

# SUSTAINABLE ECONOMIC DEVELOPMENT STRATEGIES

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During the past decade, Global Urban Development (GUD) has created a systematic approach to Sustainable Economic Development Strategies. The key GUD insight is the recognition that an effective response to the global environmental/climate crisis can be the greatest economic opportunity of the 21<sup>st</sup> Century. (See Appendix A for a description of Global Urban Development.)

In this paper:

- Part One presents the concept of Sustainable Economic Development and the ways that Global Urban Development assists places in developing Sustainable Economic Development Strategies.
- Part Two discusses the Core Objectives and the Key Dimensions of the Sustainable Economic Development Framework and how they are applied to undertake a comprehensive assessment of a place's economy and its sustainability potential and to work with that place to design a uniquely appropriate Sustainable Economic Development Strategy.
- Part Three offers three examples of places in the U.S.—San Jose/Silicon Valley, San Antonio, and the State of Delaware—that Global Urban Development's Principals have assisted in designing and implementing Sustainable Economic Development Strategies.
- Five Appendices provide more detail on Global Urban Development and Sustainable Economic Development Strategies.

## PART ONE: UNDERSTANDING SUSTAINABLE ECONOMIC DEVELOPMENT STRATEGIES

### I. Sustainability 3.0

Global Urban Development (GUD) has formulated a framework for Sustainable Economic Development Strategies to assist communities, cities, counties, regions, states, provinces, and nations (places) to accelerate progress toward a sustainable economy.

From the GUD perspective, there are three basic forms of Sustainability:

- Sustainability 1.0—Environmental Protection.
- Sustainability 2.0—Climate Action.
- Sustainability 3.0—Sustainable Economic Development.

(See Appendix B for a brief discussion of the three basic forms of sustainability.)

Sustainability 3.0—Sustainable Economic Development—combines two seemingly disparate ideas into a powerful new concept, connecting the environment/climate crisis with the opportunity for large-scale economic prosperity—asserting that the imperative to address the environment/climate crisis offers the greatest economic opportunity of the 21<sup>st</sup> Century.

Sustainable Economic Development Strategies generate substantial economic and employment growth and sustainable business and community development by demonstrating that innovation, efficiency, and conservation in the use and reuse of all natural and human resources is the best way to increase jobs, incomes, productivity, and competitiveness.

In addition, Sustainable Economic Development Strategies are the most cost-effective method of promoting renewable energy and clean technologies, protecting the environment, and preventing harmful impacts from climate change.

By implementing Sustainable Economic Development Strategies based on technological innovation and resource efficiency, places can grow their economies, improve their standards of living, and expand businesses, jobs, and incomes.

## II. Creating a Sustainable Economic Development Strategy

The transition to a carbon-constrained world will drive profound changes in every business, non-governmental organization, and household as well as every city, county, region, state, and nation. The question is whether the transition will be dominated by a potentially chaotic response to emergencies or a more orderly process of careful design, implementation, and evaluation.

The premise behind the creation of a Sustainable Economic Development Strategy is that a more orderly response to this inevitable transformation can be proactively organized and managed, and that this will lead to significant and widespread economic benefits.

Each place is unique. A Sustainable Economic Development Strategy cannot be mechanically imposed. Rather it must grow out of the special conditions and the dynamic trajectory of each place. Sustainable Economic Development Strategies are guided by a local/regional Leadership Structure and a Consultation Team collaborating in partnership through a series of five distinct phases of work.

**Leadership Structure:** Typically, the leadership structure for a Sustainable Economic Development Strategy includes three elements:

1. A Leadership Group, which is usually a pre-existing local/regional organization that has committed to lead the effort.
2. A Decision-Making Council, made up of the key leaders from a variety of different organizations, who are guiding the creation and implementation of the Sustainable Economic Development Strategy.
3. A broader Stakeholder Advisory Group, composed of the full range of public, private, and civic stakeholders supporting the Sustainable Economic Development Strategy, who are advising the process.

**Consultation Team:** Global Urban Development organizes Sustainable Economic Development Consultation Teams to assist in the Sustainable Economic Development Strategy formation and implementation process. Sustainable Economic Development Consultation Teams are headed by one or more generalists with extensive professional experience in Sustainable Economic Development.

The generalists are responsible for maintaining the client relationships and coordinating the Consultation Teams. Specialists are added to the Teams, as needed, to address the specific

dimensions of the Sustainable Economic Development Strategy that are custom-designed for each particular place and situation.

With Sustainable Economic Development Strategy consultations outside of the U.S., Consultation Teams include both global and local Sustainable Economic Development experts.

**Phases of Work:** There are five phases of work involved in the development and implementation of a Sustainable Economic Development Strategy:

1. An Initial Consultation to establish the goals and objectives and the work plan for the process.
2. A Strategic Assessment and Opportunity Analysis of the area-wide economy, to identify its current direction, its strengths and weaknesses, and the opportunities and challenges for Sustainable Economic Development.
3. Design of a Sustainable Economic Development Strategy that builds on the momentum that already exists, establishes a specific focus, and weaves together a set of Initiatives and Actions to create a clear, coherent, easily understood, dynamic strategy, with a strong business model.
4. Formulation of an Implementation Plan—including a system for monitoring progress—that addresses who is responsible for each Initiative and Action, the timeline and milestones, the costs, the sources of potential revenues, and the processes for mid-course corrections.
5. Initiation and, subsequently, full implementation of the Sustainable Economic Development Strategy and Implementation Plan.

