

Jobs: What's green got to do with it?

A thesis

submitted by

Jerrad Pierce

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Advisor: Sheldon Krinsky

Reader: Laurie Goldman

Abstract

Using a data driven thematic analysis of 85 newspaper articles from the four Census Regions of the United States, 43 articles from the national press, 17 selected studies and 29 trade paper articles, variations in the themes associated with green jobs across regions and source are explored. An initial hypothesis that the West and Northeast regions would favor environmental benefits of green jobs, versus an emphasis on employment benefits in the South and Midwest, is not confirmed. However, statistically significant variations in several areas are found including the perceived skill-level of green jobs, and their association with environmental topics such as resource conservation. Key findings are: 1) Northeastern newspapers discuss green jobs in the context of values and issues—based on Lakoff’s levels of analysis—more than other sources. 2) Analytical studies contain more references to a wider variety of themes than other sources.

Available at <http://pthbb.org/natural/UEP-Thesis.pdf>

Keywords: green jobs, ecolinguistics, framing, polysemy

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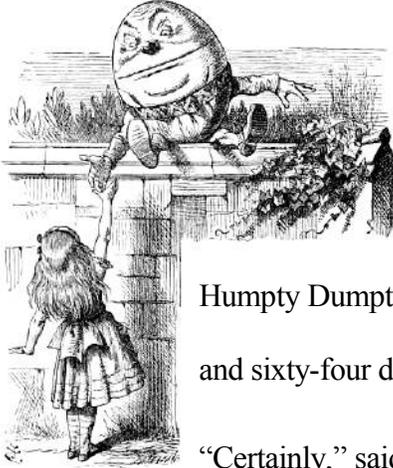
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Prologue

Humpty Dumpty said gaily ... “that shows that there are three hundred and sixty-four days when you might get un-birthday presents—”

“Certainly,” said Alice.

“And only *one* for birthday presents, you know. There's glory for you!”

“I don't know what you mean by ‘glory’,” Alice said.

Humpty Dumpty smiled contemptuously. “Of course you don't—till I tell you. I meant ‘there's a nice knock-down argument for you!’”

“But ‘glory’ doesn't mean ‘there's a nice knock-down argument’,”

Alice objected.

“When I use a word,” Humpty Dumpty said, in a rather scornful tone, “it means just what I choose it to mean—neither more nor less.”

“The question is,” said Alice, “whether you can make words mean so many different things.”

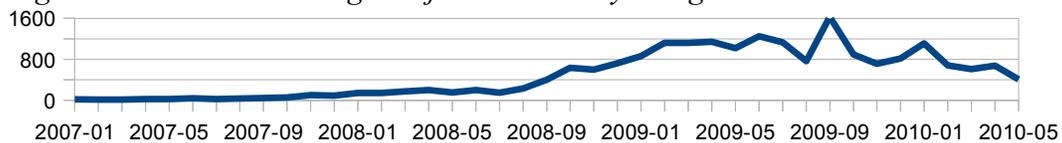
“The question is,” said Humpty Dumpty, “which is to be master—that's all.”

– Lewis Carroll, Through the Looking Glass

1 Introduction

In the past year and a half the concept of green jobs has surged into the public consciousness as news coverage of the topic has grown (Google News, 2010). Green jobs feature prominently on the Obama administration’s agenda, and intersect some of the most important issues of the day namely: the environment, economy and employment. The graph below shows the number of articles per month which mention green jobs, increasing nearly 80-fold from January 2007 to January 2009 (Google News)¹. Major events during this period include: passage of the Green Jobs Act of 2007, as part of the Housing and Economic Recovery Act of 2008; the 2008 presidential campaign and election of Barack Obama (2008-11); passage of the American Recovery and Reinvestment Act (ARRA, 2009-02); appointment and resignation of activist Van Jones as the White House Council on Environmental Quality’s Special Advisor for Green Jobs, colloquially dubbed “Green Jobs Czar” (2009-03—2009-09); and the announcement of the Obama administration’s “Cash for Caulkers” (2009-12) initiative.

Figure 1.1: Articles about green jobs indexed by Google News



Source: Author; Data: Google News, 2010

¹ The graph is a readily accessible proxy for available news coverage of green jobs, but is imperfect because Google News includes some English-language content from foreign news sources.

But what does this pervasive phrase mean? What is a green job? Here are some examples of how the media convey a definition of green jobs:

I know, it should be obvious. Green workers are people who make solar panels, install insulation, run recycling programs, and similarly environmentally helpful things. But it quickly gets more complex than that.

Are all workers at an automaker green if a few of them make hybrid cars? Does the janitor's position at a wind-turbine factory count as a green job? What about the urban planner who designs a mass transit system one year and a strip mall the next? (Belsie, 2009).

* * *

Green jobs are generally defined as those that involve protecting wildlife or ecosystems, reducing pollution or waste, or reducing energy use and lowering carbon emissions, according to Rutgers University's John J. Heldrich Center for Workforce Development, in New Brunswick. (Lee, 2009).

* * *

Several environmental advocates polled by NEWSWEEK defined green jobs the way Supreme Court Justice Potter Stewart famously defined obscenity: I'll know it when I see it. (Stone, 2009).

* * *

Washington [state] ... will share almost \$13.5 million [with five other states and the District of Columbia] to train workers for "green" jobs within the energy and *health care* [emphasis added] sectors. (Burnham, 2010; U.S. Department of Labor, 2010).

Despite all this coverage—more than 15,000 news articles worth—there appears to be a considerable amount of confusion surrounding the term “green jobs” in public discourse (Google News, 2010; Badger, 2009), as evidenced by the myriad manners in which those jobs are described, and the disparate forms of employment that are included or excluded by various authors. Is this simply a

matter of reporters misunderstanding the material, or are there potentially larger issues at hand? What might the significance of the situation be if politicians and the public are floundering to grasp the meaning of this (relatively) new (to non-specialists) term, or working with different definitions?

Language—of course—frames the debate around a topic and can affect its outcome,. In particular vague terminology can influence several steps of the policy cycle. The accuracy and (political) utility of economic estimates of the growth potential for green jobs depends in part upon who is counted and who is not. Expectations among potential workers (and employers) regarding wages and benefits, job security *et cetera* may be influenced by the rhetoric they encounter. As used, the term green jobs may be too broad to be useful, a criticism often levied at a similar phrase that swept into vogue in recent years: sustainable development. Clarity is also crucial to effective policy implementation, and the combination of a colorful adjective with an intangible noun is unlikely to be sufficient guidance for bureaucrats tasked with reforming labor, education, economic and environmental policies. Lastly, the use of non-standardized terminology could result in wasted effort and resources as stakeholders unwittingly debate different things.

As an example, assuming sufficient agreement was reached to pass major legislation regarding green jobs, the definition employed would influence which segments of the executive branch should implement the intended programs. This could subsequently affect the specific types of green job training and business

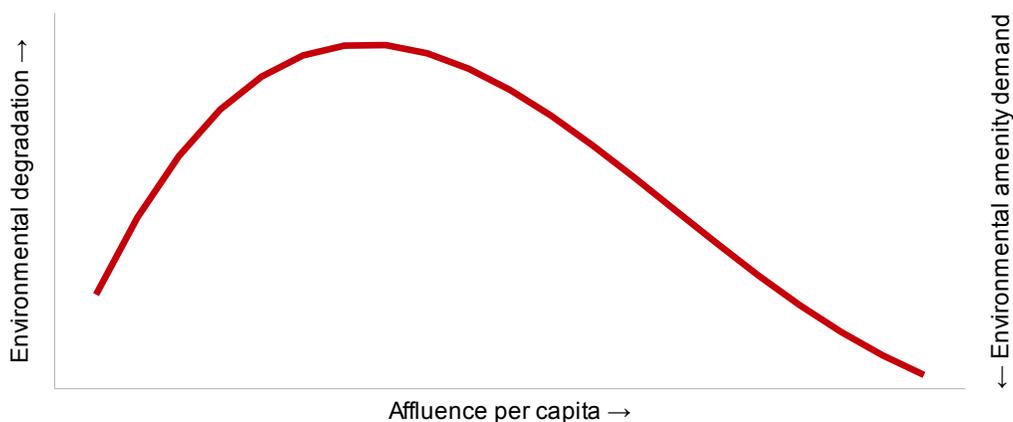
incentives available. For instance, a techno-centric or energy-focused definition of green jobs might lead to a research-oriented organization such as the Department of Energy (DoE) becoming the designated implementing agency. The DoE could promote research into speculative technologies such as carbon sequestration and nuclear fusion, or it might even interpret the mandate as a justification for redoubling its efforts at Yucca Mountain and expanding American nuclear programs. A concept of green jobs that emphasizes accessibility, equity and future workers might be assigned to the Department of Education, which could choose to bolster vocational programs in community colleges. Likewise policies and regulations from a Department of Labor-led green jobs program would be shaped by its own mandate, agenda and culture.

This research seeks to answer the question: What is the perceived meaning of green jobs? Are different groups using green jobs in distinct ways that could complicate policy setting and implementation as outlined above, and if so what are they? It is believed that Southern and Midwestern sources will be more skeptical/critical of green jobs, and focus on the potential employee benefits, versus the generally pro-position of the Northeast and West coasts which will emphasize the environmental benefits. This is due to the generally conservative views prevalent in the South and Midwest, as well as the fact that these areas are more dependent upon heavy industry. The West and Northeast are centers of richer, more liberal and technology-based economies. In other words, this hypothesis of regional variation is an example of an environmental Kuznets curve.

The premise of the environmental Kuznets curve (EKC) theory—shown graphically in Figure 1.2—can be succinctly phrased as follows: Once basic needs are met, greater affluence increases demand for environmental amenities; this is similar to the trade-off one observes with respect to income and leisure. Although the EKC is typically applied at the national level, generalizing its use to other geographic scales is a natural extension of this theory e.g; *The Environmental Kuznets Curve for U.S. Counties: A Spatial Econometric Analysis with Extensions* (Rupasingha1, Goetz, Debertin & Pagoulatos, 2004) and, *Is There an Environmental Urban Kuznets Curve? The Case of Polluting Emissions Due to Daily Mobility in 37 Cities* (Meunié & Pouyanne, 2007).

Both of the above studies found evidence of the theorized income-effects at sub-national scales, and additional studies have uncovered regional variation in other variables. For instance, in *Place, Distance, and Environmental News: Geographic Variation in Newspaper Coverage of the Spotted Owl Conflict* Bendix & Liebler indicate that framing variables are responsive to place characteristics (1999, p. 670).

Figure 1.2: Environmental Kuznets Curve



Source: Author

1.1 Overview

The literature review (Chapter 2) to follow seeks to substantiate the claims above regarding the importance of ambiguity, language, symbols and framing to policy in general, and where possible environmental policy in particular. To do so it will be necessary to draw upon works from a variety of fields including environmental policy, political science, and ecolinguistics.

Next, a discussion of the methodology employed to determine the symbology present in descriptions of green jobs, a form of thematic analysis, opens Chapter 3. An outline of the selection criteria and procedures for the corpus follows, and finally the process for converting the qualitative products from the thematic analysis into quantitative data are discussed.

Chapter 4 contains statistical analysis and charts of 32 index variables created from approximately two hundred thematic analysis codes, along with proposed explanations for the variations observed. An overview of the analysis is given in the chapter summary, section 4.5.

The fifth and final chapter summarizes the key findings of this research, and places them in a broader context of the reviewed literature. Additional readings and suggestions for future work are referenced.

2 Literature Review

If, while visiting a town in the foothills of the Sierra Nevada, a stranger tells you to beware of polecats in the area you might thank him for the warning but laugh it off thinking that surely there aren't that many bobcats/cougars/pumas/mountain lions roaming about in this modern age. Or, as a visiting European you might wonder why you should worry about wild ferrets. However, if you were an avid fan of Mark Twain you would now know there are *Mephitidae* on the prowl and you risk being sprayed by a skunk; you might also infer something about the education or geographical origins of your would be savior.

Words matter, and names especially matter. It is easy to dismiss such a statement as a truism but its simplicity belies its significance. In fact there are whole disciplines and sub-fields of academia dedicated to exploring the implications of word choice and meaning including two which are of particular relevance to this paper 1) ecolinguistics and 2) framing; although as shall be seen in later examples the subject is of interest to a variety of social scientists.

Framing is most frequently associated with political science, but is a vital part of social marketing and planning as well. It "is about getting language that fits your worldview. It is not just language. The ideas are primary—and the language carries those ideas, evokes those ideas" (Lakoff, 2004, p. 4). In other words, the theory of framing is that through the careful selection of words, a collection of other ideas which support the speaker's messages are (subconsciously) brought into play. This

is different from “spin,” wherein falsehoods or half-truths are obscured and made palatable through doublespeak or other slight of tongue. In one sense, the goal of spin is to increase ambiguity, whereas careful framing seeks to reduce it.

The field of ecolinguistics encompasses two reciprocal pursuits: the study of the use of language or metaphor in environmental discourse, and the application of an ecological metaphor to the study of language. In The Ecolinguistics Reader: Language, Ecology and Environment Harris offers a concise description of the relevance of vocabulary and meaning to the creation of policy, “If we cannot communicate in the here-and-now about the present circumstances, there is no way we are ever going to be able to communicate about the past or the future” (2001, p. 158). Therefore,

when considering metaphors we must question the job that they do, in particular how they can advance our insights into the workings of nature [or society]. Metaphors that achieve this—for example, those of the ‘flow’ of electricity or of the glaciers as a ‘memory’ of past climates—should be distinguished from ‘hot air’ metaphors, such as the reduction of carbon emissions causing ‘pain and anguish’ to the economy or ‘green consumerism’

... [excerpts are reordered]

It is not our brief to arbitrate on which ... metaphors ... are ‘right’ or ‘better’ and which ones are ‘wrong’ or ‘worse’. We hope we have made clear that it would be quite inappropriate to judge metaphors in terms of those categories. They are tools meant to help us explore the unknown and as tools are either useful, harmful or useless but neither right nor wrong. (Harré, Brockmeir, Mühlhäuser, 1999, p. 109).

Thus, ecolinguistics and framing both suggest that deliberate phrasing is important in the pursuit of both social and academic progress, a perspective affirmed with one last excerpt from Harré *et al.*:

few ... pay any specific attention to the linguistic properties or the communicative function of such metaphors or indeed the question of what job they do in understanding green issues. This, one might wish to argue, constitutes a problem, in the sense that some arguments could have been strengthened and others avoided had more attention been paid to the role of metaphor. As we have tried to show ... metaphors are not the fuzzy edges of scientific arguments nor undesirable detractors from the truth, but, in many instances, heuristic tools that, when applied skillfully, knowingly and in the full knowledge that they are tools and not mirror images of reality, can considerably advance the knowledge of environmental matters (1999, p. 114).

