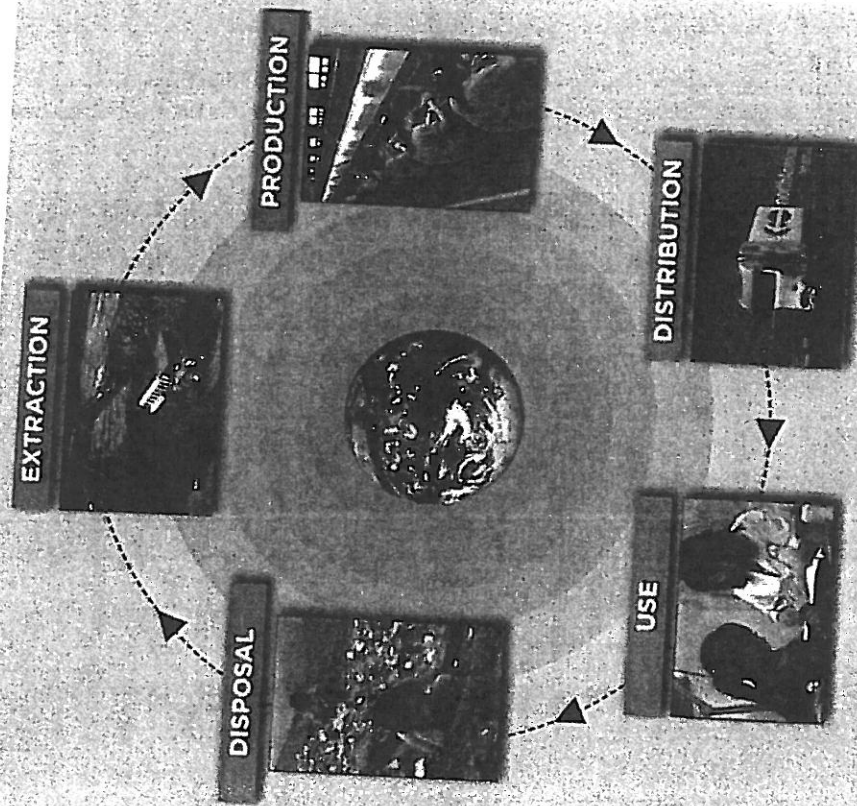


Figure 5.8.1 *Applying an LCA*

Source: ACRJ and WJJI, 2009, p13

While processes used in the semiconductor industry significantly contribute to global warming, the sector also considerably harms reproductive health and justice for women workers. Research has demonstrated that women working in the semiconductor industry may have an increased risk of delivering a low birth weight baby (Lipscomb et al, 1991), congenital malformation (Saillenfait and Robert, 2000), spontaneous abortion and subfertility (Correa et al, 1996; Schenker et al, 1995), cancer (Chen, 2007) and musculoskeletal problems (Chee and Rampal, 2004). Initial research has found associations between these health effects and workers' exposure to chemicals, including PFCs, used to manufacture microchips

the formation of smog. Acetone, a solvent in nail polish remover, is an example of one of the VOCs emitted directly from the use of remover in the salon. Many nail polishes contain the chemical aluminum calcium sodium silicate which requires aluminum to produce. The production of aluminum is one of six industrial processes classified as having high GWP by the EPA (US EPA, 2010) because during primary aluminum production, PFCs are emitted as byproducts of the smelting process. Therefore, the production of nail polish is dependent upon one of the top six GWP gas emitting industrial processes.

The production of ammonia, used to clean nail salons, is the 14th largest source of CO_2 in the US (USEPA, 2009b). Petrochemicals are used in nail polish in the form of polyvinyl chloride; their production is the 18th largest source of CO_2 in the US (US EPA, 2009b). Magnesium is also found in nail polish, and magnesium production and processing is the second largest source of sulfur hexafluoride in the US. Sulfur hexafluoride has one of the largest GWP of all GHGs (US EPA, 2009b).

In the US, nail salons are required to use hospital-grade cleaners and disinfectants. Chemicals known as phenols are used in nail salons as disinfectants, degreasers and slimicides to clean the equipment and the salons themselves. In order to produce phenols, large amounts of the GHG nitrous oxide (N_2O) are used. Manufactured sources of nitrous oxide accounted for approximately 4.4 per cent of all GHG emissions in the US in 2007 (US EPA, 2009c). Although N_2O emissions are much lower than CO_2 emissions, N_2O is approximately 300 times more powerful than CO_2 at trapping heat in the atmosphere and nitrous oxide production is the third largest source of N_2O emissions in the US (US EPA, 2009c).

