

# Does Environmental Regulation Kill or Create Jobs?

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**G**overnment regulation and deregulation are often framed as extensions of employment policy. Advocates of all stripes portray environmental regulation either as “killing” jobs or as the primary driver behind “green job” growth. This misleading framing is not supported by economic theory or evidence, and it distracts from policies that could actually create economic security for workers in the U.S. economy. Job impact models provide limited economic context and are easily manipulated; these limitations should be considered in any debates about regulation and jobs.

## Regulations have little effect on aggregate employment or unemployment rates.

**There is no consistent evidence that regulations contribute to long-term changes in the unemployment rate.**<sup>1</sup> While some regulations could shift jobs from one sector to another, these sectoral or regional layoffs are often accompanied by hiring in other areas.<sup>2</sup> “Deregulation” presents the same issue: while some may claim extreme growth in jobs from removing regulations, any job growth in that named sector will likely be paired with job losses in another sector or region.

**The best predictions by agencies estimate that regulations have very little effect on jobs.** And any job effects tend to be dwarfed by the overall effects on public welfare. For example, EPA finalized a rule in 2011 to curb upwind sources from impairing air quality in downwind states. The agency estimated a onetime increase of +2,230 compliance-related job-years, equivalent to creating 2,230 one-year positions or 1,115 two-year positions. The

annual net effect on the regulated industry was estimated at -1,000 to +3,000 jobs, with a central estimate of +700. By comparison, EPA estimated the rule would generate between \$120 and \$280 billion in annual net benefits, including up to 34,000 premature deaths avoided per year.<sup>3</sup> Note that this estimation includes short-term employment (compliance-related job-years) and longer-term employment.

## While a regulatory or deregulatory action may create labor demand temporarily, it often does not affect long-term job growth.

**For instance, the State Department estimated that construction of the Keystone XL pipeline would create 10,000 temporary jobs lasting only 4-8 months each,<sup>4</sup> and only 35 permanent jobs;<sup>5</sup> the project would not have a significant impact on long-term employment.** Some advocates of the pipeline insist that 42,100 jobs would result from the project,<sup>6</sup> but provide no clarification on how many would be permanent, lasting jobs that would create economic security for workers. Similarly, President Trump recently claimed that 28,000 jobs would result from the project, without mention of how many of these jobs would be permanent.<sup>7</sup>

## Job analysis models can easily be manipulated to predict either job losses or gains.

Economists use several types of models to estimate job impacts, and **most models rely on assumptions that drastically affect the results.** Input-output models use a number of simplifying assumptions to allow researchers to focus on employment results in particular sectors or regions. **Ideally, data going into these models would be collected from detailed surveys of manufacturers,<sup>8</sup> but in fact such data is often built around shortcuts that can undermine their reliability.<sup>9</sup> This type of modeling tends to overstate employment effects,<sup>10</sup> as it assumes prices are constant and does not reflect long-term, structural changes to the economy like globalization and industrialization.<sup>11</sup>**

Computable General Equilibrium models (CGEs) use the same data as input-output models, with all the attendant reliability issues. Unlike input-output models, CGEs allow for price changes and more complex interactions among economic sectors.<sup>12</sup> This complexity, while depicting a more accurate picture of the economy, also makes the model less transparent to a lay or policy audience. Since CGEs often do not explicitly define all their assumptions, the models are frequently characterized as “black boxes.”<sup>13</sup> **Small tweaks to these often undisclosed assumptions can have large effects on results, allowing advocates to cherry-pick a set of assumptions in order to produce a result they want.**

In an advocacy context, job impact analyses using these models can tell very different stories, often depending on the narrator. **In one revealing example, the American Coalition for Clean Coal Electricity estimated that two EPA rules on power plant emissions would trigger a 1.4 million job loss; meanwhile, using a different model and different assumptions, the Political Economy Research Institute predicted the same two rules would generate a 1.4 million job gain.<sup>14</sup>** EPA estimated the total job impact of the two rules to be relatively small: a combined total of fewer than 50,000 one-time job gains and fewer than 9,000 jobs created annually.<sup>15</sup>