2.1 Ambiguity

There are echoes of both Harré *et al.* and Harris in Gerring & Baressi's discussion of ambiguous metaphor:

Indeed, lexical confusion may be regarded as both a primary cause of the ongoing fragmentation of the social sciences at the turn of the 21st century and a principal medium through which that fragmentation occurs. Because we cannot achieve a basic level of agreement on the terms by which we analyze the social world, agreement on conclusions is impossible.

Regrettably, social scientists have not paid much attention to concept formation (2003, p. 202).

At this point it is worth noting that although much of the literature cited in this review concerns the use of metaphor within acadæmia, and the work in this thesis principally focuses on lay publications, the implications for productivity are the same in both arenas, and the former informs the latter *through* concept formation.

Much of the discussion of ambiguity in policy literature is about ensuring faithful implementation, however there is also some discussion about policy formation or agenda setting. In these areas, ambiguity is generally treated as beneficial or a

necessary evil, and those who decry it as pursuing an overly rational model of policy making (Matland, 1995; Stone, 2002), even seeking to subvert the democratic process. “What was unambiguous could not be contested and therefore was being placed outside the political arena” (Chock, 1995, p. 171). Or, as Harris explains: “If you accept the facts as established ... and you accept the metaphor as a reasonable summary, then you are trapped” (2001, p. 156).

In The Policy Paradox, Stone claims that ambiguity in symbols allows for the formation of coalitions (2002, p. 138), and furthermore that these coalitions are a prerequisite for the transformation of individual intent into collective purpose (p. 157). She goes on to state however, that although ambiguity may be beneficial in the early stages of coalition formation, it masks future rifts, citing later divisions among entrepreneurial and mothering feminists as an example (p. 158). In the realm of green jobs the Blue Green Alliance of labor and environmental organizations could be an example of just such a partnership founded in the pursuit of a goal which is ambiguous enough to permit each party to perceive in it that which it desires.

Foster offers another rationale for accepting ambiguity. In his view, it allows us (as a learning society) to “engage the exploratory-creative use of words and ideas” (2005, p. 34). He further argues:

An important test of such a learning society ... would be its not developing an inherent tendency to fetishise its major metaphors, to rigidify their exploratory-creative character into a simulacrum of science or social science. A learning society is one which does not automatically try to turn its heuristic parallels and paradoxes into parameters.

This is the flip-side to Gerring & Baressi's argument that the careless propagation of new phrases and meanings impedes productive discourse and the process of knowledge creation. Their proposed solution to these opposing forces is the use of "min-max" definitions i.e; a pair of definitions for any given concept. One definition which is generic and broad, but sufficiently detailed to capture the majority of cases. A second extremely detailed definition describes an "ideal-type" with conditions that are rarely if ever all satisfied.² The result "bind[s] a concept in semantic and referential space, providing the most satisfactory general definition for that concept" and "structures ongoing debate over terms and meanings so that they can proceed more productively" (2003, p. 201 & 227).

Finally, Mandelker outlines an interesting linkage between agenda setting and policy implementation that results from poorly scoped definitions. In *Environmental Policy: The Next Generation*, he describes "the perils of fragmentation" that arise from political symbolism, namely overly narrow and incomplete policy solutions to problems which beget ambiguous and conflicting regulations. For example, in an effort to comply with the Clean Air Act a power plant drawing cooling water from a local stream might reuse the water in its sulfur dioxide scrubbers before returning the borrowed water. The upshot being that an air pollution *cum* remote water body acidification problem becomes one of local water body acidification. In this case, the conflict could easily be solved by

² A minimal definition for green jobs might be "occupations which are less damaging to the environment than their conventional counterparts" with a corresponding ideal-type of: safe, well-paid, interesting, and upwardly-mobile occupations available to all whom seek them, as well as providing satisfaction and meaning for the same while improving humanity's relationship with the natural environment.

treating the effluent to modify its pH, but not all ambiguities are as blatant or simple to overcome. Indeed, one could imagine instances where political symbolism and fragmentation would result not in ambiguous or conflicting regulations *per se*, but instead in a lack of attention-to or omission-of some aspects of an otherwise comprehensive program necessary to effectively address an issue. If due to inconsistent definitions green jobs are perceived by the vocal majority purely as a stop-gap measure for the economic crisis of the late 2000s, and a high-tech silver bullet to our ongoing struggle with energy issues then programs for transitional training plus research and development will be undertaken. Meanwhile, other views of green jobs as the core of a broader and necessary economic, educational and environmental reform agenda could be overlooked leaving holes in official policy which neglect to prepare the next generation of workers, and fail to provide adequate incentives for business to adopt green technologies and practices.

2.2 Similarly Polysemous Subjects³

Although Foster advises against automatically seeking to parametrize and rigidify codes and concepts (2005, p. 34), the body of the same essay is part of a tradition of seeking to disentangle the meaning of vague and contested terminology within the social sciences related to environmental policy. For,

One of the most interesting problems within the burgeoning literature on ecological sustainability is that the concept itself, while politically ubiquitous, is also analytically ambiguous. There

³ Polysemy is lexical ambiguity. This heading refers to the exploration of other vague forms of greenspeak in this section e.g; sustainable development.

is even some concern that it has become “intellectually empty;” deployed “to justify and legitimize a myriad of policies and practices ranging from communal agrarian utopianism to large-scale capital-intensive market development.” Indeed, concerns about the contested meanings of “sustainability” have motivated a new field of critical analysis of ecological discourses and symbolic politics (Amsler, 2009, p. 111).

In *Making sense of stewardship*, the concepts of environmental stewardship, sustainable development and natural capital are all grappled with as he explores the use of metaphor (Foster, 2005). He begins by outlining two major schools of thought regarding the interpretation of metaphor. Namely, predicative and enactive. Predicative metaphors can be succinctly described as a lingual Venn diagram where the features of X that could be rationally attributed to Y are understood to be the intended meaning, whereas an enactive metaphor represents perpetual tension between the conflicting clauses (p. 27).

In just the same way, the point of a picture, poem or piece of music is not to give us a message or a particular experience, although these forms can nevertheless be found revealing, insightful, thought-provoking or moving—they can be charged with meaning even when they don’t tell us anything. Understanding [such] a metaphor is not a passage from recognition of *prima facie* falsity to identification of *secunda facie* truth, but the holding together of two centres of attention, which between them enact significance.

This raises the question, should green jobs be interpreted predicatively or enactively? The search for idiosyncratic themes and implicit minimal definition in the subsequent chapters of this thesis presupposes a predicative interpretation.

Other insightful treatises investigating metaphors within environmental policy include Åkerman on natural capital (2005), plus Lockie, Lyons & Lawrence on

“green” food (2000) in Australia/New Zealand. Both Lockie *et al.* and Amsler (2009) of the previous section apply Ulrich Beck’s theory of a “risk society”—the ultimate Kuznets curve in which societal focus shifts from distribution of wealth to risk—to environmental symbolism and “green” metaphors. Such a theory suggests that discussion of green jobs would focus not on a pay and stability, but job safety (intrinsic risk) or climate change (extrinsic risk).

2.3 Green Jobs

Little literature exists on the myriad meanings of green jobs themselves, although Penney’s review of the literature (2002), contains an excellent overview of numerous definitions within an international and academic purview including the following footnote on its synonyms:

In addition to “green jobs” and “environmental employment” various authors refer to “environmental jobs,” “environmental careers,” “sustainable employment” and “sustainable livelihoods.” A couple of authors also use the term “green collar workers:” as a way of describing people in environmental jobs. Each expression has a slightly different implicit meaning and usage . Environmental researchers and academics are more likely to use “environmental employment.” Authors of career guides for young people, environmental industry advocates and people concerned with training professionals talk about “environmental careers.” “Sustainable livelihoods” is used mainly by writers concerned about peasants and marginalized populations in the South who are not usually in waged employment. A few writers also use “sustainable livelihoods” because they are interested in posing alternatives to conventional employment relations in visioning sustainable futures in developed as well as less developed parts of the world. (pp. 57–58).

Penney states that the term green job is of indefinite origins but was in use as far back as the mid-1990s (2002, p. 57), thereby disproving any claim that the metaphor remains ill-defined because it is a preliminary attempt to explore new ground; particularly if one considers the jobs-and-environment framing efforts of the late 1980s (p. 11). She also notes that few authors give proper definitions of green jobs, instead listing examples that might be considered green, typically vocations related to waste management and building retrofits, or especially among government works, pollution control and mediation (p. 58). Finally, she points out several similarities between the notion of sustainable development and green jobs, including an observation that much discussion of these terms revolves around which aspect(s) of the matter one is concerned with. Does the method or the sector make the job green? Or maybe the output?

These are questions the federal government continues to grapple with. Some segments—BLS, DoE and OMB—seem to see little or no distinction between green jobs and conventional employment, even though to other groups they are distinct and significant enough to warrant considerable attention. For instance, the first meeting of Vice President Joseph Biden’s Middle Class Task Force was devoted to the topic of green jobs (OEVP, 2009). In early 2009 the Bureau of Labor Statistics’ (BLS) SOC Policy Committee (SOCPC) completed its review of job titles for the 2010 Standard Occupational Classification (SOC) Manual, in which:

The SOCCPC carefully analyzed over 80 unique suggestions regarding “green” occupations and considered these recommendations from the perspective of the classification principles of the SOC. In many cases, the work performed in the “green” job was identical or similar to work performed in existing SOC occupations. For example, the work performed by a “Sustainable Landscape Architect” is already included in the SOC definition for “Landscape Architects” (17–1012). The SOCCPC did recommend adding “Wind Turbine Service Technicians” (49–9081) and “Solar Photovoltaic Installers” (47–2231) to the revised 2010 SOC. Workers in both of these occupations perform tasks that are sufficiently distinct from tasks in existing SOC occupations, and analysis of reports provided by the U.S. Department of Energy [DOE] and the California Employment Development Department, Labor Market Information Division provided evidence supporting the collectability of data on these proposed occupations.

In cases involving requests for occupations already covered in the existing SOC, the SOCCPC often altered definitions and titles of existing SOC occupations to clarify where the workers specified in a particular comment should be classified. (OMB, 2009, p. 3923)

Another approach to the question of whether method/sector/output or intention qualifies a job as green is proposed by Kate Crowley (1998, as cited in Penney, 2002, p. 60). She speaks of a spectrum of green jobs, with the ends being anchored by the now-familiar-within-environmentalism-circles nuance-enhancing prepositions light and dark. Crowley claims that most occupations referred to as green jobs are light green, “which pose little or no challenge to the current structure and goals of the economy.” If this is indeed the case, then perhaps the debate over green jobs is much ado about nothing.

3 Methodology

The methodology chosen for this paper—thematic analysis—was shaped by discussion with the author’s advisors, as well as a number of sources examined during the compilation of the literature review. Analysis was principally performed on text from the popular press, based on the belief that the press both affects and reflects the views of the public. Therefore a survey of major newspapers was deemed to be an adequate means of gauging public perceptions of green jobs.

During the initial stages of the literature review samples of similar research were sought in the hopes that they might provide examples of an established code for themes common in environmental discourse, and their underlying meaning. Although they did not offer such ready-made answers, several did offer valuable insights, which are referenced in the preceding literature review. The following contributed to the evolution of the methodology described below, and were considered to validate the approach.

Similar approaches are used in *Place, Distance, and Environmental News: Geographic Variation in Newspaper Coverage of the Spotted Owl Conflict* (Bendix & Liebler, 1999) and to a lesser extent *The Tobacco Settlement: An Analysis of Newspaper Coverage of a National Policy Debate, 1997-98* (Lima & Siegel, 1999).

Framing Discourse on the Environment (Alexander, 2009) makes use of concordances, or limited extracts from a source document including the term of interest and the surrounding text, to explore the meaning in numerous documents.

Greenspeak (Harré, Brockmeier & Mülhäusler, 1999) is a broad review of ecolinguistics. Of particular note is the application of Vladimir Propp's analytical methods for staple fairy tale plot points to environmental narrative. Although not employed, this technique allows one to uncover discursive elements which seem to be very satisfying to message recipients (Harré *et al.*, 1999, p. 75), and may therefore form more compelling and acceptable rhetoric.

Transforming Qualitative Information (Boyatzis, 1998) is a primer on thematic analysis, both manifest and latent. A data-driven approach to manifest analysis was adopted, and adapted for this research.

3.1 Corpus

Text from a variety of sources were analyzed including major newspapers and news magazines; trade paper and journal articles; government bills, research and press releases; as well as non-profit position statements.

3.1.1 Popular press

The table below documents which major news sources were included, and the number of articles sought from each. Sources from across the geographical and economic spectrum were chosen—from major coal producers (CO, OH, PA) and other meccas of extractive industry (OR, TX) to the rust belt (IL, MI, NJ, OH, PA) and centers of high technology (CA, MA, NJ, WA)—and correspond roughly to the major population centers of the nation as demonstrated in Figure 4.1 on page 38. The number of articles examined is roughly proportional to the source's

circulation (ABC, 2009), with larger samples for higher circulation sources based on the notion that they would have a larger impact via a trickle-down effect. The newspapers reaching more than five hundred thousand readers are well-established as news leaders, and their stories are often picked up by other outlets.