The impact of the use and disposal of nail salon products also creates GHG emissions. For example, at an ex-Revlon site in New Jersey that was used to manufacture nail salon products, tetrachloroethene (PCE) and other VOCs have been found to be serious polluting contaminants (Amuthan, 2008). The health effects of PCE in humans include neurological, liver and kidney problems following short-term and long-term inhalation. PCE evaporates readily from soil and surface water and undergoes degradation in air to produce direct and indirect GHGs that contribute to climate change including phosgene, trichloroacetyl chloride, hydrogen chloride, carbon monoxide and CO_2 .

Reproductive justice is only possible when women are physically healthy and when their economic, political and social rights are assured. Although more longitudinal research is needed in order to fully understand the long-term health impacts of working in a nail salon, the research to date points to possible serious health effects. Studies have shown that manicurists and cosmetologists may experience disproportionate rates of multiple myeloma (Guidotti et al, 2007), spontaneous abortion (John et al, 1994), birth defects, reproductive problems and asthma (Porter, 2009). Moreover, a reproductive justice analysis of working conditions in nail salons directs improvements not only to making the nail salon environment one that is conducive to good health, but also to increasing wages, improving benefits, reducing working hours, reducing harassment and discrimination, and creating more educational opportunities for the workers.

POLISH: Nail salon workers looking both ways

ACRJ has applied the reproductive justice and climate justice framework to the nail salon industry, focusing specifically on nail salon workers in Oakland, California through the project POLISH (Participatory Research, Organizing and Leadership Initiative for Safety and Health) that organizes workers. POLISH is a leading member of the California Healthy Nail Salon Collaborative, an alliance of community, advocacy, policy and research organizations dedicated to advancing a preventative environmental health agenda for the nail salon industry in California. Over the past two years, this project has made gains in a successful campaign pressuring government agencies to prioritize education and access to health and safety information for workers and salon owners. Currently, POLISH is designing a local campaign in Oakland to improve reproductive justice for nail salon workers and reduce the GHGs emitted by products used in this industry.

Conclusions and lessons learned

In the US, both the semiconductor and nail salon industries employ significant numbers of immigrant women; both industries have been found to have possible negative reproductive health consequences for workers and both are, in their own way, complicit in the widespread chemical production and consumption that contribute to climate

change. The nail salon industry represents a mid-market industry that experts agree needs to be comprehensively addressing the climate crisis. The semiconductor industry has been identified as a top GHG emitter. Solutions that combine reproductive justice and climate justice within these two industries represent new, local and forward-looking strategies to the climate crisis – ensuring both sustainability and justice. Similar solutions should be strived for in other low-wage toxic industries with primarily female workforces. The opportunity is ripe for corporations and individual businesses to be accountable to the reproductive health of the women whom their success depends on and at the same time reduce or eliminate GHG emissions.

These changes can happen at multiple levels. Entire industries as well as individual businesses can take action at the intersection. Individual businesses can choose to change and/or eliminate hazardous products. Cities and regions can also provide incentives and support local businesses to make changes that advance reproductive justice and climate justice.

Change at the industry level can happen as a result of government regulations and/or voluntarily. For example, an industry can take pre-emptive actions or be regulated to change the chemicals and materials in the production that impact on reproductive health and global warming. Cities, counties and states can participate in creating an environment that supports industries to transition by rewarding those that incorporate greener and safer practices. In order for cities and/or states to make the link from products and chemicals used to global warming, several steps are important. First, they must incorporate an LCA framework to measure GHG emissions; thereby making tools and methods available to conduct LCA and analyse product and supply chains. Secondly, government and industry must collaborate with affected communities and incorporate the leadership and solutions from workers themselves. Ultimately through this range of government and community activity, it will be more probable for industry to be on a path towards altering the chemical composition of what they supply. This will result in healthier outcomes for workers, surrounding communities and the planet.

Moving beyond a gender analysis that solely focuses on the disproportionate impact of climate change on women, and embracing the complex interactions between women's well-being and climate change mitigation holds the potential to activate and mobilize larger