Both of these studies looked at limited parts of our dynamic economy. **Modeling layoffs or hiring in a particular sector cannot accurately capture the dynamic, economy-wide effects of a policy on aggregate employment levels.**

Because overall employment responds to large, macroeconomic factors like inflation and monetary policy, **individual environmental regulations will rarely have lasting effects on aggregate employment.**<sup>16</sup>

## Models can tell us some information about redistribution in the workforce.

**Environmental regulations are more likely to influence the geographic or sectoral distribution of employment opportunities, rather than national employment levels.** Current employment models are better suited to measuring these effects than forecasting economy-wide consequences.<sup>17</sup> Even if aggregate, economy-wide demand for labor is not affected by a rule, a policy could expand employment opportunities in specific markets and have particularly significant benefits for workers—especially in areas in which the regional or local economy is depressed. Models can also show the specific sectors and regions experiencing layoffs due to economic shifts, helping identify where additional policy is needed to support those workers.<sup>18</sup> Such considerations need to be properly incorporated into the broader, existing mandates for regulatory impact analysis.<sup>19</sup>

## Blocking regulation solely based upon job effects is bad economics, bad policy, and bad law.

Effects on employment are often small compared to the net social benefits of regulation. Well-designed rules can save the public money by preventing negative impacts before they happen, rather than mitigating expensive impacts after they happen. **The health benefits of an environmental rule, such as avoiding early mortality, are normally much larger than either the costs for industries to comply with the rule or the potential job impacts.**<sup>20</sup> For example, EPA proposed controls for hazardous air pollutants, such as mercury, from industrial boilers in 2010. EPA estimated the rule would generate between \$25.2 and \$65.5 billion in annual net benefits, including up to 8,000 premature deaths avoided per year. By comparison, the agency estimated a cumulative, net employment effect on the regulated industry of between -4,000 and +8,300 jobs, with a central estimate of +2,100.<sup>21</sup>

Even in cases like these, job impacts are important for the individuals affected and should be given appropriate weight in the decisionmaking process. Avoiding discussion of the public benefits of a regulation does not help these individuals, who also must bear the burden of under-regulation.

## Regulations are poor tools for addressing the negative impacts from jobs shifting from one sector to another.

**Other policies, like supporting technical job training for growing areas of the economy and tax policy that promotes economic growth, are tools that can help address distributional effects.**<sup>22</sup> Repealing or blocking regulation solely based on potential job effects and ignoring their massive benefits to the public will neither save taxpayers money nor help U.S. workers.

**Laws require agencies to evaluate a range of regulatory advantages and disadvantages, and not focus disproportionately on a single factor like layoffs and hirings.** Agencies are required by various statutes to create rules advancing their policy missions. Some of these statutes require extensive cost-benefit analysis. Some statutes

prohibit consideration of costs. Other statutes and judicial rulings encourage agencies to roughly weigh advantages and disadvantages. No statute, however, instructs agencies to avoid issuing even massively benefit-justified new regulations to prevent shifting any jobs from one sector to another.

When presented with claims about how regulation affects jobs, Congress and the media must ask these questions to understand the context of the claims.

### What are the inputs and assumptions used in the model?

All models make simplifying assumptions. Changing the underlying assumptions of a model can dramatically change model results. **Any analysis that does not make its modeling choices public should be questioned**, and a request for that information should be made.