Table 3.1: Source newspaper details

Source	Publisher	Circulation	Sample	Available	
				LNA	DJF
<i>Census Region Total: Midwest</i>		1,281,762	19	167	62
Chicago Tribune	Tribune Co.	465,892	5	12	0
Minneapolis Star-Tribune	Star Tribune Co.	304,543	5	89	35
Cleveland Plain Dealer	Advance Publications	271,180	5	62	27
Kansas City Star (MO)	McClatchy Co.	240,147	4	4	0
<i>Census Region Total: Northeast</i>		1,769,662	22	331	311
New York Times	NY Times Co.	927,851	7	137	109
Philadelphia Inquirer	Phil. Media Holdings	361,480	5	61	54
Boston Globe	NY Times Co.	264,105	5	–	94
Star-Ledger (Newark, NJ)	Advance Publications	216,226	5	133	54
<i>Census Region Total: South</i>		1,418,830	22	337	256
Washington Post	Washington Post Co.	582,844	7	169	143
Houston Chronicle	Hearst Co.	384,419	5	62	42
Saint Petersburg Times	Times Publishing Co.	240,147	5	67	46
Atlanta Journal-Constitution	Cox Enterprises	211,420	5	39	25
<i>Census Region Total: West</i>		1,511,140	22	167	72
Los Angeles Times	Tribune Co.	657,467	7	27	0
Denver Post	MediaNews Group	340,949	5	53	44
Seattle Times	Seattle Times Co.	263,588	5	16	0
Oregonian	Advance Publications	249,136	5	95	28
Associated Press		N/A	10	200	809
Reuters	Thomson Reuters	N/A	8	–	266
Time	Time Inc.	3,350,415	5	15	2
Newsweek	Washington Post Co.	2,720,034	5	21	18
Wall Street Journal	News Corp.	2,024,269	5	0	79
USA Today	Gannett Co.	1,900,116	5	42	25
US News & World Report		1,269,260	5	10	14
<i>SUBTOTAL (National)</i>		>11,264,094	43	288	1,213
<i>SUBTOTAL (Local)</i>		5,981,394	85	1,002	701
TOTAL		>17,245,488	128	1,290	1,914

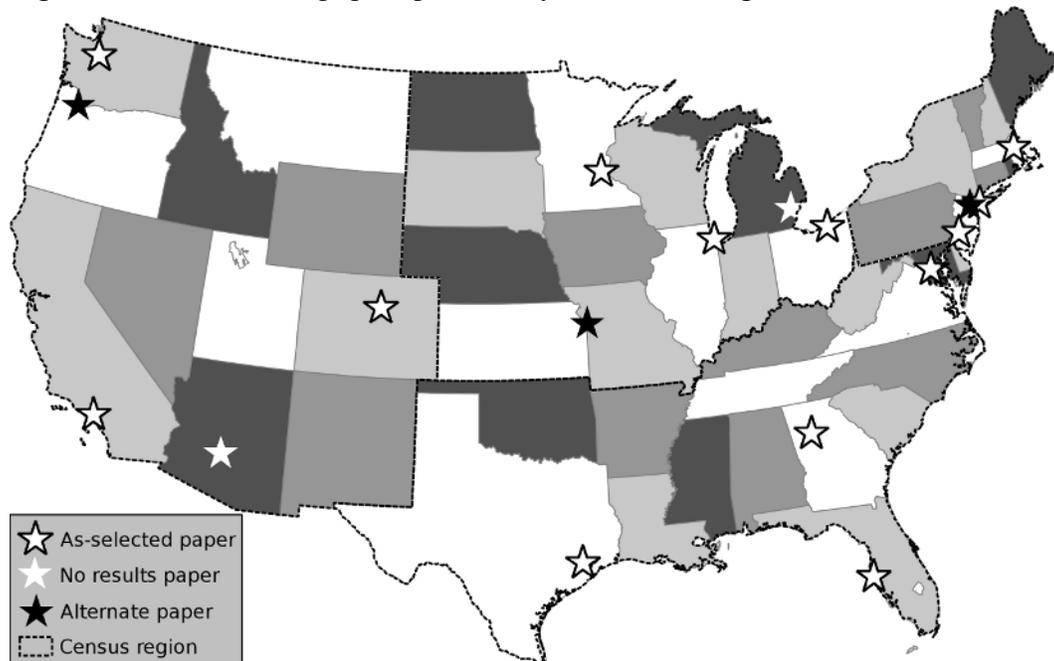
Adapted from: ABC, 2009; MPA, 2009.

LNA = LexisNexis Academic, DJF = Dow Jones Factiva

Newspapers were chosen based on statistics from the Audit Bureau of Circulations, and limited to papers with more than 250,000 daily readers. If multiple newspapers in a state satisfied this condition, the paper with the largest readership was selected. The national papers *USA Today* and *The Wall Street Journal* were also included as part of a control corpus, as were news magazines with circulation in excess of one million readers, and syndicated news feeds.

Two newspapers which satisfied these criteria, the *Detroit Free Press* and *The Arizona Republic*, are not included because no articles about green jobs were available from Lexis Nexis Academic (LNA), a final constraint on source selection. They were replaced with the next largest papers satisfying these conditions, respectively *The Kansas City Star* and *The Oregonian*.

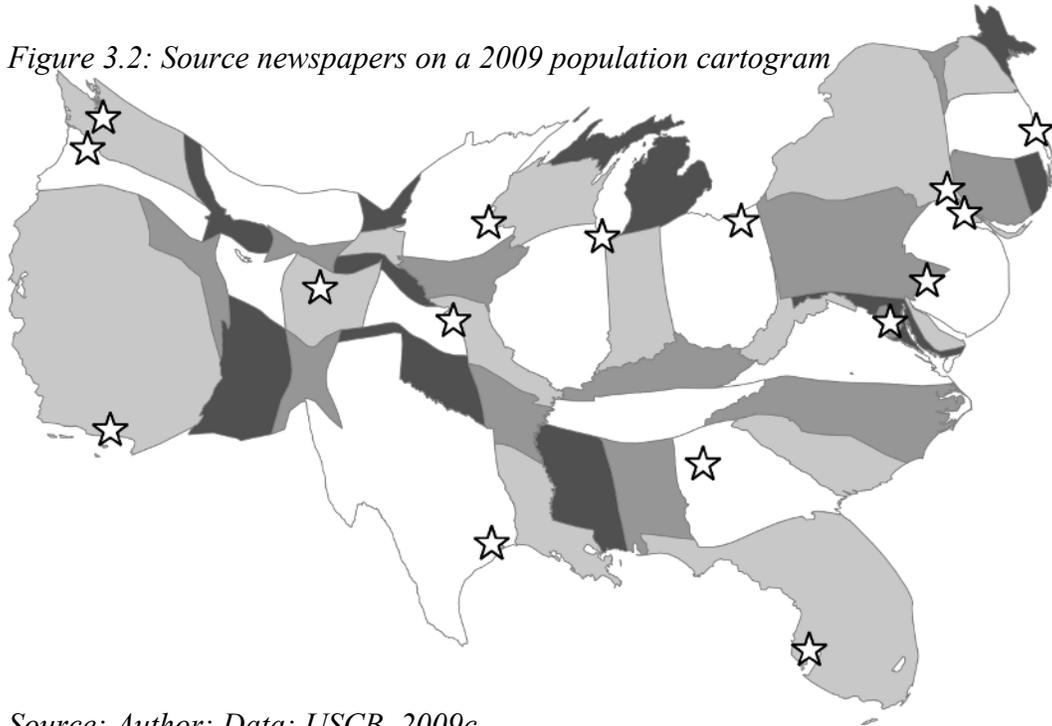
Figure 3.1: Source newspapers plotted in four Census Regions



Source: Author

The results were grouped by Census Region—dotted lines in Figure 3.1—giving four papers each in the West (population 71,568,081) and Midwest (66,836,911), three in the Northeast (55,283,679), and two in the South (113,317,879) (Census Bureau [USCB], 2009c). Since this severely under-represented the South additional sources were sought, and the next highest ranking newspapers were added: the *St. Petersburg Times* & *The Atlanta Journal-Constitution*. Finally, for parity amongst regions, the Northeast gained the *Newark Star-Ledger*.

Figure 3.2: Source newspapers on a 2009 population cartogram



Source: Author; Data: USCB, 2009c

Some readers may question the representativeness of this sample given the clustering of sources in the northeast quadrant of the country, and the exclusion of non-conterminous states. Figure 3.2 above shows these same newspaper locations on a population cartogram, where they are much more evenly distributed. In addition, there are no high circulation newspapers in Alaska or Hawaii, which rank 48th and 43rd in population; roughly equal to North Dakota and Maine.

Convenience and accuracy were primary factors in the decision to rely upon LNA as the source and filter for articles, because the behavior of search engines on individual newspaper websites varies widely. Some sites include user comments, while others cannot search for exact phrases like “green jobs.” Although searching individual sources on Google with the *site:* operator to limit results to the desired publication was considered, the difficulty of excluding undesirable content such as user comments⁴ remained cumbersome⁵. Therefore, the specified number of articles from each source were selected via a search on LexisNexis Academic limited to that publication, and sorted by relevance.

Unfortunately, *The Wall Street Journal* (WSJ) and *Boston Globe* were both unavailable via LNA. Each was considered an important source for the perspectives it could bring—the business-focus of WSJ and the green technologies coverage of Massachusetts’ universities and start-ups in the *Globe*—therefore an alternate source was required⁶. Dow Jones Factiva (DJF), a database similar to LNA, included both of the papers missing from LNA and was used as the source for only these newspapers as well as the international news agency Reuters; additional searches were performed with DJF to confirm the absence of articles about green jobs in the *Detroit Free Press* and *The Arizona Republic*. For additional discussion of LNA versus DJF see §3.4.1 Popular press.

⁴ Although it could be instructive to examine reader perceptions through user comments, that material is one step removed from the central question of this research. Furthermore, online commentary is frequently colored with passion, vitriol and lack of civility which could distort the commenter’s actual position.

⁵ Even with the benefit of Google’s PageRank, a measure of how popular articles are, thereby selecting those which had presumably had the largest impact upon the public.

⁶ Although *The Boston Globe* has been owned by The New York Times Co since 1993, it has largely maintained a distinct voice until recent cut-backs in the newsroom spurred greater content cross-over.

3.1.2 Trade papers

Thirty articles were selected by searching American trade papers and magazines within ABI/Inform and EBSCOhost for the term green jobs; some results were excluded due to difficulties extracting comprehensible text.

Table 3.2: Trade paper break-down by sector

Sector	Articles
Business / Management	3
Construction	4
Engineering	1
Food Service	1
HR / Training	5
HVAC / Plumbing	4
Manufacturing	1
Planning	1
Safety	2
Utilities & Fossil Fuels	5
Waste Management / Recycling	3
TOTAL	30

Source: Author

3.1.3 Analytical studies

A variety of government, and other organizational reports were collected and reviewed. They are grouped together due to the complex network of relations surrounding authorship and sponsorship of such documents. In other cases such as the *Current and Potential Green Jobs in the U.S. Economy* for the United States Conference of Mayors and the Mayors Climate Protection Center, the distinction between government and association is less clear (Global Insight, 2008).

The majority of these documents were located by reviewing California’s Digest of Green Reports and Studies (California Employment Development Department, 2009)—a collection of articles about the green economy—for reports with titles or filenames referring to green jobs. Entries referring to green collar jobs, clean energy, or other related terms were not included, both as a means of keeping the corpus a manageable size, and with the assumption that authors familiar with the field would be careful with their word choice i.e; when they wrote of green collar jobs, they specifically meant to invoke imagery of hard hats, unions and lunch pails. Two documents satisfied these constraints but were omitted due to complications in text extraction: EDF’s *Green Jobs Guidebook* (2008) and *Helping workforce training and education programs support green job growth in the Sacramento Region* (Mazzai, Mayes & Shepard, 2009). Three others—the frequently cited report by the U.S. Mayors Conference (Global Insight, 2008), a second UN report (UNEP, 2008), and a brief from the Heldrich Center (Cleary & Kopicki, 2009)—lacked a distinct summary and were therefore discarded.⁷

Additional documents—uncovered during the original literature review for this paper—were: a report prepared on behalf of Senator Kit Bond, as well as the staff report on green jobs from the Vice President’s Middle Class Task Force.⁸ The remainder of the 17 reports are from CA, CO, DC, MI, MN, MO, OR, PA, TN, WA plus the UN, National Center for O*Net Development, Political Economy Research Institute, Workforce Information Council and Good Jobs First.

⁷ Only summaries were analyzed, see §3.2.2

⁸ Somewhat surprisingly, there were no reports available in the Congressional Quarterly library.

3.2 Thematic Analysis

To help ensure the consistency of the coding process, plain text versions of the works to be examined were used.⁹ In this way graphical elements did not influence the analysis, although a case could be made for reviewing this content separately—the layout and imagery present in some forms of media certainly affects a reader’s impression of an article as a whole, and therefore influences perceptions of its topic—it is beyond the scope of this work.

3.2.1 Software

Although it is facile to mark-up facsimiles of articles or make notes in a logbook, analysis of the results is complicated by the task of collating these observations. To simplify this process, a number of software packages have been developed, but they can be difficult to locate and evaluate due to the variety of terminology used. A number of related techniques including content analysis require similar software, and there is also considerable overlap with several sub-disciplines within computer science and artificial intelligence. Some of the common names for this genre of software include: QDA (qualitative data analysis), CAQDAS (computer-assisted QDA software), annotation, and others.

Some helpful guides and directories for selecting software are:

- Choosing a CAQDAS Package — <http://cue.berkeley.edu/qdaarticle.pdf>
- Choosing software — <http://caqdas.soc.surrey.ac.uk/softwareoptions.html>
- CAQDAS – A primer — <http://www.restore.ac.uk/lboro/research/software/caqdas.php>
- Software for QDA — <http://www.unige.ch/ses/sococ/aqual/links/qualsoft.html>

⁹ This is also a requirement of the Weft QDA software.

It is important to consider one's preferred workflow and the minimum set of features necessary to accomplish this when selecting a software package. These guides can help one through the process, and list some lesser-known free software alternatives in addition to the conventional commercial products. Particularly notable packages are the Center for Disease Control's robust and featureful ANSWR, RQDA (QDA implementation in the R statistics language), and the programmable GATE (General Architecture for Text Engineering) suite.

Because there was no predefined code book or theory to derive one from, and the material itself was relied upon to develop a set of themes, the ability to perform *ad hoc* coding was required; something ANSWR and many other programs lack. The remaining requirements were fairly basic: the ability to search, and retrieve coded extracts with source citation. The minimalist QDA package Weft satisfied all these requirements, and was also cross-platform thusly permitting work on different computers without difficulty. Weft QDA's simple design also lacks support for rich text formatting, facilitating the analysis of manifest themes.

3.2.2 Coding

Since the interest of this paper is not the general characterization of discourse in which the term green jobs occurs, but rather of occurrences of the term, a hybrid concordance-thematic analysis approach was used. Documents were coded by searching for the keyword job, then reading matching phrases as well as those before and after. This focus on the concordance-like context allowed for the review of the themes mostly closely associated with the topic as well as

discussion about green jobs using expletive subjects e.g; “Many activists and some politicians are calling for policies to promote the growth of so-called green jobs because of the many virtues attributed to them. *They* provide living wages, often make use of a worker’s existing skill-set, and help this nation gain energy independence.” The lone word “job” was searched for rather than “green jobs,” since authors often drop the modifier for stylistic reasons, and also as a form of expletive subject like if one were to replace “They” in the example above with “These jobs.” Searching for the singular form also catches other use cases such as definitions: A green job does not harm the environment.

As previously noted alternative terminology for green jobs such as “sustainable employment” and “environmental jobs” exist however, they are perceived as being rare outside of academic literature and therefore are not explicitly searched for in the source documents; yielding the added benefit of a simpler and more focused process of analysis; this supposition appears to be born out by the histogram of synonym occurrences in Appendix I — Synonyms. “Green energy job” and “green collar job” are considerably less ambiguous terms than green jobs, but they are at times used interchangeably with it. Therefore this author’s discretion is employed as to whether these or other terms are being used as a synonym and should be coded, along with an indication of the actual term used and number of occurrences. Also recorded is whether the term is presented in quotes or with the derogatory antecedent “so-called,” and how central it is to the article e.g; presence within the title or first 100 words.

Due to the length of most analytical studies, only the executive summaries or similar section was coded. Additional justifications for this decision are: 1) the primary arguments or themes of a report would be highlighted in the executive summary and 2) that this section is what many readers would focus upon.

After all documents were coded, a code book was produced, and codes were merged or more clearly differentiated as needed. 437 input codes were transformed into 303 codes for analysis, including 54 for green job synonyms.

3.2.3 Sample excerpt

The example was randomly selected from the most common theme: job growth.

