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Policy Brief

The Economic Development Potential of the Green Sector

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with input from the Economic Development Working Group, Innovations Roundtable Project

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Table of Contents

Executive Summary

This brief contains policy recommendations on establishing a regional economic development and job creation initiative to grow the Green sector into a significant export base. The long-term goals are to capture internal and external economies of scale, agglomeration benefits, and a cutting edge market identity to develop a region as a leader for meeting the growing demand for Green jobs and services. This effort requires a rounded and balanced economic ecology that includes strengthening and increasing the number of Green vendors, suppliers and related supply chains. This is a desirable goal because the Green market is projected to grow substantially both domestically and globally over the next decade.

Several cities and metropolitan regions have begun to aggressively develop and promote the Green sector. Regions face competition domestically from major U.S. cities, and also from countries and regions abroad. In the race to become a major regional center for the Green economic sector, securing the "first mover" advantage will be critical to future success.

Although the odds of winning the inter-regional competition to grow the Green sector are unknown, taking the risk to implement the initiative is worthwhile because of the potential high pay off. The proposed strategy provides an opportunity for a region to become a recognized global leader in both the promotion of a Greener city and world and as the preeminent promoter of industries needed to make the Green vision a reality.

An equally important goal is to ensure that growth is managed in a manner that benefits a region's residents, particularly disadvantaged populations and neighborhoods.

Through a process of consultation with key individuals in the private, public, non-profit and higher education sector, along with secondary research, this project identified the following goals to guide regional development:

(1) Promote economic development of Green sector, with the goal of becoming a major national and international center for Green goods and services.
(2) Support the effort to make a region more environmentally sound by strengthening the local/regional suppliers of Green goods and services.
(3) Strengthen economic equity by promoting programs that prepare the work force, including disadvantaged populations, for Green jobs; and ensure that all neighborhoods share in the benefit of economic growth

Based on these goals, and a review of activities taken by select cities, we recommend the following to develop and promote the Green sector:

- Adoption of policies and programs by public agencies to promote economic development by "piggy backing" on current and projected local and regional induced demand for Green products and services. This enables the region to take advantage of locally induced demand.

- ❖ Develop infrastructure and incentives for public and private investment to overcome the barriers to financing a Green sector.
- ❖ Develop a "town-gown" network to promote the production, diffusion and adaptation of knowledge to ensure that a region has an edge in innovation.
- ❖ Eliminate cumbersome city rules and regulations that hinder development of a Green sector; establish operating procedures that facilitate the expansion of Green firms; and promote the development of a Green industrial service park.
- ❖ Match training to labor needs of the Green sector through the utilization of local community colleges and the Workforce Investment Act.
- ❖ Maintain accountability by developing timely performance measurements and monitoring strategy, including outcomes for workers, firms and neighborhoods.
- ❖ Establish an office to coordinate the proposed initiative and appoint a Green expert who is knowledgeable about environmental issues and economic development.

For a region to secure the "first mover" advantage of a Green sector, leadership should act quickly and decisively. A region can reap significant intermediate effects by taking the market early on. The projected growth in the domestic and global market for Green goods and services can translate into economic and job growth for a region.

Project Background

This policy brief is a product of a six-month effort to formulate concrete recommendations for a region to advance its Green economic sector. The project started as an effort to identify innovative approaches to economic development. Through a consultation process with people in the public and private sectors and university researchers, it was decided to focus on economic development in the Green sector.[1]

The participants convened to develop broad recommendations based on an established set of criteria. The recommended strategies and/or policies should:

- Demonstrate success in regions or cities
- Be appropriate to the scale of a large city
- Be cost effective
- Be connected to meaningful opportunity for change in a region
- Be projected to help foster equity and inclusion
- Be designed for the short term

In addition, the Working Group members adopted additional criteria to guide their recommendations: (1) focus on demand-oriented strategies; (2) take an industry-based approach; and (3) include community benefits principles.