## PART TWO: THE SUSTAINABLE ECONOMIC DEVELOPMENT STRATEGIC FRAMEWORK

### III. The 4 Core Objectives of Sustainable Economic Development

Global Urban Development has evolved the Sustainable Economic Development Strategic Framework to provide a comprehensive methodology for assisting in the design and implementation of Sustainable Economic Development Strategies focused on four core objectives, which GUD refers to as the **Four Greens**:

1. **Green Savings** — encouraging businesses, families, communities, and governments to cut costs and save money by efficiently using renewable resources and by reducing and reusing waste, with the goal of all businesses becoming Green Businesses.
2. **Green Opportunities** — growing Cleantech companies, jobs, and incomes through business development and expansion of the markets for products and services that conserve resources and prevent pollution.
3. **Green Talent** — investing in the fundamental assets of education, research, technological innovation, and modern entrepreneurial and workforce skills, because people are now the world's most vital green economic resource.
4. **Green Places** — promoting Eco-Smart Development that features low-impact, mixed-use, resource-efficient design and utilizes multi-modal transportation, sustainable infrastructure, and green energy to protect and enhance the natural and built environment, leading to communities and regions that are more attractive, livable, healthy, vibrant, prosperous, and productive.

**Green Savings** addresses the demand side of markets for green products and services, while **Green Opportunities** deals with the supply side of green markets. **Green Talent** focuses on the human

resources dimension of green markets, and **Green Places** focuses on the geographic dimension of green markets (both of them relate to the demand side and to the supply side).

#### IV. Key Elements of a Sustainable Economic Development Strategy

Within the context of its four core objectives, the Sustainable Economic Development Strategic Framework utilizes a set of Key Elements in two ways:

1. As lenses to assess the sustainability assets, liabilities, opportunities, and challenges of cities, counties, regions, and states (places).
2. As prototype initiatives to use in the design of Sustainable Economic Development Strategies that build on the assets, address the liabilities, take advantage of the opportunities, and respond to the challenges of places.

The Key Elements of the Sustainable Economic Development Strategic Framework have been generated by systematically applying innovative sustainability perspectives to widely accepted economic development best practices. (See Appendix C for excerpts from the paper *Sustainable Economic Development* and, in particular, a discussion of the relationship of economic development best practices and sustainability.)

##### *1) Green Savings (The Demand Side of Green Markets)*

- **Green Businesses, Public Agencies, and Non-Governmental Organizations:** the environmental and financial performance of existing business firms (whether or not they produce an environmental product or service), government agencies, and non-governmental organizations and the potentialities for implementing significant increases in energy conservation, resource efficiency, waste reduction, and financial return.
- **Green Building Retrofits:** the financial/energy/resource efficiency of existing buildings and building user behavior, and the possibilities for large-scale building retrofits.
- **Large-Scale Behavior Change:** the level of adoption of Green Savings by households and the opportunities for undertaking large scale citizen mobilizations to encourage households to reduce environmental impacts and adopt green buying practices.

##### *2) Green Opportunities (The Supply Side of Green Markets)*

- **Cleantech Cluster:** the status and the potentiality for growth of the businesses included in the Cleantech business cluster that provide a range of environmental products, services, and processes intended to offer superior performance at lower costs, while reducing negative ecological impacts, and improving the wise and responsible use of natural resources. (See Appendix D for a discussion of the Cleantech Cluster and the global venture investment Cleantech businesses are receiving.)
- **Cleantech Technology Transfer:** the current situation and the opportunities for strengthening of university and institutional research and development (R&D) leading to technology transfer and intellectual property (IP) commercialization that can be utilized by Cleantech companies to produce new Cleantech products and services.

- **Green and Cleantech Business Support:** the economic and social infrastructure that is in place and the opportunities for improvement in relation to business incubation, acceleration, retention, and attraction—creating an optimal place for Cleantech and green businesses to locate, expand, and grow over the long term.
- **Triple Bottom Line Investment:** existing and potential investment vehicles—both debt and equity—pursuing financial, social, and environmental returns through investment in Cleantech and green businesses and sustainable real estate developments.

### 3) *Green Talent (The Human Resources Dimension of Green Markets)*

- **Green Workforce:** established systems and new opportunities for green employment development—including education, training, placement with career pathways, and other forms of assistance—to attract and retain a high quality green workforce that provides the employees, entrepreneurs, and management needed by Cleantech and green businesses, government agencies, and non-governmental organizations.
- **Green Community Engagement:** existing and potential programs for the engagement of the talent and creativity of the residents of a place in understanding sustainability, in participating in the process of building a sustainable/green economy, and in making green purchasing decisions.

### 4) *Green Places (The Geographic Dimension of Green Markets)*

- **Eco-Smart Real Estate Development:** the construction—both infill and Greenfield—of mixed-use, walkable, energy efficient, transit-oriented real estate developments featuring Cleantech and green businesses and the opportunities for new sustainable real estate development projects.
- **Green Physical Infrastructure:** the financial/energy/resource/information efficiency of water, energy, transportation, waste management, and broadband infrastructure as well as the potentialities for significant increases in overall efficiency and financial performance of the physical infrastructure.
- **Green Branding and Marketing:** existing and potential branding and marketing of a place as an emerging sustainable economy, seeking to promote the growth of Cleantech and green businesses and sustainable real estate developments, as well as to attract these types of businesses and real estate developments.
- **Sustainable Community Development:** existence of Cleantech and green businesses and sustainable real estate developments led and participated in by minorities, women, and underserved communities and opportunities to connect these businesses and developments with the appropriate financial and business acceleration services; as well as the empowerment of low- and moderate-income employees and residents to save money through resource efficiency.