Primary green occupations with the most opportunity for growth through 2016 include construction managers, environmental engineering technicians, operating engineers, electricians, environmental engineers, and pipe layers. The occupations cited span a variety of education and skill levels. (MERIC, 2009, p.1).

Additional coded themes:

- definition/includes/hard-hat
- definition/includes/plumbers
- definition/includes/white-collar/engineering
- job-type/skill-level/wide-range
- synonym/green/occupation

3.3 Data Analysis

As the first step of data analysis, index variables were created for select subject areas such as resource conservation, based on the presence of one or more related themes in an article. The themes comprising each variable are listed in Appendix III — Analytical Theme Clusters on page 79. All but two of these variables (the

rate of occurrence of pro- and con- themes) simply indicate the presence or absence of the subject in an article. This binary state places brief, punchy articles—common in trade papers and some newspapers—on more equal footing with the in-depth¹⁰, long-form text of magazines and analytical studies than calculation of theme frequency. In addition, the non-pro/con variables codes for the absolute value of a theme—which are in fact coded separately—rather than whether the context is in-support-of, or against the particular notion since generally the goal was to determine which topics were affiliated with green jobs.

Next, the significance of variable variance across regions/sources was tested using the K-Independents method in SPSS, otherwise known as the Kruskal-Wallis Test. The results are similar to those for one-way ANOVA or Pearson's Chi, but the test does not assume a normal distribution and is therefore more appropriate for the binary variables developed for this analysis. Variables are marked with standard asterisk notation (***) = $p \leq 0.001$, ** for ≤ 0.050 , and * for $p \leq 0.100$) in the summary table of distribution descriptives.

Finally, regionally pooled means were graphed and those falling outside of one standard deviation were noted. This permitted the testing of the hypothesis that Southern and Midwestern sources would be more skeptical/critical of green jobs, emphasizing the potential employee benefits, versus a generally accepting and positive stance by the Northeast and West coasts focused on the environmental benefits of green jobs.

¹⁰ Longer news articles theoretically have the opportunity to cover material in-breadth but this appears to be the exception rather than the rule.

One section of analysis—4.4.1—is worth special note, as it attempts to address the question of distinctive meanings for the term green jobs by different groups in a unique way. Themes are grouped into variables for each of Lakoff’s levels of analysis i.e; values & principles, issue categories, programs & policies (Lakoff as cited in Wallack, 2005). If participants in the public discourse about green jobs are communicating on different levels, this could prevent them from understanding one another, or potentially place the platform of parties promoting higher-level themes at a disadvantage,

3.4 Assumptions & Limitations

In addition to the obvious limitations of this paper such as the use of a single reader for the thematic analysis, or a small number of articles from a single newspaper in each represented state (precluding more detailed local analysis), there are other potential sources of error in this research design.

3.4.1 Popular press

Originally Reuters and The Associated Press (AP) were each to be represented by nine articles however, after the initial stage of thematic analysis was complete it was discovered that only eight Reuters articles had been reviewed. In addition, an earlier decision to exclude an AP article syndicated from *The Wall Street Journal*, was reversed. This article was added back to the corpus, although it was also included in the WSJ sample, maintaining the original allotment of 18 articles for news wires. It could be argued that this altered mix better represents the actual impact of these services, since Reuters appears to be a less common source of

syndicated material in American newspapers. This relates to a previous point regarding sample proportionality to circulation which is worth reiterating: national news sources and larger newspapers should be a larger part of the corpus because smaller news outlets frequently pick-up stories from these leaders. Likewise, through their high profile presence online these larger papers can reach other readers in their region beyond those in the immediate distribution area; this could even extend the readership of some papers to give them a significant presence outside of their assigned region, which is not controlled for in this paper.

The replacement of the *Detroit Free Press* and *The Arizona Republic*, with *The Kansas City Star* and *The Oregonian* due to an absence of articles from the former duo in LexisNexis Academic altered the character of the Western and Midwestern samples. Although the themes regarding manufacturing one would expect in a Michiganite paper were present in Minnesota and Ohio, they were absent from Missouri and therefore their regional prominence was skewed. Although the addition of Oregon made it possible for a number of resource dependency themes such as timber and salmon harvesting to be linked to the discussion, the economic and political landscape in Oregon is decidedly different from that in Arizona. Indeed Arizona is considerably more conservative than Oregon according to a 2008 Gallup poll (Jones, 2009). Lastly, it is possible that the proximities of some cities such as Portland and Seattle, or especially Newark to New York City may have resulted in less diverse sample than first appearances would indicate. See Figure 3.2 *Source newspapers on a 2009 population cartogram*, page 21.

The article sample for the *Boston Globe*, *The Wall Street Journal*, and *Reuters* may not be comparable to those from other popular press sources since they were selected with the search algorithm from Dow Jones Factiva, as opposed to LexisNexis Academic. When the search results of these two databases were compared for seven sources there seemed to be little correlation between the two; the top results were not merely in a different order, but high ranking articles (within the top 10) in LNA were often located in the thirties and forties of DJF. Given this disparity, an attempt to reduce it and increase the sample size for each newspaper present in both databases was made by selecting the top two results in DNJ not duplicating those from LNA. Somewhat surprisingly the resulting articles were rarely on topic and bore little or no mention of green jobs, even though they were within the top dozen results; fortunately no such difficulty was experienced with the other sources available only via DNJ. As a result, these selections were not added to the corpus.

The databases consulted may have incomplete coverage of some sources. LNA only indexes the last two years of *Time*, whereas DNJ only offers access to material via the magazine's website. In addition, three newspapers in LNA—Seattle, Chicago and Kansas City—were only available via aggregate news feeds, however when these papers were searched in DNJ no results were found.

Although public comments such as “Letters to the Editor” were not included in the corpus, editorials and opinion editorials were. This runs counter to the conventional wisdom of comparing like with like, but it seems a reasonable

departure given the nature of the inquiry, to discover: What do people mean when they speak about green jobs? It should be noted though, that these editorials and opinion pieces make up perhaps 10% of the corpus. An exact value is impossible to provide since such a calculation requires a firm cut-off for a highly variable and subjective attribute however, the articles explicitly marked opinion or editorial comprise 9.3% of those from the popular press or 6.9% overall.

Similarly, even though the Associated Press was included as a portion of the national press corpus, the eight articles from the AP reprinted in local newspapers were not excluded from the sample. Even though these articles may be (largely) written on the other side of the country, they still contain perspectives the residents of the respective regions were exposed to, and are often composites of AP and local reporting. This is comparable to another small segment of articles which hail from national desks of parent publishing companies or as in another case, was reprinted from *The New York Times*.

A number of high-ranking articles referred to the resignation of Van Jones as the White House Council on Environmental Quality's Special Advisor for Green Jobs. Although it is possible some information could have been gleaned from these pieces, most were discarded since the only reference to green jobs was through Mr. Jones' title. Other cases where subjectivity influenced article selection are: the exclusion of a trade paper article about the dangers of bidding on green jobs [bids], the inclusion of an article about the impact of water restrictions on landscaping, and the inclusion of three digest columns composed of multiple brief headlines with summaries.

3.4.2 Trade Papers

The corpus contains the fullest readily available sample available at the time the thematic analysis was conducted, but it is obviously incomplete and narrow. A brief review of ABI/Inform just a six weeks later (in July 2010) revealed almost twice as many articles available in the index.

3.4.3 Analytical studies & legislation

Three major documents were not included due to their girth and lack of executive summary: *Green Jobs Act of 2007*, *Clean Energy and “Green” Jobs* (2008), *Green Jobs and Their Role in Our Economic Recovery* (2009). From a cursory examination, the single most relevant chunk of text in all three documents is this summary of the bill in the Green Jobs Act of 2007 (pp. 6–7):

The legislation would establish a grant program for Energy Efficiency and Renewable Energy Workforce Training to be administered by the Department of Labor (DOL) in coordination with the Department of Energy to help America develop the specialized workforce skills needed to ensure robust growth and development of good jobs in the renewable energy and energy efficiency industries. The initiative would: (1) expand our nation’s capacity to identify and track the new jobs and skills associated with the growing clean energy technology sector; (2) develop national and state skill training programs that will demonstrate best practices in quality training that address skill shortages that have already begun to impair the expansion of clean energy and efficiency technologies; and (3) provide a pathway out of poverty by training targeted workers for sustainable employment.

Also omitted from the corpus for lack of a summary are two of the most frequently cited reports, *Preparing the Workforce for a “Green Jobs” Economy* (Cleary & Kopicki, 2009) and *Green Jobs in U.S. Metro Areas* from The U.S. Conference of Mayors and the Mayors Climate Protection Center (Global Insight, 2008).

3.4.4 Synonymy

Ironically, although the purpose of this study is to disambiguate a common phrase, one final but major limitation of this research arises from ambiguity of language. Discourse of employment often shifts from jobs, positions, or occupations to sectors and economies with little context available to discern if the author is referring to another class of noun or is simply employing the substitute as a synecdoche. As a result, the concordance-like review of the phrases surrounding instances of the word job in the corpus may yield an incomplete picture of the characterization of green jobs in these texts. Although efforts were made to visually scan for synecdoches, it was not possible to review them all without the investment of considerable time and effort. Additionally, the interpretation of any such instances was largely subjective.

3.4.5 Index variables

Although many codes are reused two or three times in the construction of index variables, this should not reduce the overall power of the analysis through induced collinearity. Code reuse occurs predominately through the creation of general positive and negative theme variables, as well as the disaggregation of broad-themed variables such as “environment” into more finely-grained topics like pollution and resource conservation.

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4 Results

A complete listing of the theme groupings used for each of the following analyses is available in Appendix III — Analytical Theme Clusters on page 79.

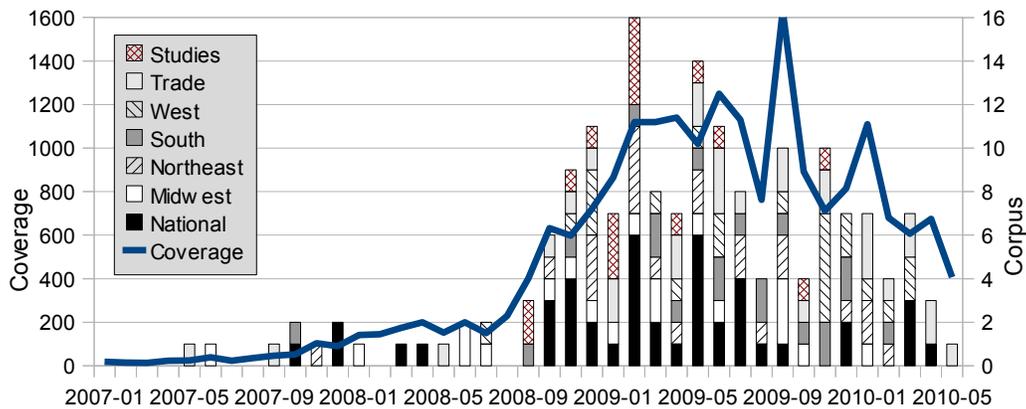
4.1 *Corpus Quality*

Since the articles comprising the corpus were not chosen randomly, there is no guarantee of representativeness. Therefore, it is instructive to explore the correlation between the temporal distributions of the corpus and the universe of possible articles. The corpus distribution would ideally mimic that of the sample pool in order to ensure proportionate coverage of significant developments that could influence the character of ensuing press coverage such as the administration’s “Cash for Caulkers” initiative.

The popular press corpus is approximately 6‰ of the articles available at the time of writing, as reported by Google News (2010). As shown graphically in Figure 4.1 *Corpus publication dates versus green jobs news coverage*, the distributions appear to be roughly correlated, but a sampling bias is indicated by a Fisher’s exact test two-sided p-value of 2.2E-16. A comparison of Tukey’s trimean for normalized distributions of corpus and universe articles, 0.19 and 0.23 respectively, suggests that the bias is small and favors earlier articles which is to be expected since the sample selection was completed between four and six weeks prior to the cut-off date and collection of per-month green jobs news article statistics. Further examination of the normalized distributions using a two-

dimensional Kolmogorov–Smirnov test reveals a *minimum* correlation of 70.7%. Note that trade papers and analytical studies are shown in Figure 4.1 for comparison, but they are not included in the statistics above since these source types are not part of the Google News index.

Figure 4.1: Corpus publication dates versus green jobs news coverage



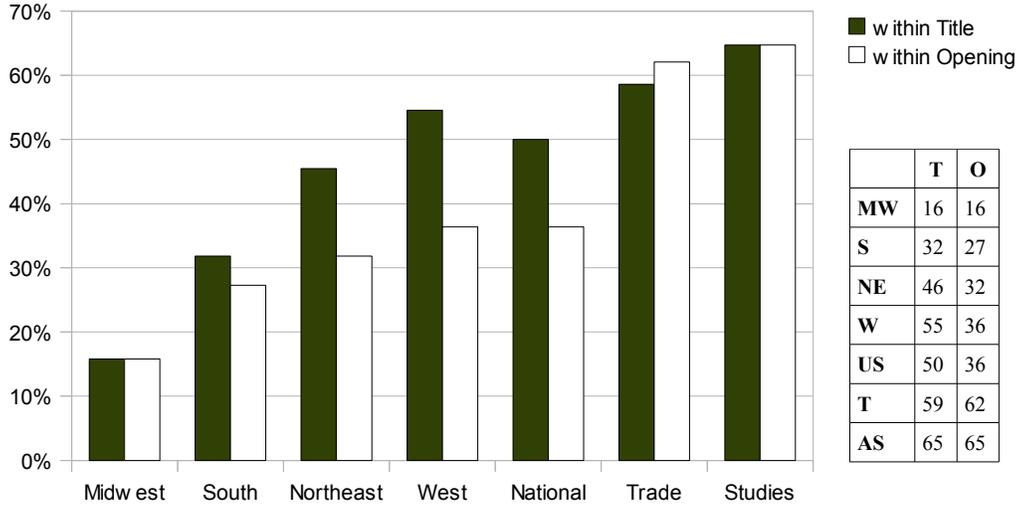
Source: Author; Google News, 2010

Another potential measure of sample quality is how prominently the subject of green jobs is featured. Since news samples were selected based on a relevance search—with a couple of off-topic outliers being manually discarded—they should be germane to this inquiry. However, green jobs may be an ancillary topic of the article, which could reduce the amount of discussion about green jobs and the variety of themes present.

Prominence was measured in two ways: 1) whether the term green jobs, or a recognizable synonym, was used within the title of an article and 2) whether such a phrase occurred within the first 100 words of the article or summary. The results are presented in Figure 4.2 and Table 4.1. Note that the criterion for inclusion of

an analytical study to be added to the corpus was that the title or file name must include the term green jobs, thereby biasing the metrics for that corpus segment.

Figure 4.2: Prominence of the term green job (or synonym) in the corpus



Source: Author

Trade papers and the executive summaries of analytical studies are more likely to include green jobs or related expressions within the first opening lines of text, but this is to be expected of earnest executive summaries and trade papers. Midwestern sources are less likely to feature such phrases in either article titles or openings which suggests a preoccupation with other issues e.g; unemployment.