Furthermore, the participants recommended moving beyond the original criteria. The goal was not to have a laundry list of potential programs and policies, but to select one or two potential initiatives that have great promise and would allow for demonstrations in leadership in a critical area on a national stage. The participants recognized that there is no single panacea to economic development and as a result, do not address many otherwise worthwhile proposals. The participants considered several industries, but focused its recommendations on the development and promotion of a Green sector.[2]

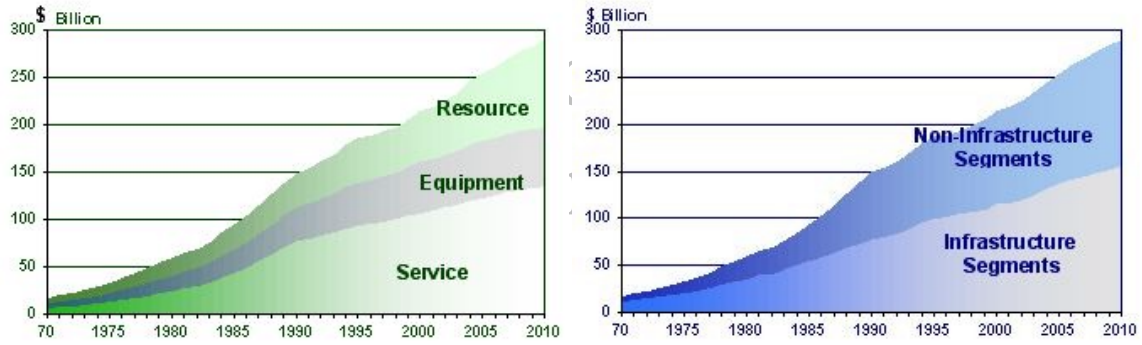
The research staff used a combination of methods to collect data and information on the Green sector. The participants were extraordinarily helpful in providing suggestions as well as additional references and individual referrals. The research staff was able to speak with key experts and community leaders regarding the development and promotion of a Green sector.[3] In addition the research staff examined current reports on the development and promotion of the Green sector in cities and metropolitan regions across the country including: Los Angeles, San Francisco, Seattle, Chicago, Portland, and States of New York and Massachusetts.[4]

The Green Wave

The goal of this initiative is for a region to become a leading center of production for Green goods and services. This is an attractive sector because of the potential for growth in the United States and the world. Growth estimates vary in part due to the numerous and various ways in which the Green sector is defined. This sector of the economy can be conceived as being composed of activities related to efforts to clean the air and water, manage waste products, promote conservation, and enhance the environment. Existing data can provide only a rough estimate of the size and trends of this evolving sector that has not fully matured. In the United States, reports use data from the U.S. Economic Census to determine the number of jobs and/or potential revenue generated from Green products and services.[5] Existing reports rely on the Standard Industrial Classification Codes (SIC Codes) and North American Industry Classification System (NAICS) to identify and quantify specific Green products and services of interest. Green products and services range from manufacturing, construction, and waste management to professional services including architecture and engineering. Several of the reports listed in the references provide alternative listing of the industries included in the Green sector.[6] Despite the data limitations, the available information is sufficient in providing a useful overview.

As a whole the Green sector experienced a boom in the 1980s, followed by a slow down in the subsequent decade.[7] However, the trends varied by region, state, and local areas in part due to the adoption of policies including regulatory ones that have induced demand in some places. Overall national projections indicate renewed growth that will continue through to 2010 (see Figure 1.1) with an estimated market value of up to $300 billion dollars. The UK's Department of Trade and Industry estimates that "the world market for environmental goods and services was valued at US$515 billion in 2000 and was forecast to increase to US$688 billion by 2010."[8]

Figure 1.1: Past and Projected Trends



Source: Report 2020: The U.S. Environmental Industry and Global Markets, Environmental Business Journal

Several cities and metropolitan regions have begun to aggressively develop and promote the Green sector. Cities and regions have taken efforts to promote the Green sector through changes and/or the adoption of policies. A report published in 2002 lists a current ranking of the most active regions in the environmental technology industry. The Los Angeles/Southern California region leads the list in total revenue and export revenue in green technology. Chicago, New York, and Philadelphia follow behind.

Table 1.Environmental Techology Industry Rank by MSA

Total Revenue	Total Export Revenue
1. LA-Long Beach	LA-Long Beach
2. Chicago, IL	New York, NY
3. Philadelphia, PA	Chicago, IL
4. New York, NY	Philadelphia, PA
5. Boston, MA	Detroit, MI

Table adapted from Rodino & Associates (2002)

Green development occurs through a commitment of resources and leadership, particularly among key policymakers that bring significant attention and institutional resources to the Green sector. The following are examples of what other cities are doing across the nation:

Chicago: Mayor Daley has taken several steps to promote clean technologies: creating the Chicago Center for Green Technology (home to numerous environmentally oriented companies and city services), committing $100 million to a variety of environmental projects, and helping Chicago become a world leader in solar energy. In addition, the Mayor has an assistant that advises him specifically about Green Initiatives.[9]