## V. Initiatives and Actions

Utilizing its research into Sustainable Economic Development best practices, Global Urban Development has formulated a set of Initiatives based on the Key Elements of the Sustainable Economic Development Strategic Framework. (See Appendix E for an example of one potential Initiative with the component Actions.)

Global Urban Development's research is ongoing. As the field of Sustainable Economic Development grows, the number of different Initiatives will grow and the number of successful Actions will grow substantially. Each time a new Sustainable Economic Development Strategy is undertaken, it contributes to adaptations of the existing Initiatives and Actions as well as constituting new ones.

In moving to an integrated Sustainable Economic Development Strategy it is very important to recognize that the different Initiatives have important relationships with each other and need to interact with one another in order to produce a strong Sustainable Economic Development Strategy that is effective in building a sustainable economy.

For example, the green businesses in a Green Business Initiative are markets for the products and services of the Cleantech businesses in a Cleantech Initiative. At the same time, the Cleantech and green businesses and sustainable real estate developments can gain access to equity and debt capital through a Triple Bottom Line Investment Initiative and obtain qualified employees through a Green Workforce Initiative.

Cleantech businesses can take advantage of technology transfer and intellectual property commercialization facilitated by a Cleantech Technology Transfer Initiative as well as the sustainability entrepreneurship and management education of a Green Workforce Initiative. By engaging business and government leadership, combined with broad civic and community participation, a Sustainability Community Engagement Initiative will benefit all of the other Initiatives and Actions.

## VI. Business Models for Sustainable Economic Development Strategies

It is also very important to pay close attention to the business model that is built into each Sustainable Economic Development Strategy. A Sustainable Economic Development Strategy should not just result in costs. Rather the Strategy should generate the revenues to pay for implementing the strategy and/or provide a return on the investment of the funds needed to implement the Strategy.

It is legitimate for governments to use a portion of increases in business permits and other licensing fees, property taxes, sales taxes, transfer taxes, income taxes, valued added taxes, and other sources of revenue—directly or indirectly attributable to a Sustainable Economic Development Strategy—as a way to pay for its expenses. However, it is also important for the Sustainable Economic Development Strategy to look for all of the other potential sources of income and financial support to supplement government expenditures.

The Sustainable Economic Development Strategy as a whole and each of the Initiatives and Actions to be incorporated in the Strategy should include an aggressive pursuit of ways to generate income and support. For example:

- Businesses can help financially sponsor the overall Strategy, as well as the various specific Initiatives and Actions.
- Businesses can pay modest fees for services, particularly when they are tied to saving them money and increasing their incomes.
- Successful financial and business transactions can help generate proportionate fees.
- Carbon credits and offsets can be accumulated and sold.
- Public/private partnerships can be created that incorporate sources of private support.
- Public agencies, private organizations, and public/private partnerships can all pursue national and state/provincial government funding for specific Initiatives and Actions included in a Strategy, as well as for the Strategy as a whole.
- Grants can be solicited from philanthropic and corporate foundations.

### PART THREE: SUSTAINABLE ECONOMIC DEVELOPMENT IN ACTION

In the United States, San Antonio (Texas), San Jose and Silicon Valley in the San Francisco Bay Area (California), Metropolitan Portland (Oregon/Washington), Metropolitan Denver (Colorado), the State of Delaware, and Southwest Florida are all in the process of implementing Sustainable Economic Development Strategies.

Global Urban Development is working with Sarasota County (Florida) on a Sustainable Economic Development Strategy. This initiative, funded by the U.S. Department of Energy, is a strategic plan for Sarasota County to become a “Center for Innovation in Energy and Sustainability.”

Detailed presentations of Sustainable Economic Development Strategies for San Jose, Silicon Valley, San Antonio, the State of Delaware, Metropolitan Portland, Metropolitan Denver, and Southwest Florida can be found on the Publications web page of the Global Urban Development website, [www.globalurban.org](http://www.globalurban.org).

The three examples of Sustainable Economic Development Strategies presented below are places—a region, a city, and a state—that Global Urban Development’s Principals have advised and assisted.

#### VII. San Jose/Silicon Valley

The City of San Jose and the Silicon Valley region in the San Francisco Bay Area have been a leading force in two economic revolutions—the Information and Communications Technology revolution and the Biotechnology revolution. Now they seek to be a global leader in a third economic revolution—the Green and Cleantech revolution.

Building on San Jose’s and Silicon Valley’s history of innovation, Joint Venture: Silicon Valley Network, working with business, government, academia, labour, and the community, has developed a Climate Prosperity Strategy and established a Climate Prosperity Council to encourage the growth of clean and green industries and, simultaneously, to reduce greenhouse gas emissions.

**Climate Prosperity Strategy:** The Silicon Valley Climate Prosperity Strategy, launched in February 2009, is designed to stimulate regional demand for clean and green technology and, at the same time, to supply those new products and services to the global marketplace. Based on the recognition that protecting the environment can be an economic driver for the region, the Silicon Valley Climate Prosperity Strategy focuses on four areas on the demand side of green markets:

- Renewable energy.
- Building efficiency.
- Clean, convenient transportation.
- Green infrastructure.

On the supply side of green markets, the Silicon Valley Climate Prosperity Strategy seeks to coordinate the regional base of clean and green industries by addressing:

- Innovation production.
- Regulatory climate.
- Investment.
- Land and facilities.
- Workforce.
- Promotion.

**Climate Prosperity Council:** To guide the implementation of the Climate Prosperity Strategy, Joint Venture: Silicon Valley Network created the Climate Prosperity Council made up of industry, public sector, academic, and community leaders and Co-Chaired by the Mayor of San Jose and the California Managing Director of Accenture.