Without a standard to reference it is difficult to definitively say whether these rates of prominence represent a high-quality corpus, but given the richness of the English language and opportunities for creative flourish, they seem respectable.

Table 4.1: Summary statistics of green jobs prominence within articles

	Grand Mean	Std. Dev.	Over	Under
Title**	45.9%	16.9%	Studies	Midwest
Opening**	39.2%	18.0%	Studies, Trade	Midwest

Source: Author

4.2 Hypotheses

Recall that in the introduction the following hypothesis was introduced:

It is believed that Southern and Midwestern sources will be more skeptical/critical of green jobs, and focus on the potential employee benefits, versus the generally pro-position of the Northeast and West coasts which will emphasize the environmental benefits. ... this hypothesis of regional variation is an example of an environmental Kuznets curve.

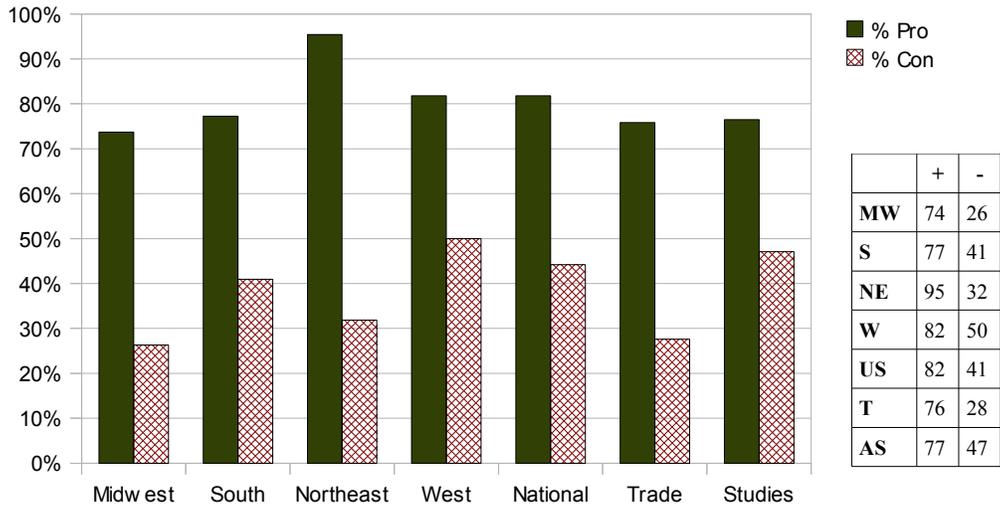
This section of analysis shall seek to confirm or refute this hypothesis.

4.2.1 Critical views

The graphs and table on the next page contain information about the prevalence of positive and negative themes in the corpus which is summarized below. These were compiled by grouping a variety of codes listed in the Appendix on page 79 into pro and con categories, then counting both the number of articles containing them per region/source-type as well as the total number of occurrences so that the rate could be calculated.

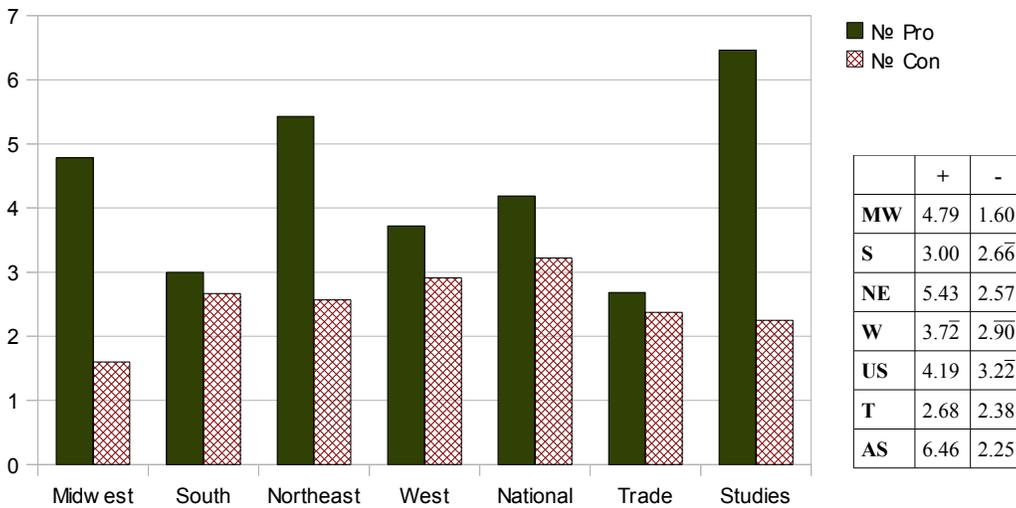
More analytical studies contain negative themes related to green jobs than the average article, but these studies are generally studmore positive. This fits the nature of these publications which are often written to support green jobs policies, but within the constraints of academic rigor are also required to explore both sides of the issue. Also unsurprising is the fact that within trade papers fewer articles than average contain negative themes and that articles containing positive themes have fewer instances of them. In other words, they appear to contain restrained but balanced views. Northeastern articles are overly positive with the proportion

Figure 4.3: Percent of corpus with positive/negative themes by region/source



Source: Author

Figure 4.4: Average rate of ± themes within articles containing them



Source: Author

Table 4.2: Summary statistics of positive and negative themes

	Grand Mean	Std. Dev.	Over	Under
% Articles pro	80.3%	07.3%	Northeast	
% Articles con	37.8%	09.4%	West	Midwest, Trade
Rate of pro**	4.325	1.344	Studies	Trade
Rate of con	2.513	0.518	National	Midwest

Source: Author

containing positive themes falling just inside two standard deviations of the mean. Finally, contrary to the original hypothesis, Midwestern sources are less negative than average, and Southern sources are within a standard deviation of the norm for both positive as well as negative themes.

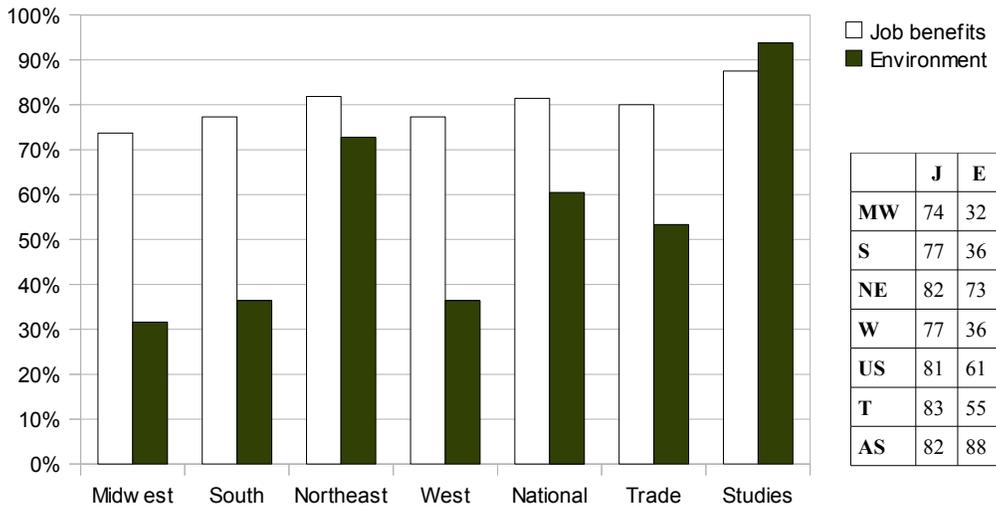
4.2.2 Jobs versus environment

In a comparison of the presence of beneficial environmental attributes and desirable employment characteristics associated with green jobs, Midwestern papers discuss both less frequently than the norm whereas Western articles are more likely to bring up both, but especially negative themes. Since the majority of the latter are reports exploring and promoting green-job generating policies, it is to be expected that they would describe green jobs as rosily as possible for the widest possible audiences. The lack of detail in articles from the Midwest is more puzzling. One possibility is that this region is simply desperate for jobs regardless of their form, and another is that it is “stoic skepticism.” After all, Midwestern texts also contain fewer positive and negative references to green jobs.

The next page also explores economic themes including green jobs as: investment in the nation’s future, necessary for a competitive economy¹¹, as an undesirable market distortion, and as destroyer of more jobs than can be replaced. National articles were more likely to feature themes of investment and market distortion. Northeastern sources gave greater emphasis to economic competition, and Western sources to the depiction of green job creation as a Pyrrhic effort. The former may be for potential scientific advancements by its academic institutions.

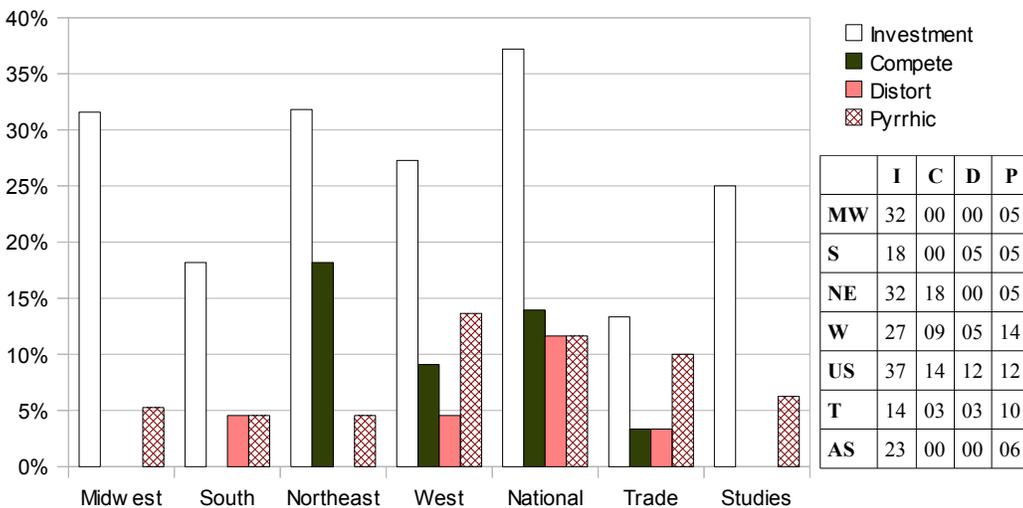
¹¹ A couple articles discussed domestic competition for green jobs, but these were not coded.

Figure 4.5: Presence of employment attribute and environmental benefit themes



Source: Author

Figure 4.6: Select economic themes by region/source



Source: Author

Table 4.3: Summary statistics of green-job benefits and economic themes

	Grand Mean	Std. Dev.	Over	Under
Job benefits	79.2%	03.4%	Trade	Midwest
Eco-benefits**	54.5%	21.2%	Studies	Midwest
Investment	25.8%	07.6%	National	Trade
Compete	06.3%	07.4%	Northeast	N/A
Distortion	03.4%	04.1%	National	N/A
Pyrrhic	07.9%	03.8%	West	

Source: Author

4.3 Characterization

In addition to this paper's initial hypothesis, explored in the previous section, broader questions were asked about green jobs:

What is the symbology surrounding green jobs? Are different groups using green jobs in distinct ways that could complicate policy setting and implementation...?

The subsections below explore the first question with an eye towards answering the second in section 4.4: Conflicting Views?

4.3.1 Colored collars & skill-level

Figure 4.8 *Green job "collar" categorization by region/source*, on page 47 shows themes grouped into three categories: blue-collar, white-collar and indeterminate; primarily based on specific examples of green jobs given in the corpus. Indeterminate are "specific" descriptions of jobs which are too vague to categorize. For example, eco-tourism might include travel planners, rangers/tour guides, or hotel maintenance and cleaning staff. Some themes that cross-over were classified as blue-collar instead of indeterminate, because the number of white-collar jobs in these areas are comparatively small, and likely not obvious to the casual reader or author. Although occupations related to efficient buildings includes architects and researchers, in most cases articles specifically refer to weatherization. In this example, the ambiguity arises from coarse coding, but the same logic applies to other codes open to interpretation such as that for clean-coal, or sequestration. Besides price and energy independence, the impetus behind clean-coal is keeping miners employed, not geochemists or economists.

The second chart on page 47 highlights the skill-levels associated with green jobs, a separate but related dimension of the nature of green jobs as collar-type. The middle-skilled category includes instances where green jobs are explicitly described as such, or where an article notes that there are green jobs available for a wide range of skill-levels. In addition, the middle-skilled category includes comments suggesting that “some training can double a worker’s earnings.”

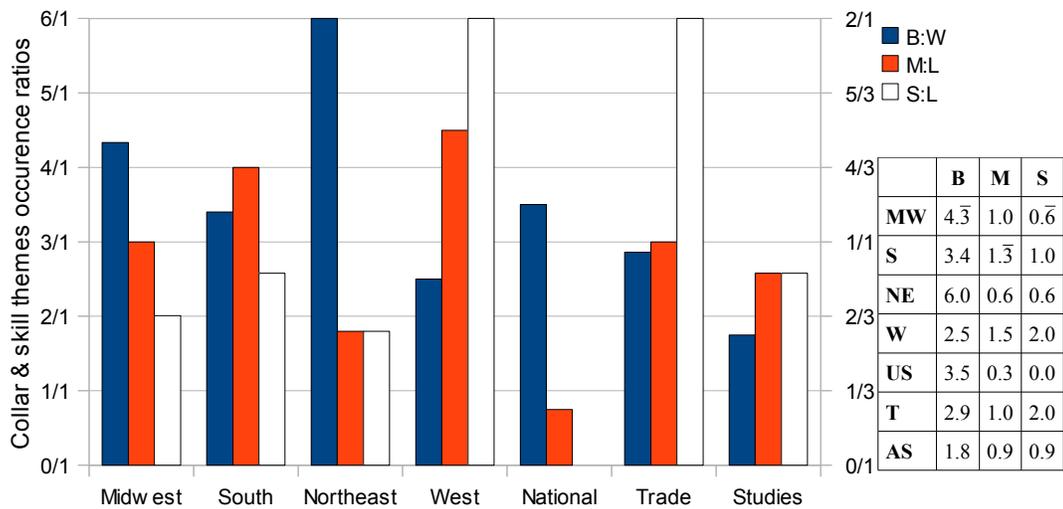
To simplify the following statistical analysis, the indeterminate job collar category is ignored. Statistics are also only calculated for press articles, omitting the outliers of analytical studies in both charts, and trade papers for green job skill-level; trade papers are not outliers for collar-type but are still excluded. Besides these outliers and the absence of skilled green job categorization in the national press, the regions appear quite similar but examination of Table 4.4 reveals several subtle trends. Most notably, discussion of green jobs as either blue-collar or low-skilled occupations is overrepresented in Northeastern newspapers. However, it may be more instructive to examine the ratios of blue to white collar, or middle and skilled to low-skilled themes per region/source for these spectral categories rather than inter-region/source distributions.