Los Angeles: A recent report released in March 2006 by the Economic Roundtable, a non-profit corporation that conducts research and implements programs related to economic self-sufficiency, examined the range and quality of Los Angeles' Green technology sector jobs. The report states that Los Angeles' Green technology sector has a total of 118 Green businesses in the City of Los Angeles and 296 in the County.[10]

Portland: The City of Portland established an Office of Sustainability. The City also has a strategic plan to develop a Green or what they call a "Sustainable Industry" as developed by the Portland Economic Development Commission.[11]

San Francisco: In October of 2004, a San Francisco based organization called Clean Edge issued a report entitled "Harnessing San Francisco's Clean-Tech Future: A Plan for Attracting Businesses and Creating Jobs."[12] The report explains that, "The Board of Supervisors has played an active role in promoting clean tech policies. They recently enacted precautionary principle is a progressive process of review that takes into account environmental impact with respect to all proposed legislation…policy helping to create markets."[13]

Seattle: The City of Seattle established an Office of Sustainability whose mission is to "provide leadership, tools, information, and ideas to help City agencies, residents, households, and businesses use natural resources efficiently, prevent pollution, and improve the economic, environmental, and social well-being of current and future generations."[14]

These examples demonstrate efforts of cities that are in competition to improve their share of the Green market's goods and services. Each of the cities and/or regions discussed above demonstrates a strategy to specifically target developing the Green sector by incorporating the active role of public institutions in inducing demand, attention and resources toward the goal of developing and promoting a Green sector. It is clear that each region faces several domestic competitors for the Green market.

Competition from Abroad: In addition to the domestic competition, regions also face competition from countries and regions abroad. The United Kingdom has established a government unit, the Environmental Industries Sector Unit (EISU) with the responsibility of promoting the UK environmental industry overseas. The EISU operates within the International Trade Group of UK Trade & Investment with the prime objective to significantly increase the UK's share of the global markets for Environmental Goods and Services (EGS).[15]

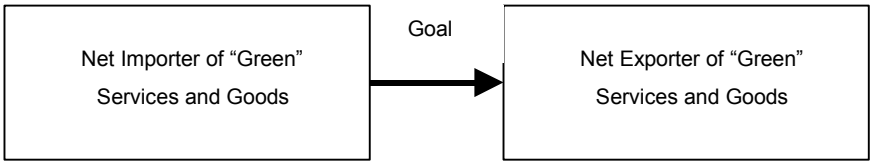
In summary, the scan of the supply side of the national and international Green sector indicates both a significant potential for growth and a geographic concentration of producers and suppliers, thus creating regional "winners" and "losers."

Identifying, Capturing and Enhancing Agglomeration Effects

Within the range of possibilities, the long-term goal for a region wanting to lead the Green sector is to be a net exporter of Green goods and services. Clearly, there will be Green goods and services that should be purchased from outside a region because it would be more cost effective. However, there is an opportunity for a region to become a net exporter (i.e. we sell more to those outside the region than we buy from the outside suppliers). In fact, the goal is to become a dominant, if not the dominant regional center for the production of Green goods and the provider of Green services. To gain this position, a region must take quick and aggressive action to maintain and extend their Green sector position. In doing so, other regions are positioned as being predominantly buyers of Green goods and services.

In the competition for leadership, a region must strengthen its comparative position by capturing *economies of scale, enhancing agglomeration effects, and strengthening its capacity to innovate and assume risk.*

Figure 1.2: Goal for Green Economic Development



Economies of Scale. Scale effects include those that are internal to the firm and external to the firm. Internal scale economies result when average cost of production declines due to the level of production. In order for internal scale economies to exist the firm needs to produce a product and/or service in a way that decreases the average cost to produce over the long term. There are also scale effects that are external to the firm. Agglomeration effects are scale effects external to the firm that occur from spatial clustering. Spatial clustering is particularly relevant to transportation costs associated with producing and distributing products and services. The magnitude of the agglomeration effect, in part depends on the need for spatial clustering that is partially dependent on the level of commonly shared input and specialized services the Green sector needs for production and distribution.