The Climate Prosperity Council has adopted 5 goals:

1. Enhance regional competitiveness.
2. Reduce the environmental footprint of Silicon Valley.
3. Pursue new investment and industries.
4. Demonstrate that economic growth and environmental sustainability are interconnected.
5. Provide a range of career opportunities.

**Climate Prosperity Benefits:** Through the Climate Prosperity Strategy, San Jose and Silicon Valley are pursuing a number of important benefits, including:

- Making homes and cares more energy efficient, which will mean less money spent on energy and more disposable income that is likely to stay in the community.
- Adding solar and other renewable energy sources on residential, commercial, and industrial buildings to accomplish important energy saving goals, expand a newly emerging business sector, and stimulate the regional economy.
- Retrofitting homes and offices to be more energy efficient to create new jobs for construction workers, energy auditors, efficiency monitoring tools, network installers, and manufacturers of products ranging from temperature sensors to building components made from sustainable materials.
- Pursuing transportation alternatives to reduce the use of fossil fuels, clean up the air, and produce important lifestyle and health benefits.



- Encouraging liveable, walkable, and sustainable communities that are more appealing to the rising generation of green talent needed to live and work in Silicon Valley.
- Making progress on all these fronts to help California achieve its goal of reducing Greenhouse Gas emissions by 80% from 1990 levels by 2050.

## VIII. San Antonio

In January 2009, the City of San Antonio Texas launched *Mission Verde* focused on the economic opportunities inherent in the transition away from a carbon-intensive economy to a sustainable economy.

**The Mission Verde Strategy:** “*Mission Verde*...is more than an environmental policy; it is an economic one. This economic approach runs deep. It is driving new technologies, new opportunities, and new jobs. It is expressed in the writings of the best-selling author and columnist Thomas Friedman and the noted economist Jeremy Rifkin, who both see this change as nothing less than the beginning of the Third Industrial Revolution and the future of the U.S. economy. It will be one of the most dramatic economic changes in world history.”

San Antonio is already a national leader in water conservation and open space preservation. Led by the San Antonio Water System, San Antonio uses the same amount of water it did 20 years ago and saves \$550 million, even though the city’s population has increased 50%. San Antonio has also extended the famous River Walk to be a 13-mile linear park and is building a 311-acre park in a heavily developed part of the City.

Building on these accomplishments, *Mission Verde* asserts that, “we must invest in green technology, energy conservation, renewable energy, efficient transportation, and smarter buildings. We must build a new energy infrastructure that transforms our city from reliance on centralized power to distributed power. We must create a multi-modal transportation system that is integrated and efficient. We must bring venture capital to invest in new green businesses and technology. With *Mission Verde*, San Antonio has a plan to do this...to compete successfully in a 21<sup>st</sup> Century global economy.”

**10 Initiatives:** *Mission Verde* is pursuing the creation of a sustainable economy in San Antonio through 10 initiatives:

1. A 21<sup>st</sup> Century Energy Infrastructure—generating energy from renewable energy sources such as solar, wind, biomass, and geothermal, originated from buildings and homes, stored until needed, and connected with a multi-directional grid.
2. A Multi-Tech Venture Capital Fund—building a regional fund headquartered in San Antonio, capitalized at \$100 million, and managed by Brooke Private Equity Advisors.
3. A Green Jobs Program—collaborating with employers and educators to match training for existing and emerging green and Cleantech jobs with employer needs.
4. A Sustainable Economic Development Strategy—using tax abatements, cluster development strategies, and business attraction and retention programs focused on clean and green technology companies.
5. A Green High-Performance Building Code—moving in phases toward a building code for new residential and commercial construction that produces net zero carbon by 2030.
6. A Green Retrofit Program—expanding free weatherization combined with a retrofit program paid for with a surcharge on utility bills.

7. An Integrated Multi-Modal Transportation System—pursuing and funding light rail, high capacity rail, and multiple transportation options.
8. Sustainable Real Estate Development—utilizing real estate investment funds to advance mixed-use, mixed-income, walkable, transit-oriented in-fill neighborhoods.
9. A Green One-Stop Sustainability Center—coordinating sustainability efforts, centralizing the location of sustainability groups and helping to facilitate their activities, demonstrating sustainability best practices, and providing comprehensive information services to residents and businesses.
10. Leading by Example—addressing energy conservation, resource efficiency, waste reduction, vehicular emission improvements across all City Departments, coordinated by the City Government's Office of Environmental Policy and the its Sustainability Task Force.

**Implementation:** San Antonio is well on its way in the implementation of *Mission Verde*. The City has already:

- Worked with CPS Energy, the municipal utility, to undertaken construction of Texas' largest photovoltaic solar energy plant, which will produce 14 Megawatts of electric power. Also, the utility has committed \$96 million to reduce peak demand by 115 MW by 2011 through energy efficiency.
- Established a Green Jobs Leadership Council.
- Opened the *Mission Verde* Sustainability Center as a Green One-Stop Center and training facility, on the site of a previously closed school in a low and moderate income neighborhood.
- Adopted a green high performance building code.
- Expanded free weatherization programs and provided resource efficiency retrofits in City buildings and through out the City.
- Completed a feasibility study and market assessment for the Multi-Tech Venture Fund.
- Convened a task force and made recommendations on a multi-modal transportation system.

## IX. Delaware

In November 2008, then State Treasurer Jack Markell was elected Governor of the State of Delaware on a Sustainable Economic Development platform.