Figure 4.7 *Green job “collar” and skill categorization ratios by region/source*, portrays many of the same phenomena as Table 4.4, but in a more pronounced way. One can clearly see that in Northeastern newspapers green jobs are portrayed as blue-collar jobs 72% more than the average (6:1 versus 3.48:1). In the Northeast green jobs are also more likely to be described as low-skill, which is

incongruent with the regional demographics. The local workforce contains more college graduates than other areas of the country; 27.5% versus 26.15%, 22.9% and 22.6% in the West, Midwest and South respectively (USCB, 2009a). In the rare instances where the national press discusses the skill-level of green jobs it represents them as low-skill positions four times more frequently than middle-skilled.

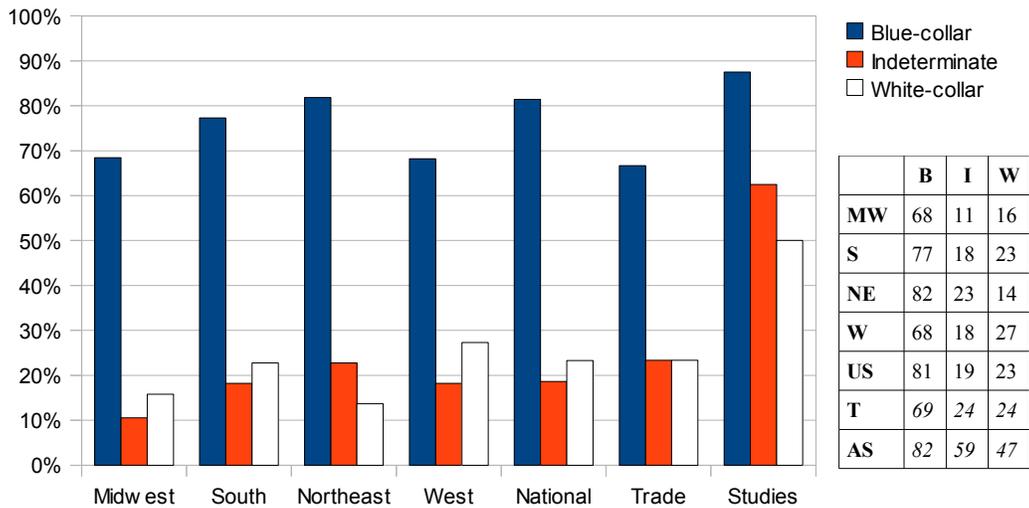
By contrast, Western newspaper and trade paper articles characterize green jobs as requiring advanced skills at over one and a half times the mean rate, and contain below average depictions of green jobs as blue-collar or low-skilled respectively.

Figure 4.7: Green job “collar” and skill categorization ratios by region/source



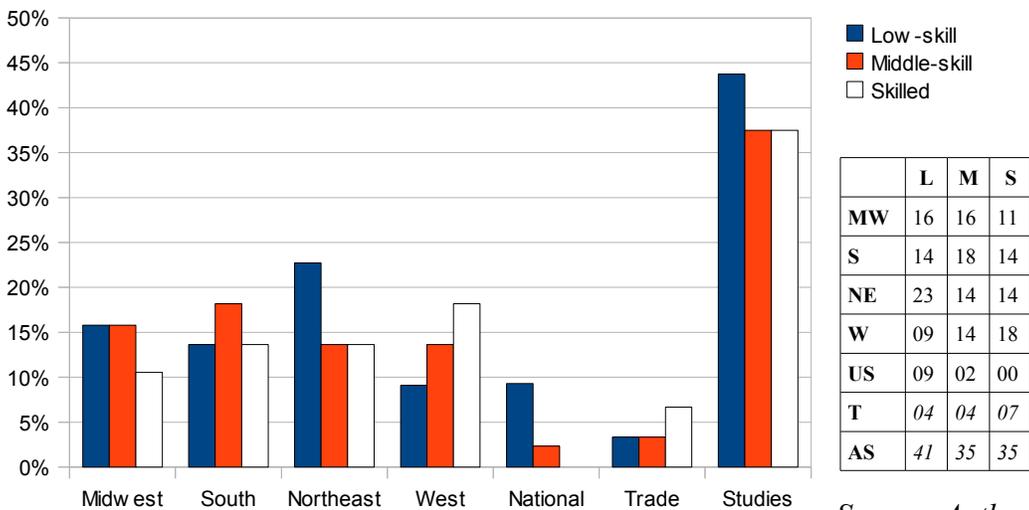
Source: Author

Figure 4.8: Green job “collar” categorization by region/source



Source: Author

Figure 4.9: Green job skill categorization by region/source



Source: Author

Table 4.4: Summary statistics of green job collar/skill themes¹²

	Grand Mean	Std. Dev.	Over	Under
Blue-collar	75.1%	06.4%	Studies, Northeast	Midwest, West
White-collar	20.4%	05.6%	Studies, West	Northeast
Low-skill**	14.1%	05.7%	Studies, Northeast	Trade
Middle-skill**	12.7%	06.1%	Studies	National
Skilled**	11.2%	06.8%	Studies, West	National

Source: Author

¹² Statistics calculated for popular press only; excludes analytical studies (and trade) outliers.

4.3.2 Energy & environment

Figure 4.11 contrasts the perception of green jobs as relating to energy, climate change, pollution, or resource conservation in each region. Although some might consider climate change as part of either energy or pollution, there is little correlation between the presence of these themes; pollution is absent from the Midwest and West, while the association of green jobs with climate barely registers in the West. A linear regression of climate change with energy and pollution as the independent variables yielded an R^2 of 0.19 against the regional means and 0.04 across all 175 articles.

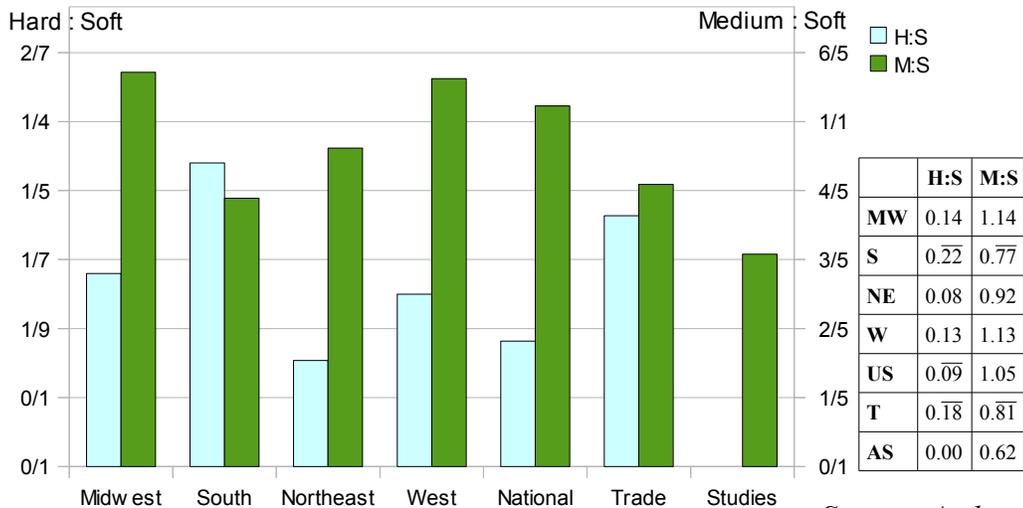
Figure 4.12 divides references to green jobs as energy-centric occupations—the most common form in Figure 4.11—into a spectrum of soft (bio-mass, social or low-tech e.g; increased efficiency of existing equipment and structures), medium (solar, wind, manufacture of new high-efficiency equipment) and hard (green-hued variants of conventional power). Similar to the previous subsection, Figure 4.10 plots the ratios of spectrum categories to aid interpretation.

Congruent with their nature as idealized academic representations of green jobs, analytical studies contain considerably more allusions to every environmental category but climate, while omitting any reference to hard energy themes. Also unsurprisingly, Southern serials suggest that green jobs involve carbon sequestration or nuclear energy more often than any other source. This might be attributed to the fact that the 31.7% of the electricity generated in the South is derived from such sources. Although the Midwest surpasses this with 42.5%—the

West and northeast are 16.9% and 28% respectively—5% of the Southern workforce is employed in the coal industry versus 2% in the Midwest or West, and 1% in the Northeast (Energy Information Administration [EIA], 2009a; EIA, 2009b; USCB, 2009a; USCB, 2009c). While many pieces in the Midwestern corpus discuss green jobs in the light of manufacturing wind turbines and solar panels, the ensemble contains significantly fewer themes of energy and pollution abatement than other regions.

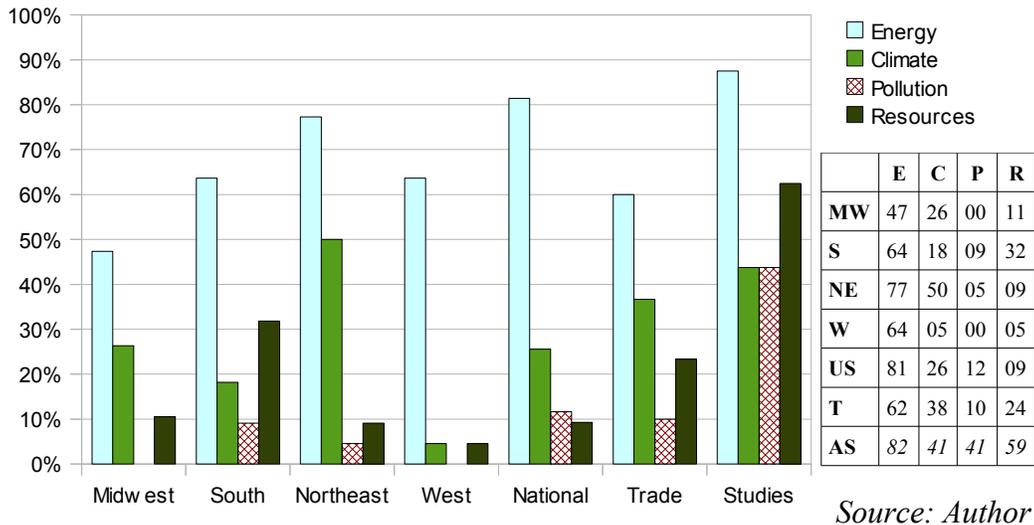
The under-representation of climate and pollution themes in Western articles is unusual though, given California’s position as a strong and early-adopter of policies in these areas such as Proposition 65 mandated labeling of suspected-carcinogens or zero-emissions vehicle regulations. By contrast, the existence of the Regional Greenhouse Gas Initiative could explain the higher incidence of allusions to climate change in the Northeast.

Figure 4.10: Green job energy-form ratios by region/source



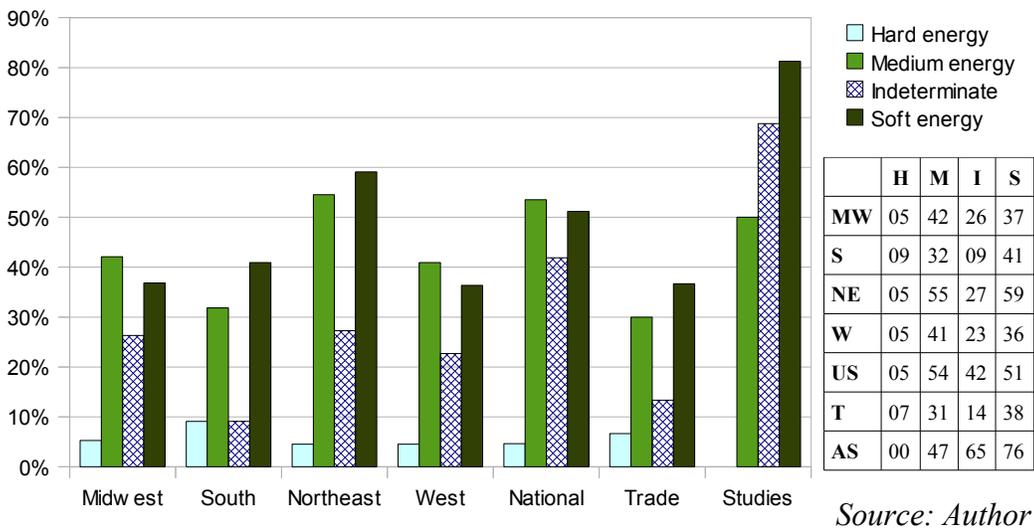
Source: Author

Figure 4.11: Green job environmental theme categorization by region/source



Source: Author

Figure 4.12: Green job energy-form categorization by region/source



Source: Author

Table 4.5: Summary statistics of green job environmental themes¹³

	Grand Mean	Std. Dev.	Over	Under
Energy	65.7%	11.7%	Studies, National	Midwest
Climate**	27.0%	15.7%	Northeast	West
Pollution***	05.9%	05.1%	Studies, National	Midwest, West
Resources***	14.9%	10.6%	Studies, South	
Hard energy	05.0%	02.8%	South	Studies
Medium energy	42.8%	09.2%	Northeast, National	South, Trade
Soft energy	48.2%	15.0%	Studies	

Source: Author

4.4 *Conflicting Views?*

At this point most of the information necessary to try to answer the central question of this paper has been compiled:

Are different groups using green jobs in distinct ways that could complicate policy setting and implementation... if so what are they?

Before an attempt is made to decipher patterns amongst the existing variables, an additional step is taken to define a vital variable through an application of George Lakoff's theory of framing.

4.4.1 Lakoff's levels

For this final form of analysis themes were grouped into variables according to Lakoff's levels of analysis i.e; Values & Principles including equality, Issue Categories such as unemployment or climate change, and Programs & Policies like tax breaks or loan guarantees (Lakoff as cited in Wallack, 2005). These variables include themes from the entire corpus, although 19 of the 175 entries were published before the collapse of Lehman brothers in September 2008, which has shifted the tone of much coverage i.e; there was no talk of "stimulus" prior.¹⁴

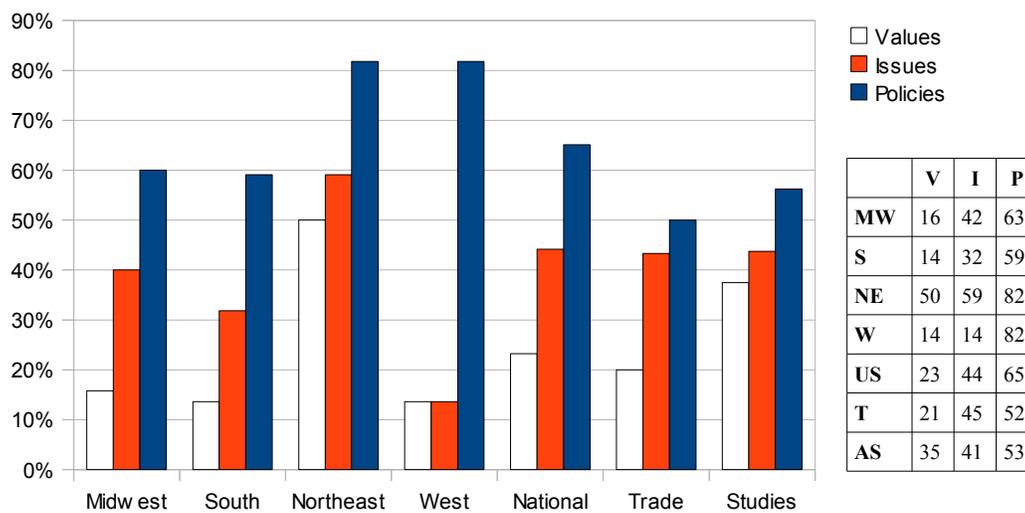
The results are interesting, as they place the Northeast in a distinct group with greater emphasis on all three levels of analysis, and more references to values than even the predominantly pro-position of analytical studies typically penned by green jobs advocates. By contrast, the West which is often paired with the Northeast in opposition to the South and Midwest—red states versus blue states,

¹³ Statistics calculated for environmental theme categorization excludes analytical studies.