### Do small changes in the above assumptions create large differences in outcomes?

One way to communicate the uncertainty associated with job impact analyses is to determine how sensitive model results are to any change in the model structure. A good analysis will show how model results change when the structure or underlying assumptions of a model change. This helps determine how robust (or reliable) the results of the model are, which aspects of the model are most strongly driving results, and what errors may exist in the model. **If sensitivity analysis is not conducted or is incomplete, this calls into question the results reported by the model.**

### Does the model distinguish between the impacts of short-term and long-term unemployment?

When a worker quickly finds a new position after a layoff, it creates different stress than if the worker remains unemployed for a long time. Models determining the economic costs of layoffs should account for this difference between short-term and long-term unemployment. Short-term unemployment may create relatively minor costs for job search, relocation, and retraining. Long-term unemployment, by contrast, may entail more substantive costs, such as more intense retraining, long-term income and productivity effects, and negative health consequences. **Conflating these two distinct types of consequences in a job impact analysis leads to incorrect cost calculations and misleading rhetoric.**

### Does the model clarify if new jobs are long-term or temporary?

Advocates may justify a project by declaring it will create several thousand jobs. **As in the Keystone Pipeline example, those several thousand jobs may last only a few months each and provide little economic security for workers.** If a job estimate is presented in “job years”, remember that this number presents an aggregate amount of labor demand, and likely temporary labor, rather than a number that can be linked to longer-term economic security for a set number of workers.

## Has the model gone through independent review?

Ideally, analyses are peer reviewed or are at least replicable. Reports that have undergone peer review are usually more reliable than those that have not, if only because their assumptions and underlying data are likely to have been made available and tested. Requests to view the underlying information that goes into job analyses should be made in all cases.

## What are the regulation's broader costs and benefits?

Environmental protection has a wide range of economic costs and benefits, including public health improvements and expenditures on pollution control technology. Regulation can also induce hiring and cause layoffs. These effects should be considered within the context of a complete cost-benefit analysis of a proposed rule. **In many cases, effects on employment are likely to be relatively small compared to both public health benefits and compliance costs.**

## Endnotes

- <sup>1</sup> See Hafstead, M. A., & Williams III, R. C., *Unemployment and Environmental Regulation in General Equilibrium*, NATIONAL BUREAU OF ECONOMIC RESEARCH (May 2016), available at <http://www.nber.org/papers/w22269.pdf>.
- <sup>2</sup> INSTITUTE FOR POLICY INTEGRITY, *THE REGULATORY RED HERRING: THE ROLE OF JOB IMPACT ANALYSES IN ENVIRONMENTAL POLICY DEBATES* 8 (April 2012), available at [http://policyintegrity.org/files/publications/Regulatory\\_Red\\_Herring.pdf](http://policyintegrity.org/files/publications/Regulatory_Red_Herring.pdf) [hereinafter RED HERRING].
- <sup>3</sup> Livermore, M. and Schwartz, J., "Analysis to Inform Public Discourse on Jobs and Regulations," In: C. Coglianese, A. Finkel, and C. Carrigan, eds., *Does Regulation Kill Jobs?* Philadelphia: Pennsylvania Press. 242 (2014), available at <http://muse.jhu.edu/chapter/1071436> [hereinafter Jobs and Regulation].
- <sup>4</sup> DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT: KEYSTONE XL PROJECT, US STATE DEPARTMENT 5-6 (March 2013), available at <https://web.archive.org/web/20170203131326/https://keystonepipeline-xl.state.gov/documents/organization/205612.pdf>.
- <sup>5</sup> *Id.*, at 24
- <sup>6</sup> *The Keystone XL Pipeline*, INSTITUTE FOR 21ST CENTURY ENERGY, US CHAMBER OF COMMERCE, available at <http://www.energyxxi.org/keystone-xl-pipeline>.
- <sup>7</sup> Osita Nwanevu, *Trump's Greenlighting of Keystone and DAPL Is a Power Play That Won't Create Jobs*, SLATE (Jan. 2017), available at [http://www.slate.com/blogs/the\\_slate\\_est/2017/01/26/trump\\_is\\_getting\\_talking\\_points\\_from\\_fox\\_news\\_again.html](http://www.slate.com/blogs/the_slate_est/2017/01/26/trump_is_getting_talking_points_from_fox_news_again.html).
- <sup>8</sup> Peter Berck & Sandra Hoffman, *Assessing the Employment Impacts of Environmental and Natural Resource Policy*, 140 ENV'T & RES. ECON. 133, 136 (2002) [hereinafter Berck and Hoffman].
- <sup>9</sup> See Harry W. Richardson, *Input-Output and Economic Base Multipliers: Looking Backward and Forward*, 25 J. REGIONAL SCI. 607 (1985).
- <sup>10</sup> Berck & Hoffman, *supra* note 8, 144-45.
- <sup>11</sup> RED HERRING, *supra* note 2 at 12.
- <sup>12</sup> J. Xie & S. Saltzman, *Environmental Policy Analysis: An Environmental Computable General Equilibrium Approach for Developing Countries*, 22 J. POL'Y MODELLING 453 (2000).
- <sup>13</sup> Arvind Panagariya & Rupa Duttagupta, *The 'Gains' from Preferential Trade Liberalization in the CGE Model: Where Do They Come From?* 3 (Working Paper, 2001), available at <http://www.columbia.edu/~ap2231/technical%20papers/cge-critique.pdf> (noting that in the context of trade liberalization, "Unearthing the features of CGE models that drive [their results] is often a time-consuming exercise. This