In a major campaign speech delivered in August 2008, Governor Markell stated: "Green is both a symbol for money and a symbol for the environment. I want to help Delaware businesses see their potential opportunities in the global green economy, because it will help get our economy moving again and it is good for our air, soil, and water. Adopting a Climate Prosperity strategy in Delaware will not only grow our economy and create good-paying jobs, but it will also help Delawareans save money on their energy bills and help our environment by reducing pollution. Everyone wins when we create jobs and help the environment."

**Delaware Modernization Service:** Delaware's Clean Energy Economic Strategy is pursuing Green Savings by establishing the Delaware Modernization Service in partnership with the State's Sustainable Energy Utility (SEU). The Modernization Service is auditing existing homes and businesses for needed energy efficiency improvements and providing small grants for modernization—thereby stimulating the market for green products and services.

**Global Green Supply Chain Service:** Delaware is considering creating a Global Green Supply Chain Service to help small businesses to understand their place within the global green supply chain, identifying markets and connecting small businesses to them. The Global Green Supply Chain Service will facilitate a partnership between public agencies, Delaware businesses, and Delaware workers to conduct a thorough analysis of the regional, national and global renewable energy and resource efficiency supply chains, and of the potential for Delaware's businesses and workers to participate in and benefit from newly expanding worldwide market opportunities, such as offshore wind power generation and distribution.

The Global Green Supply Chain Service will identify how the Delaware's businesses can immediately participate in the sustainable economy, how they can engage in more efficient production processes, and how they can develop and expand clean and green products and services to reach state, regional, and global markets.

**Delaware Green Talent Initiative:** The Delaware Green Talent Initiative is partnering with the University of Delaware, Delaware Technical and Community College, Delaware State University, and other educational institutions, to develop eco-knowledge networks in: marine energy; electric vehicle conversion; life sciences; green financial services; sustainable agriculture; eco-tourism, high efficiency solar; and climate prosperity economic development. These eco-knowledge networks are meant to establish talent hubs in these areas, and eventually new businesses in these industries, given the concentration and range of expertise and advanced skills.

The Delaware Green Talent Initiative will help ensure that new workforce entrants as well as those who are changing careers receive job counseling, placement help, and ongoing assistance by partnering with community colleges, vocational-technical schools, and high schools. The goal is to educate and train the Delaware workforce to modernize Delaware's commercial, industrial, and residential buildings, to design and manufacture specialized clean and green technologies, and to provide specialized green services.

## X. Conclusion

Communities, cities, counties, regions, states, provinces, and nations need to undertake Sustainable Economic Development Strategies for defensive reasons, to avoid being left behind as the momentum toward a sustainable economy rapidly accelerates over the next few years. However the positive reasons for launching a Sustainable Economic Development Strategy are even more important.

A Sustainable Economic Development Strategy can guide places in evolving a culture of stewardship, innovation, and action that can lead to prosperity, satisfaction, and inspiration. A culture of innovation and action in relation to sustainability is increasingly becoming one of the criteria that businesses use to determine the strategic locations of their major financial investments and where they build and manage their main job-creating facilities. At the same time, a Sustainable Economic Development Strategy can be a powerful tool for regenerating low- and moderate-income communities.

A Sustainable Economic Development Strategy provides guideposts on the way to the full realization of the promise of a sustainable economy. As such, it can help create places that people will be very proud to provide for their children, and for their children's children.

## Appendix A: GLOBAL URBAN DEVELOPMENT

**Global Urban Development (GUD):** ([www.globalurban.org](http://www.globalurban.org)) GUD is a worldwide non-profit organization founded in 2001 to conduct education, research, and action promoting policy ideas that help generate more prosperous, sustainable, and equitable urban and regional development.

GUD consists of a rapidly growing network of more than 500 leaders and experts from many different countries on every major continent throughout the world, representing a wide range of occupations and institutions. GUD has offices in Barcelona, Beijing, Belo Horizonte, Curitiba, Hong Kong, Istanbul, London, Prague, Rehoboth, San Francisco Bay Area, Singapore, Sydney, and Washington, DC.

GUD has a long and distinguished track record of accomplishments and has had significant influence on global institutions. GUD publishes *Global Urban Development Magazine* online, most recently in partnership with the World Bank and with Ashoka.

GUD is a global innovator in sub-national economic and business development, for states and provinces, regions and districts, and cities and counties. GUD's Metropolitan Economic Strategy paradigm is now widely accepted and actively promoted worldwide, including by major international agencies such as the Organization for Economic Cooperation and Development (OECD), World Bank, and the United Nations.

Beginning in 2007, GUD created the Sustainable Economic Development strategic framework, and since then GUD has provided strategic advice and technical assistance for various places in the U.S. engaged in such strategies, including: San Antonio, Texas; San Jose/Silicon Valley, California; Metropolitan Portland, Oregon-Washington; Metropolitan Denver, Colorado; Southwest Florida; and the State of Delaware. Recently, GUD produced an economic development strategy for Sarasota County, Florida – funded by the U.S. Department of Energy – to become a “Center for Innovation in Energy and Sustainability.” GUD helped organize an international conference on “Planning for Sustainable Economic Development Across the Americas” in Curitiba, Brazil on June 7-8, 2011.

**Dr. Marc A. Weiss** ([marcweiss@globalurban.org](mailto:marcweiss@globalurban.org)) is Chairman and CEO of Global Urban Development (GUD). He also serves as Chairman of Sustainable Economic Development Strategies LLC, Executive Editor of *Global Urban Development Magazine*, Chair of the Climate Prosperity Alliance, and Co-Chair of the GUD program committee on Generating Sustainable Economic Development.

