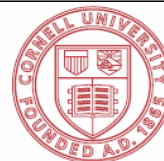


How Green Energy Investments Can Renew Old Industrial Regions



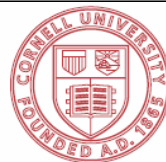
Susan Christopherson
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Some Old Manufacturing Regions Have Fared Better Than Others

- Diversified Economies
- Research-oriented Universities and Specialized Health Care Facilities (An Educated Population)
- Market Stability Provided by Government Employment
- Slow Population Growth that Dampened Housing Speculation

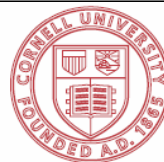


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What Do We Mean by “Resilience”

The Narrow Definition: the ability of a regional economy to return to a previously established equilibrium state (as measured by employment levels, rate of output or population size) after a traumatic event, such as a hurricane or crisis in financial markets.

The Longer View: connecting the concept of regional resilience to the ideas of regional and industry restructuring popular in the 1980s. They ask how regions affected by structural changes produced, for example, by trade liberalization, avoid severe negative impacts, are less affected than other regions, or benefit from the structural change.



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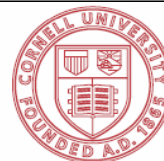
Key Concepts: Lock-In and Path Dependency,

The accepted wisdom:

Regions that underperform relative to national averages are characterized by inefficient political and institutions that prevent adaptation to new market conditions.

A contrarian view:

Path dependency can cut two ways. Old industrial regions may have assets that are the product of long-term (path dependent) investments in workforce skills and research and development capacity.



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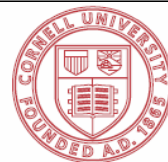
What Does a Region With Capacity for Resilience (or Sustainability) Look Like?

It is specialized:

The regional economy has high location quotients in several interrelated industries.

It is internally diversified:

The regional economy is occupationally and sectorally diversified.



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Upstate New York metro economies are among those “least touched by the recession”

BusinessWeek.com ranked US metro economies using data from The Brookings Institution’s MetroMonitor study based on:

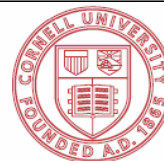
1. Job Growth
2. Gross Metropolitan Product (GMP)
3. Home Prices Change
4. Unemployment Change

Four upstate NY cities made the top 40 list

- Stable home prices
- Recession-resistant jobs: health care, education, government
- Diversified economies

- Rochester – overall rank = 20
 - 3.1% growth in home prices
 - 8.4% unemployment – up 3.1 points
 - GMP down 5% from 2007 peak
 - Ranked #10 in overall job growth
- Buffalo-Niagara Falls – overall rank = 21
 - 3.7% growth in home prices
 - 8.9% unemployment – up 3.3 points
 - GMP down 4.1% from 2007 peak
 - Diverse employment base
- Syracuse – overall rank = 27
 - 3.4% growth in home prices
 - 8.6% unemployment – up 3.2 points
 - GMP down 6.4% from 2007 peak
 - Wegman’s, SU, Lockheed Martin, St. Joseph’s Hospital
- Albany-Schenectady-Troy – overall rank = 28
 - 0.8% growth in home prices
 - 7.3% unemployment – up 2.5 points
 - GMP down 5.3% from 2007 peak
 - SUNY, government, technology sector

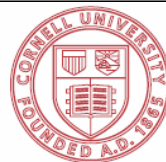
- *Business Week* - October 22, 2009



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What Critical Trends Will Affect the Future of These OIRs?

- Rising fuel prices and firm strategies to re-concentrate supply chains
- The expansion of new markets for advanced manufacturing inputs, particularly in the “green” economy
- A drive to rebalance consumption-driven economies and expand exports
- The ability to capitalize on legacy investments in research and development and labor force skills

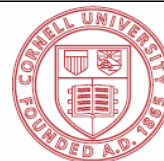


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Phoenix Industries

Phoenix industries have risen out of the ashes of the old industrial centers in the U.S. U.K. and Canada. They have several features in common.