is because their sheer size, facilitated by recent advances in computer technology, makes it difficult to pinpoint the precise source of a particular result. They often remain a black box. Indeed, frequently, authors are themselves unable to explain their results intuitively and, when pressed, resort to uninformative answers.”)

<sup>14</sup> James Heintz et al., POL. ECON. RES. INST. & CERES, *New Jobs—Cleaner Air: Employment Effects under Planned Changes to the EPA’s Air Pollution Rules* (2011); NERA ECON. CONSULTING & AM. COALITION FOR CLEAN COAL ELECTRICITY, *Proposed CATR + MACT* (2011).

<sup>15</sup> Combining estimates for EPA’s Interstate Transport Rule (gains of 2,200 one-time jobs and 700 annual jobs) and Utility Mercury and Air Toxics Rule (gains of 46,000 one-time jobs and 8,000 annual jobs). See EPA, REGULATORY IMPACT ANALYSIS OF THE PROPOSED TOXICS RULE: FINAL REPORT (2011), available at [http://www.epa.gov/ttn/atw/utility/ria\\_toxics\\_rule.pdf](http://www.epa.gov/ttn/atw/utility/ria_toxics_rule.pdf) and OFFICE OF AIR AND RADIATION, EPA, REGULATORY IMPACT ANALYSIS FOR THE FEDERAL IMPLEMENTATION PLANS TO REDUCE INTERSTATE TRANSPORT OF FINE PARTICULATE MATTER AND OZONE IN 27 STATES (2011).

<sup>16</sup> RED HERRING *supra* note 2 at 11.

<sup>17</sup> RED HERRING *supra* note 2 at 11.

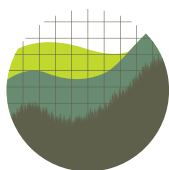
<sup>18</sup> RED HERRING *supra* note 2 at 9.

<sup>19</sup> RED HERRING *supra* note 2 at 6.

<sup>20</sup> Jobs and Regulation, *supra* note 3 at 241.

<sup>21</sup> Jobs and Regulation, *supra* note 3 at 242.

<sup>22</sup> Jobs and Regulation, *supra* note 3 at 251.



Institute for  
**Policy Integrity**  
NEW YORK UNIVERSITY SCHOOL OF LAW

For more information contact Derek Sylvan – [derek.sylvan@nyu.edu](mailto:derek.sylvan@nyu.edu)

Institute for Policy Integrity  
New York University School of Law  
Wilf Hall, 139 MacDougal Street, New York, New York 10012  
[policyintegrity.org](http://policyintegrity.org)