In addition, he is a member of the Steering Committee of the United Nations Sustainable Development Knowledge Partnership, a member of the Steering Committees of UN-Habitat's World Urban Campaign, and its Best Practices and Local Leadership Program, an adviser to the World Bank Urbanization Knowledge Partnership, and a Citistates Associate.

Previously he served as:

- Public Policy Scholar and Editor of *Global Outlook* at the Woodrow Wilson International Center.
- Coordinator of the Strategic Economic Development Plan for Washington, DC.
- Special Assistant to the Secretary of the U.S. Department of Housing and Urban Development and HUD Liaison to the President's Council on Sustainable Development in the Clinton Administration.

- Director of the Real Estate Development Research Center, Acting Director of the Ph.D. Program in Urban Planning, and Associate Professor at Columbia University.
- Deputy Director of the California Commission on Industrial Innovation.

He is the author or co-author of many books, articles, and reports, including a widely acclaimed book on urban development and planning, *The Rise of the Community Builders*, a best-selling international textbook, *Real Estate Development Principles and Process*, published by the Urban Land Institute, and *Sustainable Economic Development Strategies*.

He has been a consultant on sustainable economic, business, and community development in cities and regions in the U.S. and throughout the world, including South Africa, China, Brazil, Spain, Sweden, the Czech Republic, and the Virgin Islands. . He and his GUD colleagues have advised on Sustainable Economic Development Strategies for San Antonio, San Jose/Silicon Valley, Southwest Florida, Metropolitan Portland, Metropolitan Denver, and the State of Delaware, and they completed a Sustainable Economic Development Strategy for Sarasota County, Florida, funded by the U.S. Department of Energy. Also, he and his GUD colleagues helped organize an international conference on Sustainable Economic Development, in Curitiba, Brazil on June 7-8, 2011, sponsored by the Brazil and U.S. Governments and the Energy and Climate Partnership of the Americas.

He earned an M.C.P. and a Ph.D. in City and Regional Planning from the University of California, Berkeley, and a B.A. with Honors in Political Science from Stanford University, plus he attended the London School of Economics.

**James Hurd Nixon** ([jamesnixon@globalurban.org](mailto:jamesnixon@globalurban.org)) is President of Global Urban Development. He also serves as President of Sustainable Economic Development Strategies LLC, a Vice Chair of the Climate Prosperity Alliance, and Co-Chair of the GUD program committee on Generating Sustainable Economic Development.

He is Co-Founder and Chair of Sustainable Systems, the lead consultant to the Bay Area Council for the Bay Area Family of Funds, consisting of \$250 million in private equity real estate and venture capital seeking a market rate of financial return combined with substantial economic, social, and environmental benefits. Sustainable Systems also serves as the Project Manager for the Get Connected! Broadband Adoption Campaign in California, funded by the California Emerging Technologies Fund and as Development Consultant for various community development projects.

He has served as:

- Lead consultant to the City of San Antonio (Texas) for the widely recognized *Mission Verde* sustainability plan.
- Lead consultant for the Southwest Florida Regional Planning Council, producing the Southwest Florida Climate Prosperity Strategy.
- Team Leader for a Sustainable Economic Development Consultation with Sarasota County (Florida).
- Co-founder of Urban Sustainability Associates.
- Co-coordinator of three international *Building the Sustainable Economy* conferences.

He is the author or co-author of:

- *Sustainable Economic Development Strategies*, published by Global Urban Development.

- *Sustainable Economic Development: Initiatives, Programs, and Strategies for Cities and Regions*, published by Urban Sustainability Associates and Innovation Network for Communities.
- *The Double Bottom Line Handbook: A Practitioners Guide to Regional Double Bottom Line Investment Initiatives and Funds* (with financial support from the Ford Foundation).
- *Building the Sustainable Economy: An Opportunity for Oakland*, a policy framework adopted unanimously by the City of Oakland California.

He previously served for 12 years as Senior Vice President of Progressive Asset Management, a socially responsible investment brokerage company, where he had responsibility for social screening, investment banking, and network services.

**Nicky Gavron** is a Vice Chair of Global Urban Development and Head of GUD's London office, also serving as Co-Chair of the GUD program committee on Analyzing Global Urban Development. She is an elected Member of the Greater London Assembly, and was Deputy Mayor of the Greater London Authority from 2000 to 2008. Currently she is coordinating a research project on the Economics of Sustainable Urban Development through a partnership including the Organization for Economic Cooperation and Development (OECD), World Bank, London School of Economics, University College London, Greater London Authority, and Global Urban Development.

She was initially elected in 1986 as a local Council Member in London, and then was elected beginning in 2000 as a Member of the Greater London Assembly. Throughout the 1990s, she was the leader of the London Planning Advisory Committee where she commissioned research and formulated policies for the development of a sustainable London, including the initial strategy on congestion charging. She was actively involved in shaping what was to become the new Greater London Authority (GLA).

With the establishment of the GLA in 2000, Nicky became the first statutory Deputy Mayor of London. In this role, she worked closely with Mayor Ken Livingstone to set up the GLA's working processes and policy framework. In particular, she was in charge of shaping the London Plan - the first long-term strategic plan for Greater London. In her first term she also established the GLA Children and Young People's Unit and the Hydrogen Partnership.

Beginning in 2004, she became responsible for leading London's response to climate change, introducing a set of groundbreaking policies and strategies to reduce CO2 emissions, covering waste, water, energy and transport. These are brought together in the revised London Plan and the Climate Change Action Plan. Initiatives included the establishment of the London Climate Change Agency, the Better Buildings Partnership, and the C40 Large Cities Climate Leadership Group (40 of the world's largest cities collaborating to reduce greenhouse gas emissions).