- They are located in regions with a history of occupation-based expertise in the processes, materials, and technologies in a particular industry. These tend to be old sites, originally employing thousands and including R&D departments.
- Universities in the region have specialized programs supporting basic research related to that industry's technologies, and engineering education around those technologies.
- Supplier, design and engineering firms have been spun off when the "anchor firm" vertically disintegrated, which has created value-added capacity.
- Average wages are higher than the regional average and higher than the manufacturing average.



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Phoenix Industries Focus on Process, Design, and New Technologies

- **Photonics (precision optics and Imaging)**

Location: Rochester

Originating Firm: Kodak

Markets: Healthcare, Defense, Media production, Retailing,
Sensors and Monitors



- **Environmental Systems (Indoor air quality)**

Location: Syracuse

Originating Firm: Carrier Heating and Air Conditioning

Markets: Construction, Healthcare, Green HVAC

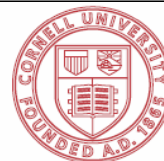
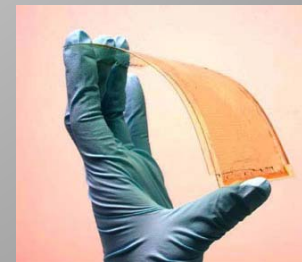


- **Electronic Packaging/ Flexible Electronics**

Location: Binghamton

Originating Firm: IBM

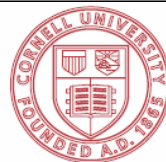
Markets: Defense, Healthcare, Circuit board Design for
Manufacture, Systems Integration



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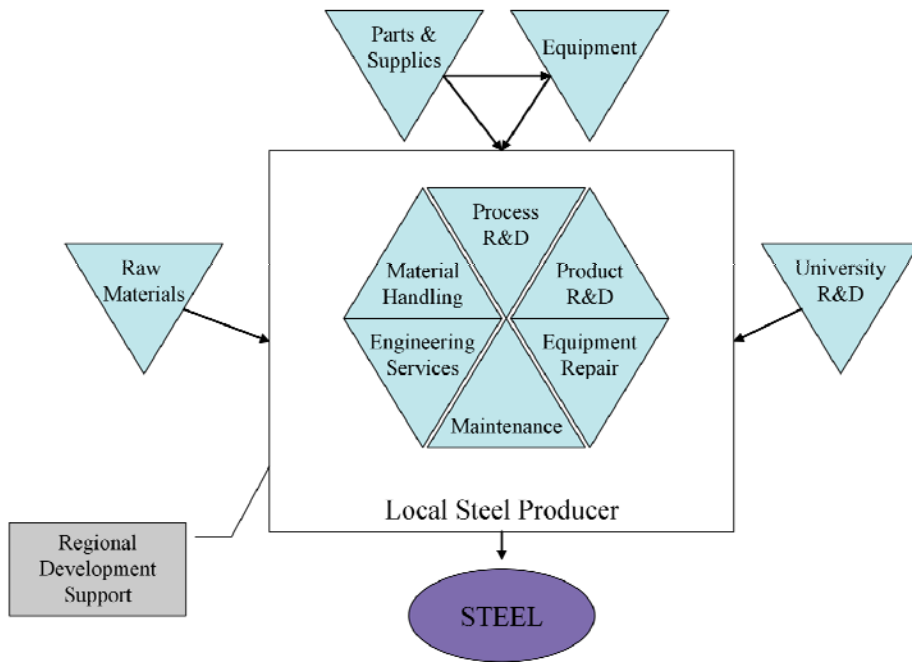
An Example: Photonics in Rochester

- Emerged from the old photographic equipment and supply industry, the “Kodak” sector. New technologies are in precision optics and imaging.
- Over 110 SMEs in the Rochester region.
- Other global centers – Ottawa, Berlin, Tucson, Silicon Glen (Scotland)
- RE and EE Applications: Optoelectronic devices providing optical sensing and control for smart management and green metrics, such as energy balance and life cycle waste management; smart LED lighting systems



