Introduction

We live in an era of globalization, and there is great concern about how this affects local jobs and economic competitiveness. In addition, there is a rapidly growing awareness of the environmental impact of current development patterns, and a particular focus on the value of “clean technologies” to assure sustainable growth in the future. *Manufacturing Climate Solutions* is an effort to look more deeply at the linkages between low-carbon technologies and U.S. jobs.

At the Center on Globalization, Governance & Competitiveness (CGGC) at Duke University, we look at globalization largely through the lens of global supply chains. More specifically, we apply a “value chain” framework to industry studies, fleshing out the more familiar supply chain approach with additional layers of information about how and where higher value activities and industrial upgrading can occur in global supply chains.

In this cooperative enterprise undertaken with the Building and Construction Trades Department (AFL-CIO), Industrial Union Council (AFL-CIO), International Brotherhood of Boilermakers, United Association of Plumbers and Pipefitters, and Environmental Defense Fund, we asked: “What are the U.S. job opportunities in technologies that can reduce carbon emissions?”

We set out to study five very different carbon-reducing technologies—LED lighting, high-performance windows, auxiliary power units for trucks, concentrating solar power, and Super Soil Systems (a new method for treating hog wastes). These topics run the spectrum from a well-established product (windows) to a new solution (Super Soil). Some are in wide use today, while others are still struggling to get costs down, but all are proven technologies that reduce greenhouse gas emissions.

We offer these five industry analyses as a step in building an understanding of the role U.S. manufacturing can play in a wide array of climate solutions. The information in these chapters is gathered from a variety of secondary sources and direct company interviews. We have sought to present the following:

- a working understanding of each technology, broken down into its main materials and components
- a view of the value chain, encompassing main components, end products, and companies, identified with each technology
- a picture of the various types of labor involved in manufacturing and installation
- a representative list of firms and a depiction of the market structure in which they operate

For each technology, we present a simple description and diagram, a value chain, a table of relevant companies, and a map of relevant firms in the United States. With these we hope to provide a snapshot of the linkages and opportunities in these industries for U.S. manufacturing and construction jobs. At the same time, we recognize that industries are changing rapidly and continuously in the global context, and this is only a small piece of a complex and ever-shifting puzzle.
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Although *Manufacturing Climate Solutions* is the sum of the efforts of all of these people, any errors are the sole responsibility of the authors. The views expressed here are those of the authors and do not necessarily reflect the views of any of our sponsors or collaborators.

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