Innovation. The potential for a region to become the leading exporter of Green goods and services depends on its ability to capture and retain agglomeration effects. If a region can become a center of Green innovation, it will secure its position as a leading center for the production of Green goods and services. Mutual learning within firms and across firms leads to innovation. This is particularly important for an evolving sector to develop and grow. Linking such firm interaction with the "intellectual assets" of the region in terms of local and regional universities will also facilitate knowledge production, diffusion, and adaptation. Innovation is ongoing in emerging industries, and mutual learning is needed

to diffuse new ideas across firms so that adaptation can occur as appropriate. Such innovation requires mutual learning within a firm, across firms and with links to research institutions including universities.

Capturing Agglomeration Effects: Making It Stick. In addition to the prerequisites for agglomeration to exist, there are factors associated with capturing such agglomeration effects. Two major factors need to exist to capture agglomeration effects. First, it is important to be a demand leader, which can be driven by regional policies. Second, having a substantial local and regional demand for such products increases the likelihood that the sector gains enough economies of scale to then become a major exporter. The combination of being a demand leader and having a substantial local and regional demand increases the likelihood that agglomeration effects can be captured.

Creating Market Identity: Increasing the demand for Green products and services requires tapping into national and international markets. Marketing and public relations can encourage consumption of Green products and services and increase the likelihood that firms will participate by becoming producers themselves. The public sector can have a specific role in such promotion by providing firms with access to information in a clear and consistent manner. Public sector involvement in promotion of the sector lends the sector credibility that it might not otherwise have if promoted by another institution.

Risk Taking: Because the potential for agglomeration is unknown and unproven for the Green sector, there is a risk in investing in such a strategy. We do not know the optimal size of the sector nor do not we know the relative role of agglomeration or how strong its effects are relevant to the Green sector. There is no way to know for certain because the clustering of a Green sector has yet to occur in a region. However, in examining previous new and emerging industries, we witness geographic competition for becoming a center for production and services. In some ways a region is entering unfamiliar territories that require a certain level of risk taking.

Collective Goods and Public Sector Leadership: A large part of agglomeration is based on the concept of a public good that by definition allow firms to benefit without agreeing to participate in efforts to generate agglomeration effects. Essentially, these firms become "free riders" in the effort to develop and promote the Green sector. To overcome such a "free rider" effect there needs to be a mechanism in place to encourage the active participation and cooperation of Green industries and its firms. The role of the government for the Green sector is to be the mechanism that encourages and facilitates Green industries and firms to work collectively.

The successful implementation of a strategy to develop the Green sector has potential to boost a region's status as a leader in environmental conservation and economic development. To ensure that a region achieves this status, building on local and regionally induced demand alone will not be enough. Other critical components need to exist in order for a region to reach its potential.

Assessing a Region's Comparative Advantages and Disadvantages

A critical step in developing a Green economic development initiative is to assess local and regional strengths and weaknesses. Below, key elements are outlined for consideration in conducting an assessment. These elements serve as a basis for building a Green economic development initiative; and for recognizing barriers and advantages on the way. Elements include:

- *Determine the current and future regional market for Green products and services*. Because demand is in part driven by public agency action, it is useful to collect information on the regulations and incentive programs that induce regional demand for Green products and services. It is also useful to determine how a growing popular interest in environmentally friendly products and services is and will affect market demand.

- *Inventory the regional firms currently active in providing Green products and services, and assess their technological strength.* This is a challenge because the Green sector is diverse, encompassing a number of industries designed to address air and water pollution, water and energy conservation, and waste management. The industries that utilize intermediary Green goods and services are also broad and wide-ranging, including construction, manufacturing, and professional services. It is useful to assess the current technological base of firms and determine the degree of interaction among these firms. Ideally, the firms and industries should form an economic sector that act collective to stimulate innovation, promote new products and services, and market their goods and services.

- *Evaluate the strengths and weaknesses of regional universities and research institutions.* Given the nature of the evolving Green sector, technology and R&D are critical to any effort to gain a comparative advantage. The possibility for shared knowledge, diffusion, and adaptation to occur and prove fruitful is great when a region has renowned universities and research institutions. It is useful to determine if these organizations are currently engaged in research on air and water pollution, energy conservation, and/or waste management. It is also useful to assess the level of interaction between the research units and Green firms.

- *Determine a region's political commitment to a Green agenda.* Leadership commitment and popular support for local government to address environmental issues is necessary to develop the Green sector. Embracing a Green agenda on all fronts contributes to the success of a Green sector.

- *Analyze the region's capital market.* Growing the Green sector will require access to investment capital and loans. It is important to determine if venture capitalists, banks, and other financial institutions are capable of evaluating the risks and potential of environmentally oriented firms that are entering into new and unproven markets.