Nicky Gavron was re-elected as a Greater London Assembly member in May 2008. Currently she serves as Deputy Chair of the cross-party Greater London Assembly Planning and Spatial Development Committee.

**Sir Peter Hall** is a Vice Chair of Global Urban Development, Co-Chair of the GUD program committee on Analyzing Global Urban Development, and Bartlett Professor of Planning and Regeneration at University College London (UCL).

He received his Master's (1957) and Ph.D. (1959) degrees in Geography from the University of Cambridge and has taught at the London School of Economics; at the University of Reading (1968-88),

where he was Dean of the Faculty of Urban and Regional Studies; and at the University of California at Berkeley (1980-92), where he is Professor Emeritus of City and Regional Planning.

From 1991-94 he was Special Adviser on Strategic Planning to the UK Secretary of State for the Environment, with special reference to issues of London and South East regional planning, including Thames Gateway and the Channel Tunnel Rail Link. During 1998-99 he was a member of the Deputy Prime Minister's Urban Task Force. In 2006 he was a member of the Expert Advisory Committee to the Barker Review of the UK's land-use planning system. In 2008 he was a member of the Eco-Towns Challenge Panel. In 2009 he co-authored a report for the UK Secretary of State for Transport on the future of train stations. He also assumed direction of a European Union program promoting transfer of new transportation technologies to support the development of peripheral European regions.

He is author or editor of nearly 40 books on urban and regional planning and related topics, including *The World Cities* (1966, 1977, 1983); *Urban and Regional Planning* (1975, 1982, 2002); *Cities of Tomorrow* (1988); *Silicon Landscapes* (with A. Markusen, 1985); *Technopoles of the World* (with M. Castells, 1994); *Cities in Civilization* (1998); *Urban Future 21* (with U. Pfeiffer, 2000); and *The Polycentric Metropolis* (with K. Pain, 2006).

**Jaime Lerner** is a Vice Chair of Global Urban Development and Head of GUD's Curitiba office, a member of the Executive Board of the Climate Prosperity Alliance, Principal of Jaime Lerner Associated Architects, President of the Jaime Lerner Institute, and Professor of Urban and Regional Planning at the Federal University of Parana and at the Open University for the Environment, in Curitiba, Brazil. In addition, he is a former President of the International Union of Architects and of the Parana Chapter of the Brazilian Institute of Architects.

Jaime Lerner was responsible for the creation and structuring of the Institute of Urban Planning and Research of Curitiba (IPPUC) in 1965. Under his leadership, IPPUC helped prepare the Master Plan for Curitiba that resulted in the physical, economic, and cultural improvement of the city.

He served as Mayor of the City of Curitiba for three terms: 1971-75, 1979-83, and 1989-92. During his first term, Mayor Lerner designed and implemented the Integrated Mass Transport System, including the world's first Bus Rapid Transit (BRT), which has attained worldwide acclaim for its operating efficiency, good quality equipment and service, and cost-effectiveness. In his two subsequent terms, Mayor Lerner intensified a program of urban planning, social inclusiveness, and human services that resulted in Curitiba ranking among the capital cities with the highest quality of life in the world.

He later was elected and reelected as Governor of the State of Parana from 1994 to 2002, where he provided leadership for a major statewide economic and social transformation. Supported by a highly effective investment promotion policy, Parana consolidated its position as a new industrial hub for Brazil, attracting \$20 billion (USD) in investments. Emulating his previously successful work in Curitiba, Governor Lerner tackled major public policy issues related to transportation, land-use, education, health, sanitation, recreation, industrialization, and sustainable economic, community, employment, and business development. Parana received international recognition during this period, winning the UNICEF Child and Peace Award and similar honors.

In addition to serving as a public official, he has been a professional architect and urban planner since graduating in 1964 from the Federal University of Parana. He has received many awards, including first prize in the national competition for the Federal Police Headquarters Building in

Brasilia, the Silver Medal at the International City Design Competition in the U.S., and numerous others. He has developed urban plans for several Brazilian cities, including Rio de Janeiro, Sao Paulo, Recife, Salvador, Aracaju, Natal, Goiania, Campo, Grande and Niteroi. Also, he has been an urban planning and design consultant for cities throughout the world, such as Caracas, San Juan, Shanghai, Havana, and Seoul, plus he is a United Nations advisor on urban issues.

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## Appendix B: THREE FORMS OF SUSTAINABILITY

It can be useful to think of three forms of sustainability.

Sustainability 1.0 focuses on environmental protection to reduce pollution and waste, while encouraging preservation of nature and open space. Sustainability 1.0 is typically implemented by governmental regulation. For businesses, these regulations usually became a cost of doing business that gets passed on to consumers.

Sustainability 2.0 focuses on climate action through climate action plans that begin with the comparison of a place's current carbon footprint with its desired carbon footprint and then move on to formulate a set of actions that are designed to take that place from its current carbon footprint to its desired carbon footprint. These actions are typically a combination of regulations that are imposed on the market and subsidy incentives that supplement the market. Taken together they seek to require/encourage businesses to become low carbon.

Sustainability 3.0 focuses on Sustainable Economic Development which recognizes that a green market is emerging. Sustainable Economic Development policies and programs are specifically designed to guide the market in general and individual green/Cleantech businesses, sustainable real estate developments, and green investments in particular. The market becomes an ally producing economic prosperity, low-carbon environmental quality, and social equity at the same time. Becoming greener becomes the way to become more profitable.

All three forms of sustainability are important in their own right. However, in addition, Sustainability 1.0 and 2.0 provide a foundation for Sustainability 3.0, whereby places don't just become greener; rather, they can become richer by becoming greener and become greener by becoming richer.