¹⁴ 5/19 Midwest, 5/44 National, 3/29 Trade, 2/22 South, 2/22 Reports, 1/22 Northeast, 1/22 West

“fly-over country,” etc.—has the fewest values and issues themes associated with green jobs of any region. The West and Northeast tie for most references to policies however, due to the numerous programs and regulations in these states such as tax breaks for green manufacturing in Colorado and renewable energy generation in Oregon, or local efforts to stimulate green jobs growth by the Mayor of Los Angeles. Finally, under-representation of green jobs programs and policies in trade papers is to be expected. Given the nature of the represented sectors, one would expect greater concern regarding how these may interact with existing issues or movements such as green building, and the resulting impacts on jobs

Figure 4.13: Green job levels-of-analysis categorization by region/source



Source: Author

Table 4.6: Summary statistics of levels-of-analysis themes

	Grand Mean	Std. Dev.	Over	Under
Values**	24.5%	13.5%	Northeast	
Issues*	39.4%	13.9%	Northeast	West
Policies	64.9%	12.4%	Northeast, West	Trade

Source: Author

4.5 Summary

The table below collects the results of the previous sections, with highlighted cells for statistically significant deviations. This overview makes regional patterns apparent. For instance, the coal-dependent South is surprisingly average except for more references to hard energy, just as one would expect. Less intuitive is the statistically significant concern for natural resource conservation which one would not normally associate with resource dependency.

Table 4.7: Summary of values outside one standard deviation of grand mean

§	Variable	Midwest	South	Nor'east	West	National	Trade	Studies	\bar{x}	σ
4.1	Title**	-					+		46	17
	Opening**	-					+	+	41	18
4.2.1	Pro			+			-		80	07
	Con	-			+		-		38	09
	N ₂ Pro**						-	+	4.3	1.3
	N ₂ Con	-				+			2.5	0.5
4.2.2	Job benefits	-					+		79	03
	Environment**	-						+	56	21
	Investment					+	-		26	08
	Compete*			+					06	07
	Distortion					+			03	04
	Pyrrhic				+				08	04
4.3.1	Blue-collar	-		+	-		-	+	75	06
	White-collar	-		-	+			+	20	06
	Low-skill**			+			-	+	14	06
	Middle-skill**					-		+	13	06
	Skilled**				+	-		+	11	07
4.3.2	Energy	-				+		+	66	12
	Climate**			+	-				27	16
	Pollution***	-			-	+		+	06	05
	Resources***		+					+	18	11
	Hard energy		+					-	05	03
	Medium energy		-				-		43	09
	Soft energy							+	48	15
4.4.1	Values**			+					25	14
	Issues*			+	-				39	14
	Policies			+	+		-		65	12

Source: Author

Sources in the Midwest appear to discuss green jobs as a supplemental subject, with little regard for the type of work, pay and benefits, or impact on the environment, perhaps because there's simply a need for any form of employment in the Rust Belt. Although themes of replacing lost manufacturing are not common in the articles of this region, and variables representing them or similar concepts are of average value, this conclusion may be supported by the fact that the region suffers from persistent structural unemployment.¹⁵

Analytical studies present a far richer picture of green jobs than the other regions/sources sampled, with above average representations of nearly all themes except for those relating green jobs to the broader economic context e.g; investment in the nation's future; and rather surprisingly discussion of Values/Issues/Policies. The only (non-statistically significant) variable for which these studies did not match or exceed average levels is that of hard energy, while they did portray green jobs as relating to soft energy ($p=0.11$) more than any other source.

In the Northeast green jobs are framed in relation to the baser levels of Lakoff's system more than other regions, along with more references to low-skill/blue-collar employment. This suggests a greater concern for environmental justice, even though the Northeast would seem to have considerably more white-collar workers than other regions as one would infer from the proportion of its population with a college degree; see page 46 for education details.

¹⁵ 5.12% in 2007 followed by 4.70% in the West, 4.42% in the Northeast and 4.33% in the South compared to 4.60% nationally, (BLS, 2009; BLS, 2010a). Normal frictional unemployment is approximately 4% (Goodstein, 1999, p. 3), yet the Midwest has not approached 4.5% since July 2001 (BLS, 2010a).

Articles from the national press also describe green jobs as blue-collar at a relatively high rate, and in particular make very few allusions to middle-skilled or highly skilled positions. Although these articles contain more negative themes (but not more articles with negative themes), including depictions of government policies supporting green jobs as unfavorable market distortions, they also characterize green jobs as an investment and affiliated with the problematic topics of energy and pollution; but not climate. This is likely due to the current administration's emphasis on clean energy jobs, as well as stimulus policies promoting the restoration of the nation's infrastructure i.e; the electrical grid and mass transit systems. The larger proportion of negative themes may be due to journalists' efforts to maintain "balance" e.g; the paired articles of Ringo & Green (2010); or perhaps some skew introduced by *The Wall Street Journal*.

The West is an enigma. More articles contain negatives themes and especially Pyrrhic portrayals than any other region. There are also fewer references to climate, pollution and other issues than one would expect given the domination of the progressive Pacific states in the region and sample composition; see Figure 3.2 *Source newspapers on a 2009 population cartogram* for additional perspective. The region's representation of green jobs as skilled and white collar is in keeping with the large proportion of college graduates in its population.

A small and undiverse sample of trade papers—which covers sectors of interest—makes generalizations difficult. Any deviations from the norm are to be expected given the papers' article formats and the represented sectors.¹⁶

¹⁶ Low-skill sectors are unlikely to have professional journals which are indexed in academic databases.

5 Conclusion

There are in fact subtle regional and sectoral variations in how green jobs are presented, but the hypothesis that the liberal coasts would characterize green jobs as benefiting the environment more than the middle of the country was disproven. However, conceptions of green jobs do appear to conform to Beck's theory of a risk society moderated by political attitudes.¹⁷ The West is aligned with the Midwest, and to a lesser extent the South, in an emphasis of employment over environmental benefits rather than with the Northeast—which is focused on climate change and environmental justice—as originally hypothesized. A possible explanation for this deviation from the outcome predicted by the environmental Kuznets curve theory,¹⁸ is the fact that the region is more conservative than its reputation suggests; population weighted averages of conservative leaning individuals in the 2008 presidential election are National =36.5%, Northeast=32.0%, Midwest=35.6%, West=36.2%, and South=39.6% (Jones, 2009; USCB, 2009c). The region has also endured the largest increase in unemployment since the 2008 financial crisis, exceeding 10% in 2009 from 4.7% in 2007 (BLS, 2010a).

¹⁷ A corresponding analysis was performed but not included since the results were very similar to those of §4.2.2 Jobs versus environment. The theme clusters chosen for affluence and risk were effectively subsets of the job and environmental benefits variables—except for the shift of safety from job benefit to risk—and therefore strongly correlated; 68% environment-risk and 77% job-affluence.

¹⁸ Median 2007 income weighted by population (CPI adjusted in parentheses) for the Northeast and West are \$56,310 (\$56,773) and \$56,324 (\$52,946). Incomes in the Midwest and South are \$49,256 (\$51,548) and \$47,298 (\$48,946). The national average is \$50,740 (USCB, 2009b; BLS, 2010b).

Readers of analytical studies e.g; academics, activists, bureaucrats and politicians; are presented with more linkages between green jobs and a wider variety of topics than consumers of the popular press. Consequently, they may be more likely to perceive green jobs as part of a solution to multiple problems and support their promotion, whereas the public would be less receptive to green job policies.

So, what's green got to do with jobs? According to Australian political scientist Kate Crowley, very little as green jobs are traditionally discussed (as cited in Penney, 2002, p. 60). In her three-slot spectrum of green, most discussion of green jobs is positioned within a reactive, short-term, accommodationist, seeking-to-enhance-growth "light green" frame (p. 61). Although some of the examples of green jobs given in this paper's corpus—and a minority of the definitions proffered—do fall within this rubric of "remedying ecological decline," far more refer to efficiency (weatherization and product design), renewables (manufacturing, installation and research) and other "ecologically modernist" or medium green jobs; the administration's policy priorities, and programs such as "Cash for Caulkers" have likely contributed to this emphasis. While the press has given considerable attention to green job growth—generally a characteristic of light green jobs—this is understandable given the broader context; particularly since said growth is discussed as a replacement for job losses rather than supplementing and supporting an ever-growing economy *per se*. Therefore, while it is not yet deep green, the American conception of green jobs circa 2010 is greener than what Crowley uncovered in the early years of green jobs discourse.

5.1 Further Research

The results of this research suggest several possible steps for further study, including a more in-depth exploration of the regional variation in jobs versus environment attitudes towards green jobs and the environmental Kuznets curve. Exploration of these phenomena with a finer-grained independent variable, such as 9 Census Divisions or all 50 states, may be more revealing than the 4 Census Regions used in this paper. Other avenues of research which would increase the level of detail available for statistical tests include analysis of whole articles, and latent themes including accompanying graphics. Also potentially fruitful would be additional work on variation in the Lakoff's levels of analysis linked to related topics, and the apparent separation between climate change, pollution and energy.

5.2 Further Reading

Although the phrase green jobs only occurs three times in the book *The Trade-off Myth: Fact & Fiction About Jobs and the Environment* by Eban Goodstein (1999), including this gem:

Green jobs, it turns out, cannot solve major problems of unemployment; however, under the right conditions, a shift from “dirty” to “clean” production methods can be an important element of a local economic development strategy. (p. 2)

It provides an excellent overview of the economic themes which arise in green jobs discussions i.e; wages, growth, pollution havens and job loss in other sectors.

In *Public Employment and Environmental Sustainability* (2003), and *Green jobs: Addressing the Critical Issues Surrounding the Environment, Workplace and Employment* (2004) Mathew Forstater discusses a proposal to increase employment and benefit the environment.

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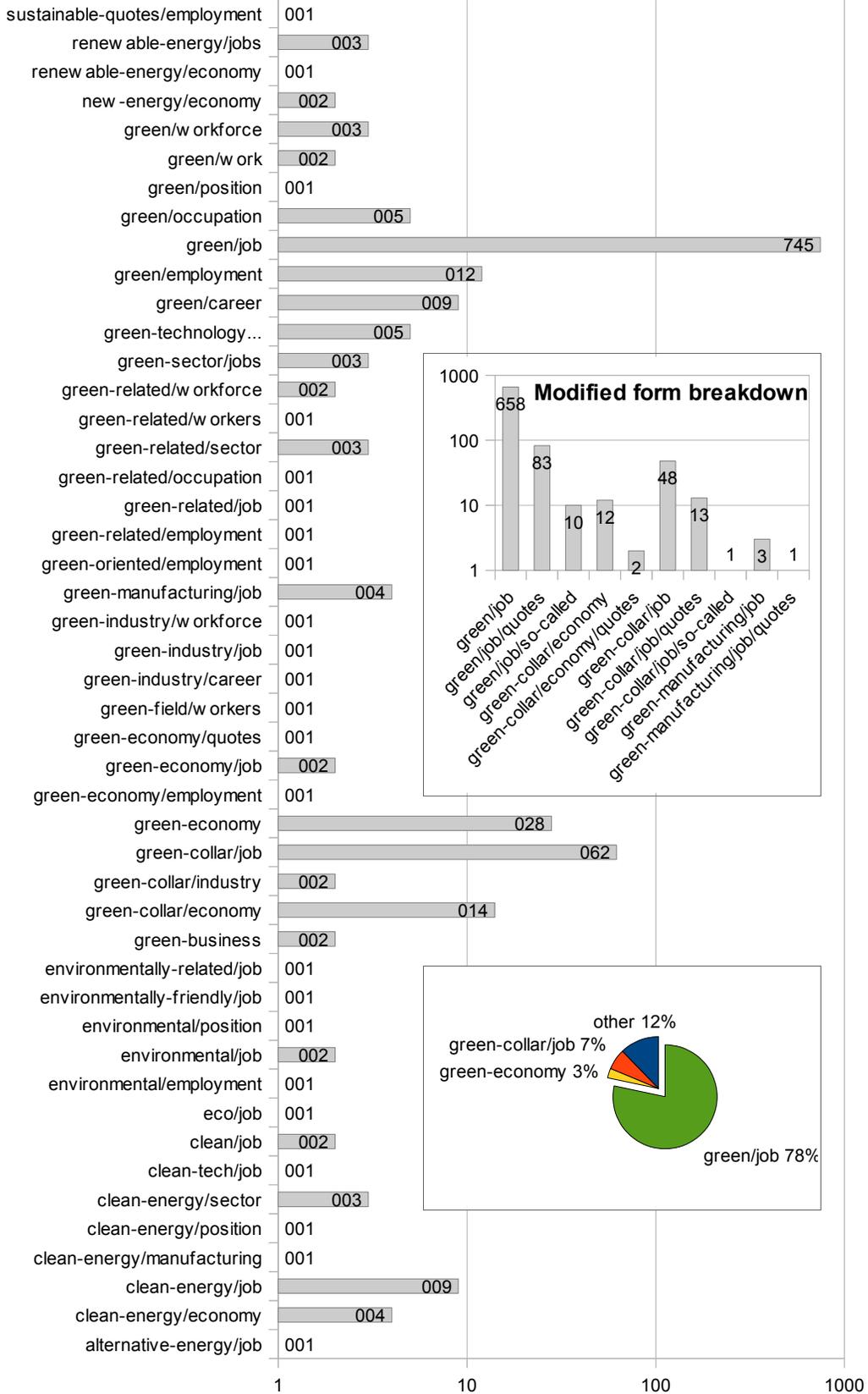
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Appendix I — Synonyms