- *Assess the region's experience in addressing environmental issues.* This step reveals information about a region's existing Green sector. Experience in addressing environmental issues due to high pollution levels results in cumulative gained knowledge about environmental issues and concerns. Therefore, creating a strong infrastructure and knowledge base for further developing the Green sector.

- *Learn from a region's record of previous efforts to capture emerging innovation-based industries.* Understanding a region's past efforts to capture emerging innovation based industries provides insight into what activities to replicate and what shortcomings to overcome. A region needs to use this knowledge to proactively and strategically target such industries to promote economic development.

- *Examine governance structure and regional leadership.* This step will identify advantages and barriers inherent in a region's governance structure. Particular attention should be paid to the degree of fragmentation and the source of regional leadership. Fragmentation can make collaboration and coordination difficult, but it could also be a source of strength due to diversity and competition. Nonetheless, cooperation is desirable because local jurisdictions are economically linked, thus sharing a common fate. Regional leadership can come from either a dominant city or from effective regional agencies.

- *Evaluate the R&D infrastructure, particularly the link between research institutions and government and business sectors.* A region's comparative advantage in the Green Sector hinges on the infrastructure supporting interactions between researchers in local colleges and universities and the firms that produce environmentally friendly goods and services. Such interaction on a consistent substantial basis provides a foundation for the innovation required to develop Green processes, products, and services.

- *Study the existing skills mismatch between the labor force and Green sector.* The existing labor force may not be currently trained for jobs in the Green sector. A decision to pursue growth of the Green industry requires substantial investment in developing the workforce skills to match the needs of Green industries.

- *Examine the impact of regulation on the Green sector.* The ability and speed at which the Green Sector can expand can be enhanced or hindered by regulatory agencies (e.g., city planning, building and construction, utilities). A viable economic development strategy requires the elimination of unreasonable barriers, while maintaining reasonable regulations that ensure the public wellbeing. It is also important to examine the degree of inter-agency coordination, and the ease with which firms can access and understand rules and regulations.

- *Asses challenges in the cost of transportation, land, and housing*. The high cost of land and transportation in a region, compared with other competing regions, can be a critical factor in attracting and keeping firms and their workers. Examine what programs are available to businesses and families to help them meet the cost of living. The best solution is to have a strong Green sector that can generate the profits and wages to compensate for higher costs.

Assessing a region's comparative advantages and disadvantages is critical to formulating a strategy to promote economic development in the Green sector. Each region is uniquely situated, depending on its historical development, geographic location, economic base, and existing institutions and governmental units. A region has strengths it can build on in developing and promoting a Green sector; along with several weaknesses that need addressing. A comprehensive assessment helps to set priorities. Equally important, it is useful to gain insights on the other regions. An understanding of the region's comparative advantage is critical to identifying the most viable niche or niches within the Green sector for that region.

POTENTIAL STRATEGIES

In pursuing economic development, a region needs a multi-prong approach, including some or all of the following strategic steps.

- Build on Regional Induced Demand

  It is important to understand that demand is both regional and global. Many regions are already actively inducing local demand, some in order to meet state and federal requirements and others as a matter of voluntary commitment to a policy of promoting a greener region or city. Most local and regional environmental efforts have been to require (through regulation) or encourage (through incentives) consumers and firms to adopt more environmentally friendly behavior and practices. What is missing is a comprehensive policy to link economic development to the induced demand. A region needs to facilitate development of local regional vendors and supply chains to meet the induced demand. This is not to deny that there are commendable programs that may be in place but these tend to be limited and ad hoc. Meeting regional consumption can be an important building block for economic development. At the same time, it is critical to recognize that this approach alone is not sufficient to develop a viable regional Green sector. It is potentially beneficial to pay attention to regional demand as a building block. Regional demand in itself is critical but not sufficient.

- Identify specialization niches

  As discussed earlier, the Green sector is very heterogeneous. It would be difficult and perhaps counter productive to try to focus on all of its sub-sectors. This is particularly important to recognize for R&D. While technology will play a key role in determining comparative advantage, the Green sector does not have a single core set of basic knowledge. Therefore, pursuing regional economic development for this sector is unlike what has been done successfully for other industries. Regional economies built on integrated circuits, software for personal computers, and biogenetics have had a much more narrowly defined set of knowledge. A more practical strategy for the Green sector is to identify the most promising sub-sectors based on a region's strengths and weaknesses.