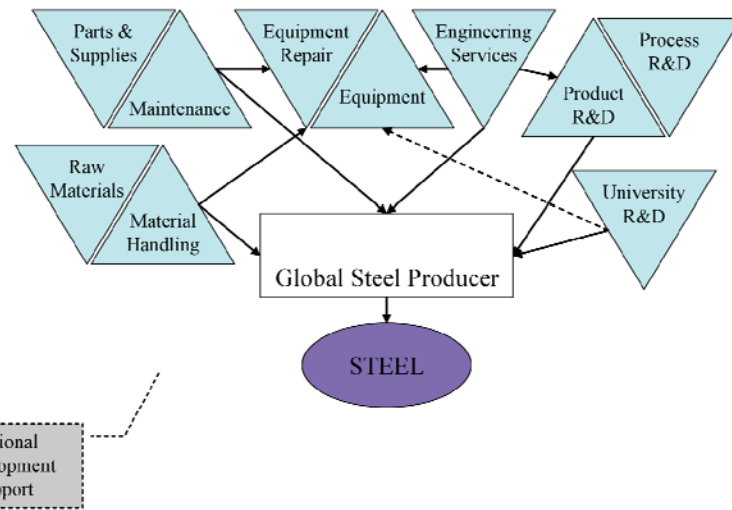
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Figure 7: Vertically-Integrated, Domestically-Based Steel Production

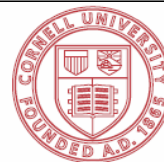


Why are phoenix industries invisible (and neglected by policy-makers)?