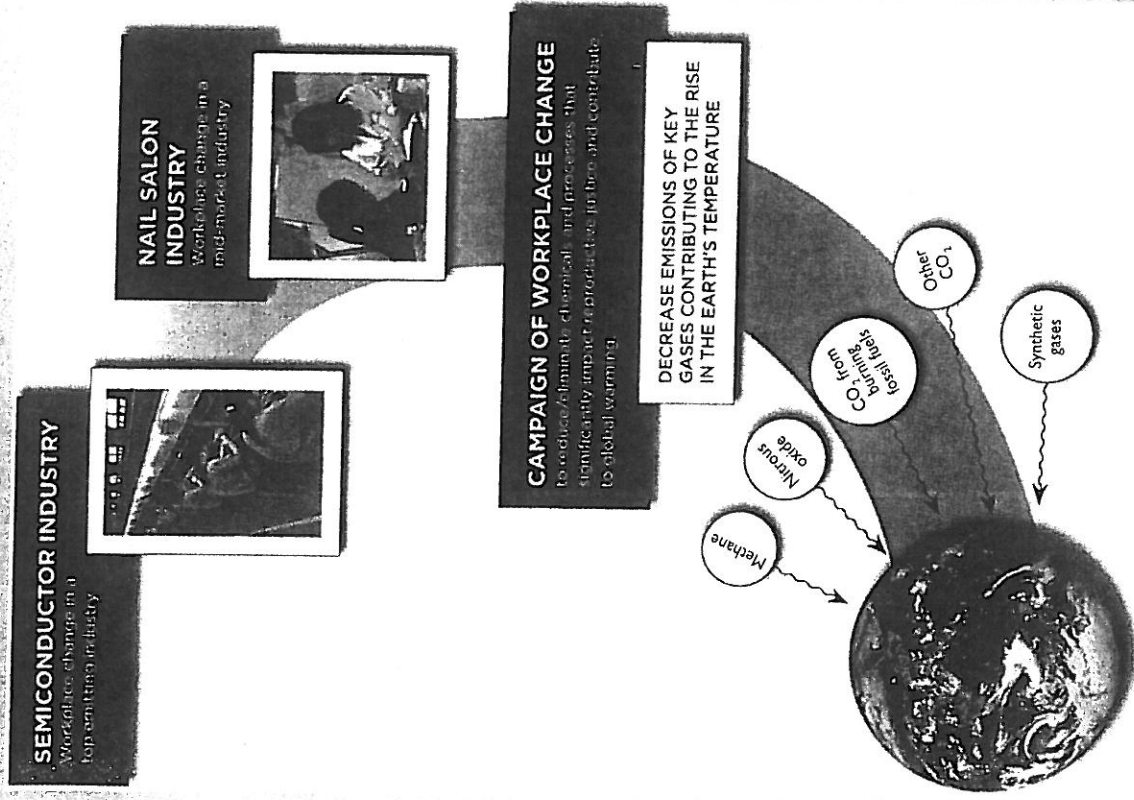


Figure 5.8.2 Industry change that can mitigate climate change and improve the health of workers

Source: ACRJ and WHJI, 2009, p. 18

constituencies that advance reproductive justice and climate justice and keep our movements strong, relevant and forward-looking.

Notes

- 1 This case study is based on a report by Asian Communities for Reproductive Justice (ACRJ) and the New Orleans Women's Health & Justice Initiative (WHJI) entitled *Looking Both Ways: Women's Lives at the Crossroads of Reproductive Justice and Climate Justice* by A. Rojas-Cheatham, D. Paredes, S. Griffin, A. Shah and E. Shen. Elements of the original report have been updated for purposes of this case study. <http://reproductivejustice.org/assets/docs/ACRJ-MS5-Looking-Both-Ways.pdf>, accessed 4 January 2010.
- 2 Reproductive justice exists when all people have the economic, social, and political power and resources to make healthy decisions about our gender, bodies and sexuality for ourselves, our families and our communities. This definition was developed by ACRJ (2005).
- 3 This definition of climate justice was developed by members of ACRJ's youth project, Sisters in Action for Issues of Reproductive Empowerment (SAFIRE). The members of SAFIRE are currently learning about climate change and are designing a project at the intersection of reproductive justice and climate justice. SAFIRE members first learned about climate justice as defined by the organization, Environmental Justice and Climate Change Initiative (EJCC) and then developed their own definition described in this case study.

It is very apparent to the authors of this case study that LCAs would significantly assess increased emissions estimates as compared to a traditional point of use or point of production analysis. This was confirmed in a conversation between Ann Rojas-Cheatham (primary author of this case study) and Daniel T. McGrath, Director of the Berkeley Institute of the Environment on 16 October 2009. In the University of California Berkeley Climate Change Feasibility Study, adding the life cycle calculation to the emissions inventory can be expressed as a 130 per cent emissions increase (UC Berkeley Climate Action Partnership Feasibility Study 2006–2007 Final Report, <http://sustainability.berkeley.edu/calcap/docs/CalCAP%20Report%20FINAL%202007.pdf>, accessed 10 January 2010).

The semiconductor industry is a multiple lever and technology enabler for the whole electronics value chain (www.wikipedia.org/wiki/Semiconductor_industry). While the semiconductor industry embodies the aggregate collection of companies engaged in the design and fabrication of semiconductor devices, the assertions of this paper are specific to the fabrication phase (manufacturing and production) of these products.

- 6 Nail salons generate US\$2.8 billion per year according to the US census data from the year 2002. This number was generated by adding receipts from employers (US\$1000) figures and from non-employers (businesses with no paid employees) (US Census Bureau, 2002).

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Part III

Strategies and Action