- Coordinate key public, private, regional, and agency actors

  A region needs to build on the momentum of the existing and future demand for Green goods and services to promote the growth and expansion of Green firms and jobs. The sector needs to expand to generate enough scale effects to gain a competitive advantage and capture the positive effects of an industry cluster. Regionally induced demand is occurring in the following four areas: (1) air

pollution reduction; (2) water conservation; (3) energy conservation; and (4) construction of Green buildings.

- Attract financing and investment

  Previous reports and key stakeholders have noted the importance of investment and financial capital for the Green sector. There are several barriers for Green firms including firm size, nature of the business, and investor perceptions. Because emerging Green firms are likely to be perceived as riskier investments, access to financial capital for such firms presents a challenge for growth. A region needs to devise a strategy to provide information to investors regarding Green firms, and likewise Green firms need to be better prepared to market themselves and interact with investors to minimize the perception of risk within the Green sector. For example, with the help of the Environmental Capital Network the State of New York is planning future venture forums to address this specific issue by providing Green firms the opportunity to have a face-to-face discussion with potential investors.[16] Additionally, relationships with commercial banks should continue to be developed because of the large potential investment in Green firms. Bank of America's Environmental Service Group alone raised $10 billion in capital for the Green sector over the last 10 years.[17]

  Related to the need for financial capital and investment is the ability to market existing Green firms to potential firms and investors. For example, part of the public relations strategy would be to promote the visibility of the Green sector through a web site. The Trade Development Alliance of Greater Seattle developed a web site specifically to promote and grow the industry. The web site provides, "An overview of the environmental services and technology industry in Washington State and Greater Seattle for prospective partners in business, investment, and research."[18]

- Harness knowledge production, diffusion, and adaptation

  As an emerging sector, knowledge production, diffusion, and adaptation are essential to a region becoming an export leader of Green goods and services. Firm to firm interaction facilitates innovation through shared knowledge and exchange of knowledge. Maintaining the edge in innovation makes a region the place new firms choose to locate and existing firms remain vested in. Regions need to continuously keep up to date on innovations emerging from places. For example, a firm in Washington, D.C. is developing a prototype energy efficient solar air conditioner.[19] Capitalizing on the innovation gained from shared knowledge will ensure that agglomeration effects are captured and remain in a region.

  Most important to the production, diffusion, and adaptation of knowledge is the development of the relationship between local colleges, universities and the Green sector. Agglomerations show the benefits gained from deliberate and focused long term research strategies. Presumably, such a long-term research strategy would be equally important in the case of the Green sector.

- Match skills development for the Green sector

  A systematic and consistent forum between community colleges, Workforce Investment Boards and firms needs to exist. Such a discussion would benefit the growth of the Green sector, as firms are able to fulfill their labor needs with an appropriately skilled and trained work force. This ensures a region's lead as a place where a firm's labor needs can be met uniquely and unlike anywhere else in the country. For example, Los Angeles Trade Technical College links its students with firms that construct the campus' Green buildings. The College's architecture program trains and places College students into jobs specifically for constructing campus Green buildings.[20] In addition, the California State Employment Development Department currently has a solar training program. Simultaneously, there are proposals in the California state legislature (AB2617 Saldana) to support funding for this solar energy-training program.[21]

- Monitor and measure performance

  Developing performance measures and a monitoring strategy are critical to track the economic development outcomes from developing the Green sector. It is particularly important to such a system in place so that timely data is available to evaluate programs and policies and adjust them as appropriate. Policymakers can measure performance and monitor programs to ensure progress, performance, and meeting of objectives. One of those objectives may be that development benefits disadvantaged populations and neighborhoods equally in the growth of the Green sector. Having such performance measures and monitoring systems in place ensures efficient and effective policy and programs, and demonstrates accountability to disadvantaged populations and neighborhoods.

- Select and target highest potential Green industries

  A strategic plan for developing the Green sector needs to be implemented. Part of this plan should be to identify which Green industries should be targeted based on their highest potential to develop and grow. The Green sector is a heterogeneous spectrum of activity, including those aimed at mitigating air pollution, energy and water conservation, and waste management. It is impossible to pursue all of these areas. There needs to a plan to identify the Green industry or industries with the greatest potential. At the same time, such plans need to be flexible enough to endure changes to policy or the economy that may require a different strategy.

- Coordinate marketing and public relations

  A coordinated effort to promote and increase public awareness about suppliers of Green goods and services in a region is important to lower the cost of information to potential buyers. As an emerging sector at its early stage, it is important to increase the visibility of the sector to generate demand. A region taking an active

role in the coordinating of such efforts lends more credibility to Green suppliers in the local area and region.

