

# Pollution Reduction and Job Creation in China, Lessons from the U.S.

## The Impact of Environmental Regulation on Job Creation in the U.S.

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### Research Goal

Economic growth remains the top priority in China, but to maintain sustainable growth, the emphasis has been shifted towards increasing employment while reducing environmental pollution. In this study we examine cases from recent U.S. experience which illuminate and challenge the perceived tradeoffs between environmental regulation and employment. We draw lessons to apply to low labor cost countries such as China. The research will culminate in an article to be published in 2014.

### Some of the potential impacts Environmental Regulation can have on Employment

<b>Direct impacts</b>	<ul style="list-style-type: none"> <li>↓ 1. Firms shift spending from labor to compliance</li> <li>2. Increased compliance costs may lead to increased prices which may lead to reduced sales and reduce labor need</li> </ul>	<ul style="list-style-type: none"> <li>↑ 1. Increased work for regulators and administrative bodies</li> <li>2. May require a change in the routine resulting in increased labor needs at the firm</li> </ul>
<b>Indirect impacts</b>	<ul style="list-style-type: none"> <li>↓ 1. Increased compliance costs may reduce the competitiveness of an industry or economy leading to plant closures and lay-offs</li> </ul>	<ul style="list-style-type: none"> <li>↑ 1. May increase competitiveness in sustainable alternatives</li> <li>2. May induce innovation increasing the competitiveness of the regulated industry</li> </ul>

### Can Environmental Regulation Increase Competitiveness?

The mainstream economics view is that there is a clear trade-off between corporate profitability and constraints on corporate choices. This view is challenged by the Porter Hypothesis(1) which argues that a company's - and a country's - long term competitive advantage depends on its ability to innovate. If companies are not currently exploiting every opportunity for profitable environmental innovation, regulation can push them in this direction. Innovation can offset the cost of regulation and improve competitiveness – if the regulations are designed properly.



On the 20<sup>th</sup> anniversary of the Porter Hypothesis, a Resources for the Future Discussion paper attempted to summarize the main research on the link between regulation, innovation and competitiveness.(2) They find that though the empirical research is unclear, more recent studies have more positive results. There are definitely no grounds for discarding the hypothesis. Environmental regulation may increase firm competitiveness, though this is not true of all regulation, nor does it apply everywhere. Porter argues that only well-designed regulation that is goal-oriented, flexible and consistent can lead to profitable innovation. Interestingly and perhaps surprisingly, the Porter hypothesis also states that stringent regulation is more likely to produce benefits than lax regulation. The reasoning is that lax regulation can often be met by small, but perhaps costly, adjustments, while stringent regulation requires disruptive innovation.

### Summary of Literature Review on Employment Effects of Environmental Regulation

Authors and year	Summary of analysis	Employment	
		-	+
Goodstein, 1999	Analyzed whether regulation leads to job loss using data on plant closures and lay-off	X	
Repetto, 1995	Analyzed impact of environmental performance on profitability at the plant level	X	
Morgenstern & Shih, 1998	Examined impact of environmental spending on employment in 4 industries	X	
Marx, 2000	Examines impact of regulation on polluting sectors and the “eco-industry” to find net impact		X
Berman & Bui, 2001	Examined effect of Nox regulation on employment at the industry level		X
Michael Greenstone, 2002	Estimates impact of the Clean Air Act by comparing data from the Census of Manufactures across attainment and non-attainment counties. Note. Dose not account for potential gains	X	
Hoag & Reed, 2002	Examined impact of Acid Rain regulation on the coal industry in Kentucky		X
Roland-Holst, 2008	Examined the economy wide employment effects of energy efficiency policy		X

### Regulation as an insignificant cause of mass lay-offs

The number of lay-offs from mass lay-offs incidents per year in the US:

Year	Total	Due to Regulations	Share of total
2010	1,415,766	2,079	0.1%
2011	1,295,273	2,737	0.2%
2012	1,337,046	2,526	0.2%

\* Data from BLS Mass Layoff Statistics (MLS)

### Case Study: The Clean Air Act & Industry in the South Coast Basin



The South Coast Basin of California has historically had poor air quality due to a combination of environmental factors, high population density and industry. Because the area was out of compliance with the Clean Air Act, plants in the South Coast Basin have faced stringent regulations.

Map source: AQMD

Regulation imposes large costs on regulated industries, but has no discernable effect on value added or employment. (3,4)

Possible explanations for the lack of relationship:

- Regulation effects capital intensive plants with low employment
- Plants sell to local markets where competitors face the same regulations
- Abatement requires some increased employment
- Results from refineries show that productivity increased while abatement increased (4)

### Preliminary conclusion

Environmental regulation does not appear to have significant negative impacts on industry or the economy, and has the potential to increase innovation and increase employment.

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