Appendix II — Code book

| delineates alternates

agency	definition/includes/white-collar/architect
agency/DoD	definition/includes/white-collar/cartographer
agency/DOE	definition/includes/white-collar/consulting
agency/DoL	definition/includes/white-collar/educator
agency/DoL/BLS	definition/includes/white-collar/engineering
agency/DoL/local-equiv	definition/includes/white-collar/entrepreneur
agency/DoT	definition/includes/white-collar/finance
agency/DoT/local-equiv	definition/includes/white-collar/gov
agency/Museum	definition/includes/white-collar/IT
agency/NIH	definition/includes/white-collar/lawyers
agency/NSF	definition/includes/white-collar/manager
agency/util	definition/includes/white-collar/manager/NOT
cost	definition/includes/white-collar/marketing
definition	definition/includes/white-collar/medicine
definition/antonym	definition/includes/white-collar/planner
definition/includes/activist	definition/includes/white-collar/real estate
definition/includes/eco-tourism	definition/includes/white-collar/sales
definition/includes/(eff.) manufacturers	definition/includes/white-collar/scientist R&D
definition/includes/(eff.) manufacturers/car	definition/includes/white-collar/secretary
definition/includes/(eff.) manufacturers/chemical	definition/includes/white-collar/trade
definition/includes/energy	definition/needs study
definition/includes/energy/battery/manuf	definition/vague
definition/includes/energy/battery/R&D	economy
definition/includes/energy/efficiency	economy/compete
definition/includes/energy/efficiency/cogen	economy/compete/NOT haven
definition/includes/energy/nuclear	economy/energy-independence
definition/includes/energy/nuclear/NOT	economy/market-distortion
definition/includes/energy/renewables	economy/new-deal
definition/includes/energy/renewables/bio	economy/NOTpanacea
definition/includes/energy/renewables/bio/R&D	economy/replace/auto-industry
definition/includes/energy/renewables/R&D	economy/replace/auto-industry/IMPLIED
definition/includes/energy/renewables/tech	economy/replace/auto-industry/NOT
definition/includes/energy/renewables/tech/R&D	economy/replace/construction
definition/includes/energy/sequestration	economy/replace/construction/skeptic
definition/includes/farming	economy/replace/fossil
definition/includes/hard-hat	economy/replace/manufacturing
definition/includes/hard-hat/green building	economy/replace/manufacturing/skeptic
definition/includes/HVAC	economy/revolution
definition/includes/industry	economy/skeptic
definition/includes/landscaping	economy/stimulus
definition/includes/maintenance	economy/stimulus/NOT
definition/includes/materials resources	economy/training
definition/includes/mechanic	economy/training/union
definition/includes/non-profit	environment
definition/includes/plumbers	environment/EJ
definition/includes/ranger forestry	environment/EJ/NOT
definition/includes/remediation abatement	environment/emissions climate
definition/includes/shipping	environment/resources
definition/includes/transit	investment
definition/includes/white-collar	investment/infrastructure

investment/infrastructure/federal-buildings	job-type/union/skeptic
investment/infrastructure/public-housing	job-type/union workers'-rights
investment/savings	job-type/unoutsourcable
investment/savings/energy-cost	job-type/unoutsourcable/ish
investment/savings/higher-energy-cost	job-type/unoutsourcable/NOT
job-type/blue-collar	job-type/unoutsourcable/skeptic gov-respo'bility
job-type/career advancement	job-type/urban
job-type/desirable	job-type/urban/not
job-type/dispersed	job-type/well-paid
job-type/global	job-type/well-paid/adequate
job-type/good quality	job-type/well-paid/benefits
job-type/good/skeptic	job-type/well-paid/implicit
job-type/growth	job-type/well-paid/living wage
job-type/growth/anti-Pyrrhic	job-type/well-paid/living wage/NOT
job-type/growth/delay/scarce	job-type/well-paid/NOT
job-type/growth/delay slow	job-type/well-paid/skeptic gov-responsibility
job-type/growth/dispersed	job-type/win-win
job-type/growth/implicit	job-type/win-win/implicit
job-type/growth/NOTeasy	job-type/win-win/NOT
job-type/growth/promise	prominence/digest
job-type/growth/rapid	prominence/opening
job-type/growth/skeptic	prominence/title
job-type/growth/skeptic/Pyrrhic	promote
job-type/growth/swap	promote/contract
job-type/growth/UN	promote/diffusion
job-type/hype	promote/event
job-type/local	promote/find
job-type/middle-class	promote/partnership
job-type/opportunity	promote/policy
job-type/real	promote/policy/(fair) trade
job-type/real/greening-of-old	promote/policy/MCTF
job-type/real/implicit	promote/policy&programs
job-type/real/novel	promote/policy/skeptic
job-type/safety...	promote/policy/reduce-uncertainty
job-type/skill-level/entry	promote/subsidy
job-type/skill-level/entry/second chance	promote/subsidy/deficit
job-type/skill-level/middle	promote/subsidy/deficit/NOT
job-type/skill-level/middle/community college	promote/subsidy/dubious
job-type/skill-level/skilled	promote/subsidy/grant
job-type/skill-level/skilled/mismatch	promote/subsidy/loan
job-type/skill-level/skilled/unaccustomed	promote/subsidy/mandate target
job-type/skill-level/un	promote/subsidy/mandate target/NOT
job-type/skill-level/wide range	promote/subsidy/NOT
job-type/skill-level/wide range/accessible	promote/subsidy/penalties
job-type/spectrum	promote/subsidy/rebate
job-type/spectrum/implicit	promote/subsidy/shift
job-type/stable	promote/subsidy/tax-break credit
job-type/stable/NOT	promote/subsidy/tax-break credit/inadequate
job-type/stable/skeptic	promote/subsidy/tax-break credit/NOT
job-type/union/implicit	promote/subsidy/tax rate
job-type/union/meh	promote/subsidy/tax rate/NOT
job-type/union/NOT	promote/training/2007
job-type/union/promise	promote/training/2009

promote/training|education
promote/training/no-capacity
promote/utilities
synonym/alternative-energy/job
synonym/clean-energy/economy
synonym/clean-energy/job
synonym/clean-energy/manufacturing
synonym/clean-energy/position
synonym/clean-energy/sector
synonym/clean/job
synonym/clean-tech/job
synonym/eco/job
synonym/environmental/employment
synonym/environmental/job
synonym/environmentally-related/job
synonym/environmental/position
synonym/environment/friendly
synonym/green-business
synonym/green/career
synonym/green-collar/economy
synonym/green-collar/economy/quotes
synonym/green-collar/industry
synonym/green-collar/job
synonym/green-collar/job/quote
synonym/green-collar/job/so-called
synonym/green-economy
synonym/green-economy/employment
synonym/green-economy/job
synonym/green-economy/quotes
synonym/green/employment
synonym/green-field/workers
synonym/green-industry/career
synonym/green-industry/job
synonym/green-industry/workforce
synonym/green/job
synonym/green/job/law
synonym/green/job/quotes
synonym/green/job/so-called
synonym/green-manufacturing/job
synonym/green-manufacturing/job/quotes
synonym/green/occupation
synonym/green-oriented/employment
synonym/green/position
synonym/green-related/employment
synonym/green-related/job
synonym/green-related/occupation
synonym/green-related/sector
synonym/green-related/workers
synonym/green-related/workforce

synonym/green-sector/jobs
synonym/green-technology...
synonym/green/work
synonym/green/workforce
synonym/new-energy/economy
synonym/renewable-energy/economy
synonym/renewable-energy/jobs
synonym/sustainable-quotes/employment
values|meaning
who
who/activist
who/bureaucrat
who/bureaucrat/DoE
who/bureaucrat/DoE/local-equiv
who/bureaucrat/DoL
who/bureaucrat/DoL/BLS
who/bureaucrat/DoL/local-equiv
who/bureaucrat/DoL/OSHA
who/bureaucrat/HUD
who/bureaucrat/NIOSH
who/bureaucrats
who/bureaucrats/CARB
who/bureaucrats/NOAA
who/bureaucrat/Van Jones
who/consultant|think tank
who/developer
who/employer|entrepreneur
who/foreign gov
who/herbalist
who/industry
who/industry/lawyer
who/industry/lobbyist
who/instructor
who/instructor/community college
who/instructor/university
who/lobbyist
who/media
who/philanthropist
who/planner|economist
who/politicians
who/politicians/candidates
who/politicians/pres
who/politicians/veep
who/recruiter
who/UN
who/union
who/worker
who/worker/job-hunter

Appendix III — Analytical Theme Clusters

To save space the text below uses an abbreviated notation with * as a wildcard.

Re: 4.2.1 Critical views Analysis

Pro

economy/compete	promote
economy/energy-independence	promote/contract
economy/new-deal	promote/diffusion
economy/replace/auto-industry	promote/event
economy/replace/auto-industry/implied	promote/find
economy/replace/construction	promote/partnership
economy/replace/fossil	promote/policy
economy/replace/manufacturing	promote/policy/(fair)trade
economy/revolution	promote/policy/reduce-uncertainty
economy/stimulus	promote/policy/MCTF
economy/training	promote/policy&programs
economy/training/union	promote/subsidy
environment/EJ	promote/subsidy/deficit
job-type/good quality	promote/subsidy/dubious
job-type/growth	promote/subsidy/grant
job-type/growth/anti-Pyrrhic	promote/subsidy/loan
job-type/growth/delay/scarce	promote/subsidy/mandate target
job-type/growth/delay slow	promote/subsidy/penalties
job-type/growth/dispersed	promote/subsidy/rebate
job-type/growth/implied	promote/subsidy/shift
job-type/growth/promise	promote/subsidy/tax-break credit
job-type/growth/rapid	promote/subsidy/tax-break credit/inadequate
job-type/growth/vague	promote/subsidy/tax rate
job-type/real	promote/training/2007
job-type/real/greening-of-old	promote/training/2009
job-type/real/implied	promote/training/no-capacity
job-type/real/novel	promote/training education
job-type/stable	promote/utilities
job-type/union/implied	synonym/green-collar/economy/quotes
job-type/union/promise	synonym/green-economy/employment
job-type/union workers'-rights	synonym/green-economy/job
job-type/unoutsourcable	synonym/green-economy/quotes
job-type/unoutsourcable/ish	
job-type/well-paid	
job-type/well-paid/adequate	
job-type/well-paid/benefits	
job-type/well-paid/implied	
job-type/well-paid/living-wage	
job-type/win-win	
job-type/win-win/implied	

Con

economy/NOTpanacea	job-type/stable/skeptic
economy/compete/NOT haven	job-type/union/NOT
economy/market-distortion	job-type/union/skeptic
economy/replace/auto-industry/NOT	job-type/unoutsourcable/NOT
economy/replace/construction/skeptic	job-type/unoutsourcable/skeptic gov-respo'bility
economy/replace/manufacturing/skeptic	job-type/well-paid/NOT
economy/skeptic	job-type/well-paid/living-wage/NOT
economy/stimulus/NOT	job-type/well-paid/skeptic gov-responsibility
environment/EJ/NOT	job-type/win-win/NOT
job-type/good/skeptic	promote/policy/skeptic
job-type/growth/NOTeasy	promote/subsidy/NOT
job-type/growth/UN	promote/subsidy/deficit/NOT
job-type/growth/skeptic	promote/subsidy/mandate target/NOT
job-type/growth/skeptic/Pyrrhic	promote/subsidy/tax-break credit/NOT
job-type/hype	promote/subsidy/tax rate/NOT
job-type/stable/NOT	

Re: 4.2.2 Jobs versus environment Analysis

Job benefits

economy/replace/*	job-type/opportunity
environment/EJ*	job-type/real*
job-type/career advancement	job-type/safety...
job-type/desirable	job-type/skill-level/*
job-type/dispersed	job-type/stable*
job-type/good*	job-type/union*
job-type/growth*	job-type/unoutsourcable*
job-type/hype	job-type/urban*
job-type/local	job-type/well-paid*
job-type/middle-class	job-type/win-win*

Environmental benefits

definition	environment*
definition/includes/(eff.) manufacturers/chemical	job-type/win-win*
definition/includes/farming	synonym/clean*
definition/includes/materials resources	synonym/environment*
definition/includes/ranger forestry	synonym/sustainable-quotes/employment
definition/includes/remediation abatement	

Re: 4.3.1 Colored collars & skill-level Analysis

White-collar

definition/includes/energy/battery/R&D
definition/includes/energy/renewables/R&D
definition/includes/energy/renewables/bio/R&D
definition/includes/energy/renewables/tech/R&D
definition/includes/white-collar/*

Indeterminate

definition/includes/(eff.) manufacturers/chemical
definition/includes/activist
definition/includes/eco-tourism
definition/includes/energy/nuclear
definition/includes/ranger|forestry
definition/includes/remediation|abatement
definition/includes/transit

Blue-collar

definition/includes/(eff.) manufacturers
definition/includes/(eff.) manufacturers/car
definition/includes/HVAC
definition/includes/energy
definition/includes/energy/battery/manuf
definition/includes/energy/efficiency/cogen
definition/includes/energy/efficiency
definition/includes/energy/renewables
definition/includes/energy/renewables/bio
definition/includes/energy/renewables/tech
definition/includes/energy/sequestration
definition/includes/farming
definition/includes/hard-hat
definition/includes/industry

definition/includes/landscaping
definition/includes/maintenance
definition/includes/materials|resources
definition/includes/mechanic
definition/includes/plumbers
definition/includes/shipping
economy/replace/*
economy/training/union
investment/infrastructure/*
job-type/blue-collar
job-type/union*
synonym/green-collar/*
who/union

Skilled

job-type/skill-level/skilled
job-type/skill-level/skilled/mismatch
job-type/skill-level/skilled/unaccustomed
job-type/skill-level/wide range

Middle-skilled

job-type/skill-level/middle*
job-type/skill-level/wide range

Low-skilled

job-type/skill-level/entry
job-type/skill-level/entry/second-chance

job-type/skill-level/un
job-type/skill-level/wide-range

Re: 4.3.2 Energy & environment Analysis

Energy

definition/includes/energy
definition/includes/energy/battery/*
definition/includes/energy/efficiency/*
definition/includes/energy/nuclear*
definition/includes/energy/renewables*
synonym/alternative-energy/job
synonym/clean-energy/*
synonym/new-energy/economy
synonym/renewable-energy/*

Climate

definition/includes/energy/sequestration
environment/emissions|climate

Pollution

definition/includes/remediation|abatement
definition/includes/(eff.) manufacturers/chemical

Resources

definition/includes/farming
definition/includes/landscaping
definition/includes/materials|resources
definition/includes/ranger|forestry
environment/resources

Soft energy

definition/includes/energy/efficiency 
definition/includes/energy/renewables/bio*
definition/includes/transit

Hard energy

definition/includes/energy/nuclear
definition/includes/energy/sequestration

Medium energy

definition/includes/(eff.) manufacturers 
definition/includes/(eff.) manufacturers/car
definition/includes/energy/battery/*
definition/includes/energy/renewables/tech*

Re: 4.4.1 Lakoff's levels Analysis

Values

economy/training/union
environment/EJ*
job-type/middle-class

job-type/safety...
job-type/skill-level/entry/second-chance
job-type/union*
job-type/urban*

Issues

economy/compete*
economy/replace/*

environment/emissions|climate
job-type/unoutsourcable*

Policies

economy/energy-independence
economy/market-distortion
economy/stimulus*

economy/training
promote*