- Develop industry/service cluster

  Regional agglomeration effects occur at the sub metropolitan level. There are numerous examples in various cities in which such industry/service clusters function successfully. They include the insurance industry the entertainment industry in Burbank, CA and the high technology parks in various Northern California regions. An environmental cluster would promote firm-to-firm interactions, centralize market transactions, and include incubator activities.

- Address regulatory conflicting agency regulations

  A region must recognize regulations that make it not be business friendly. The existence of such regulations creates a comparative disadvantage, and potentially indicates a lack of coordination among agencies with regards to regulations and policies. For example, Green firms in Portland report that the City's agencies were at times in conflict with one another about their rules and regulation. As a result, their report recommended better coordination among agencies regarding the information provided to firms.[22]

- Build organization and leadership

  A region should build the organization needed to bring together local and regional agencies to coordinate leadership in developing the Green sector. Leadership in this area needs to demonstrate an understanding of how to transform environmental policy into economic development. Despite a leader's commitment to the environment, they may have many other duties. Therefore, it would be fitting for a leader to appoint an individual to be an advisor specifically regarding Green initiatives. For instance, Chicago's Mayor Daley has an advisor specifically on Green initiatives and projects.[23]

- Formulate a community benefits plan

  Building this critical component into the overall strategy facilitates more even development without hindering growth. Bringing together business, community, and labor leaders will ensure that Green economic growth occurs without leaving behind those individuals that would benefit most from such economic development.

Each of these components will require initial steps that are acted on quickly and decisively.

Recommendations and Key Action Items

Economic development based on meeting environmental needs and demands will be a complex venture involving a diverse and large number of private, public, and community actors. A critical initial step is to develop working groups to formulate detailed plans. The provided recommendations include an objective and key actions to assist working groups.

To succeed in developing the Green economic sector, it is necessary to implement all of the listed recommendations and action items. While each individual recommendation contributes to reaching the overall goal and strategy of developing and promoting a Green economic sector, one recommendation alone does not make an effective strategy. There is a synergy that exists when multiple recommendations and actions are moving down parallel tracks. Each recommendation should be examined to see what is feasible and applicable.

The following recommendations are not listed in any particular order. However, we do recommend that the first three recommendations be implemented prior to the remaining recommendations provided.

1. Multi-agency adoption of a policy to promote economic development by capitalizing on current and projected local and regional induced demand for Green products and services.

Key Action:

- Adopt a policy that all agencies pursue economic development as part of the regionally induced demand.

2. Develop infrastructure and incentives for public and private investment in financing the Green sector.

Key Actions:

- Convene local banks, venture capitalists and appropriate public funding agencies to discuss existing resources, opportunities, and capital available for a region's firms.
- Plan an environmental venture forum in the region to link Green firms to potential investors with the goal of increasing investment in the region's firms.
- Develop a public relations strategy to promote the visibility of the Green sector in the region; including the development of a web site that provides an overview of the sector in the region.

3. Develop a network to promote the production, diffusion, and adaptation of knowledge to ensure that a region has an edge in innovation.

Key Actions:

- Establish long-term research and development at the firm level.
- Convene a forum to bring together researchers from local universities and the Green sector.
- Conduct an inventory of relevant university departments to track what research is being conducted related to environmental technology.

4. Match training to labor needs for the Green sector through utilizing community colleges and Workforce Investment Boards.

Key Actions:

- Identify and coordinate with key community colleges and Workforce Investment Boards to develop specific training and placement programs for the Green sector that target disadvantaged populations.
- Support federal and state training programs and funding related to the Green sector.

5. Eliminate cumbersome city rules and regulations that hinder the development of the Green sector and/or expansion of Green firms and Green industrial/service cluster.

Key Actions:

- Set up a unit to facilitate Green firms through the regulatory process.
- Develop a one-stop approach where potential and existing Green firms can access information in a clear and consistent manner.

6. Maintain accountability by developing performance measurements and a monitoring strategy

Key Actions:

- Convene experts in the structure and use of administrative data for monitoring and evaluating data systems and how to use them.
- Take advantage of American Community Survey and other data sets for current neighborhood level employment and business data.
- Conduct an assessment of whether local government efforts, such as those in the City of San Francisco and Chicago, to promote the Green Sector resulted in growth of the sector.