Figure 8: The Steel Technology Cluster and Global Production

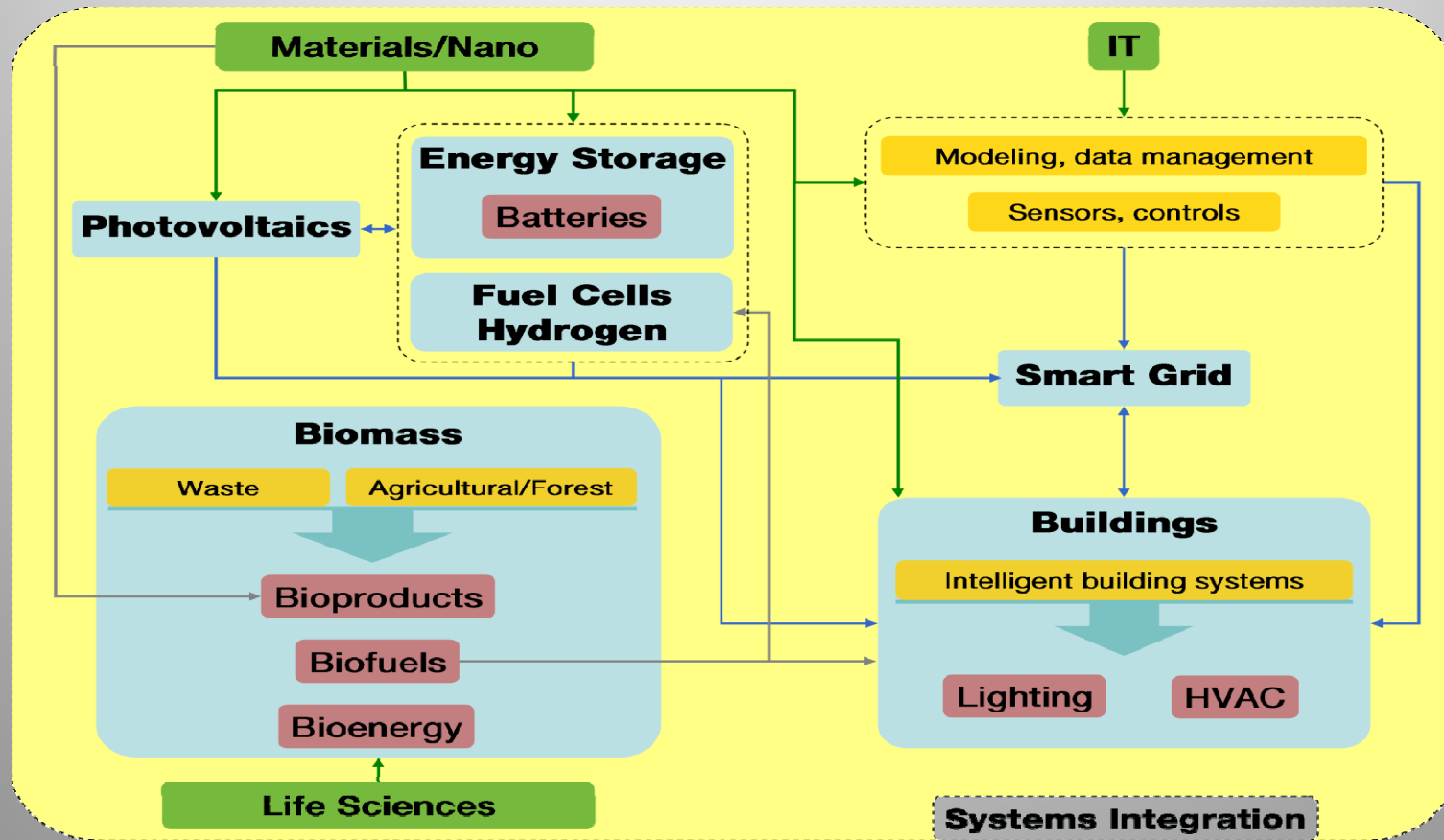


What Does the Expanding Market for
Advanced Manufacturing Inputs in
Renewable Energy and Energy Efficiency
Mean for Phoenix Industries?



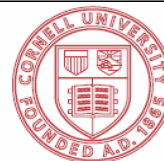
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How Phoenix Industries Relate to RE and EE



What Do We Need to Know?

- What products do phoenix industries produce and how do they serve global RE and EE markets?
- How “clean tech” is a set of markets, as well as a set of firms
- What are the missing ingredients in a strategy to connect phoenix industries to R&D and market opportunities in RE and EE?
- Why should livable cities include manufacturing jobs?

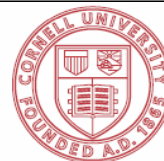


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Why Do We Need A New Approach?

The job creation capacity of investment in green technologies is being lost:

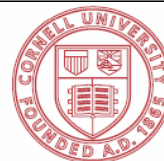
1. U.S. Federal and state subsidies for installing solar systems are paying for the cost of importing solar panels made in China using (phoenix) hi-tech manufacturing equipment. (Friedman)
2. 70% of wind energy jobs are in manufacturing. Final assembly “branch plants” constitute only a fraction of the manufacturing jobs.
3. Existing ED policy encourages sprawl. We need to create new kinds of industrial districts in cities, to limit suburban industrial sprawl.



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How is a Green Phoenix Strategy Different from Conventional Green ED Policy?

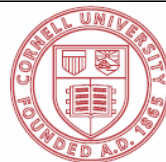
- Builds on industry-based comparative advantages
- It focuses on jobs not just innovation, providing an environment that fosters commercialization.
- Focuses on the development of businesses headquartered in the region instead of attracting FDI/branch plants for MNEs (Vestas, Gamesa)
- Emphasizes inter-regional cooperation over competition



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What is the Canadian Advantage in This Strategy?

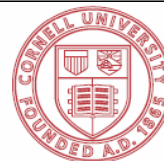
- Canada recognizes and has a regional cluster strategy – the National Research Council initiative.
- Canada has identified clusters that have strong connections to RE and EE markets – photonics (Ottawa), fuel cells and hydrogen technologies (Vancouver)
- NRC encourages international, inter-regional linkages to expand networks (and product markets).



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Conclusion: Why Should We Have a Green Strategy for Phoenix Industries?

- Existing and potential global markets for advanced manufacturing inputs.
- To build on and utilize key regional assets - university engineering and applied research and development programs, and workforce skills. Phoenix industries foster commercialization not just innovation.
- They are growing in place
- They can build manufacturing capacity, our old industrial cities, and manufacturing jobs!

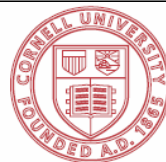


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Questions? Reactions?

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