7. Incorporate priorities for community economic development

Key Actions:

- Explore how to use funds to develop small business and provide local residents training and employment opportunities
- Adopt a citywide resolution that encourages Community Benefits Agreements incorporation in all development projects.

8. Support organization and leadership to direct growth in the Green sector

Key Actions:

- Establish a department that coordinates city agencies and provides comprehensive information to firms and the public about the Green sector.
- Appoint a Green expert who is knowledgeable about environmental issues and economic development.

Again, these recommendations focus on the critical initial step of developing working groups that can begin to formulate detailed plans to implement the various, but complimentary actions necessary to promote and develop a Green economic sector in a region.

Conclusion

To become a leading regional center of production and distribution of environmentally friendly goods and services, a region needs to take quick action. The potential growth of this sector, particularly the world market for such products and services, make it an attractive sector to invest in. While a region may contain suppliers and consumers of Green goods and services, there are many other cities vying to become the center of production and distribution of Green goods and services. A region needs to act quickly and strategically if it is to develop the Green sector. There is an emerging national and international race to gain a first-move advantage. Late comers are likely to see much of their regional demand siphoned off by firms in other parts of the world and few regional firms that can supply the growing demand for environmental goods and services elsewhere. The private sector is a necessary but not sufficient component of a successful regional economic development effort. Collective action is needed to capture the benefits of agglomeration and create the networks required to tap knowledge, and the public sector can a pivotal role in formulating policies and programs that support private efforts and coordinate key stakeholders.

This report provides the foundation for developing a more detailed strategic plan to move a region onto becoming the world's leading center for production and distribution of Green goods and services. In order to ensure that the recommendations are implemented, these efforts will require leadership and commitment to provide the appropriate level of resources. Establishing a department to focus on developing the Green economic sector, adding new staff and/or restructuring staff, and/or appointing a Green expert necessitates a commitment of time, resources and energy. It is imperative that a region's leadership dedicates enough resources to ensure the coordination and momentum of activities to following this report's recommendations. To capitalize on the momentum and enthusiasm for this strategy, a region's leadership should meet with potential conveners to discuss how to strategically move forward in developing and promoting a Green economic sector.

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[1] This effort emerged from the Job Creation/Economic Development Working Group in Los Angeles, one of seven groups convened by the Innovations Roundtable Project to develop creative solutions to difficult problems in the Los Angeles/Southern California area. The Innovations Roundtable Project consists of seven working groups designed to bring together government, applied research centers, foundations and community organizations. Other working groups include Public Education, Public Transportation, Health and Healthy Communities, Housing, Public Safety, and Systems Integration. Professor Ong was asked to lead the Job Creation Economic Development Working Group by Stewart Kwoh, Executive Director of the Asian Pacific American Legal Center and an Innovations Roundtable Project steering committee member. Members of the Job Creation/Economic Development Working Group come from on and off-campus including researchers, business and community leaders, and other key stakeholders in the area of economic development. The California Endowment provided funding to cover staff support for the Roundtable Project at United Way, where it is housed. The Job Creation and Economic Development Working Group is supported by the Ralph and Goldy Lewis Center for Regional Policy Studies at the UCLA School of Public Affairs and led by Professor Paul Ong.

[2]The Working Group considered several industries including the Transportation and Goods Movement sector, Retail and Tourism, Technology, and Creative Design.

[3] Interviews conducted in person, on phone and through emails. There were several cases where critical and useful suggestions were made, but not included in this brief because they were not directly related to the focus of the brief. We acknowledge the input of these individuals despite the constraints of the brief focus, time and resources.

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[10] Types of "Green Business" include alternative fuel vehicles, biomass/waste-to energy power, construction, environmental components manufacturer, environmental components distributor, environmental consulting, fuel cell manufacturer, solar power, waste disposal, water purification, and wind power. See Burns, Patrick and Daniel Flaming. 2006. *Jobs in L.A.'s Green Technology Sector 2006*, Economic Roundtable, Los Angeles, CA. Report prepared for the Department of Water and Power and the Workforce Investment Board of the City of Los Angeles, Economic Roundtable. http://www.economicrt.org/

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[20] Interview with Sigalle Rosner, UCLA Graduate Student in Urban Planning. Rosner is completing a client project examining green sector jobs in Los Angeles. Thursday, March 16, 2006.

[21] Sponsored by the California Solar Industry Energy Industry. This bill would amend § 9618 of the Unemployment Insurance Code. This code section was added in 2001, but never funded. This bill adds a funding source. http://www.calseia.org/.

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