## Appendix C: SUSTAINABLE ECONOMIC DEVELOPMENT

(Excerpted from *Sustainable Economic Development*, a paper by Global Urban Development President, James Nixon.

### I. The Sustainability Revolution

A sustainability revolution is taking place – from an old economy that is high carbon, high pollution, waste intensive, and ecologically disruptive, to a new economy that is low or zero carbon, low pollution, energy/resource efficient, and ecologically supportive. Businesses, cities, communities, and regions that lead this revolution will prosper, because the new economy will outperform the old one. Businesses, cities, communities, and regions that lag are in danger of being left behind.

Our time is somewhat analogous to 100 years ago when the automobile industry emerged and everything changed – the way cities and regions grew; the way transportation took place; which industries succeeded and which failed. In the 1920s, Detroit became a world headquarters of the automobile industry, a fast growing and prosperous city and region.

This time is also somewhat analogous to the information technology revolution 20 years ago when a complex of related technologies – the personal computer, the cell phone, and the internet – emerged and everything changed again, with Silicon Valley/the San Francisco Bay Area becoming one of the leading economic regions in the world.

**Green Enterprise:** This time it is the green industries – conservation, resource efficiency, renewable-energy generation, pollution prevention, and waste minimization and recycling – that are the engine of transformation, and all businesses are coming to use their products and services.

The phenomena of global warming, peak oil, and environmental dislocation; combined with the incentive and regulatory priorities in the European Union, Japan, and the new U.S. administration of President Barack Obama provide inevitability to this transformation, making it the key to a successful 21<sup>st</sup> Century economy.

A new way of doing business is emerging out of this transformation – sustainable (green) enterprise – and before long the way all businesses operate will completely change. As sustainable (green) enterprises emerge and interact with each other as suppliers and customers, and as they all become greener, a sustainable (green) economy is developing. The new clean environmental technologies are at the heart of this economic transformation. While some businesses are specializing in producing and distributing them, all businesses are coming to use them.

**Urban Response:** Cities are on point for this transformation. More than half of humanity now lives in cities and that half annually produces 85% of the world's Gross Domestic Product consumes more than 75% of the Earth's resources and generates approximately 75% of the Earth's waste. If current trends continue, 61% of all people will live in urban areas by 2030 and the rural population will be smaller than it was in 1995. Fortunately, cities are responding to the economic opportunities offered by the sustainability revolution.

**The California Example:** The example of California provides striking evidence that the sustainability revolution is, in fact, picking up speed in a way that is highly beneficial economically.

The California Green Innovation Index provides a dashboard that depicts the impact of “three decades of ambitious state environmental and energy policies, putting California on a path to energy independence and one of the lowest per capita carbon footprints in the nation, all the while growing one of the most vigorous economies in the world.”

According to the 2009 Index (using figures prior to the substantial impact of the recession on California):

- California’s increased energy efficiency over the last 35 years has saved consumers over \$56 billion, creating 1.5 million fulltime jobs and \$45 billion in payroll.
- The 2009 Index shows that green jobs are increasing more rapidly than other jobs, with total jobs increasing by 1% statewide, while green jobs have increased by 10% since 2005.
- California’s energy productivity – Gross Domestic Product (GDP) per unit of energy – is 68% greater than the rest of the nation.
- In 2006, energy consumption per capita in California was 18% lower than 1970 levels, while energy consumption per capita for the rest of the country remained at 1970 levels.
- California’s economy is less than half as carbon intensive as the rest of the U.S. While GDP per capita in California increased by 28% in the 16 years following 1990, gross emissions per capita are 10% lower than 1990, thereby demonstrating that it is possible to increase economic prosperity while also reducing greenhouse gas emissions.

## II. The Three Forms of Capital

The sustainability revolution is based on the fundamental recognition that there are three forms of capital essential to the creation of genuine prosperity. In addition to economic capital (financial and manufactured), there are two other forms – natural and social.

Any business-person knows that, over the long run, a successful business needs to invest wisely to generate more income than expenses and to grow its capital. If a business lives off its capital, it will eventually go bankrupt. This is just as true for natural and social capital as it is for economic capital.

**Natural Capital:** The economy operates within design limits inherent in the natural environment. If the economy disrupts the environment it disrupts itself, at great financial cost to society and to individual businesses. Under the deceptively named “free market” economy, which bears little resemblance to the type of market envisioned by Adam Smith, enormous resources have been lost that were once, in fact, provided for free by intact ecosystems.

Conversely, the sustainability revolution recognizes the economy’s dependence on the environment for fresh air, clean water, climate stability, renewable energy, and a thriving ecosystem. Businesses need to derive value from the eco-system without disrupting it. As the sustainability revolution proceeds, true cost pricing and true cost accounting to value major contributions of the natural world are emerging.

**Social Capital:** A prosperous economy depends on a stable society with an effective workforce. The economy threatens its own foundations if it disrupts society by allowing an extreme gap to emerge between the very wealthy few and the rest of the population or by inadequately supporting society’s ability to ensure public safety, an effective educational system, a well trained workforce, and quality affordable health care. At the same time, a prosperous

economy contributes to a stable society by creating the jobs, the opportunity for productive work, and the income that people need to live satisfying lives.

The sustainability revolution recognizes the profound contribution of social capital to a prosperous economy and builds social capital by paying its fair share of taxes and making investments in a healthy society in many other ways.

**Economic Capital:** Sustained economic prosperity requires that both the private sector and the public sector operate according to sound financial principles. Massive government budget and balance of payments deficits are not sustainable and put the borrowing countries in jeopardy to foreign lenders. At the same time, it is essential for countries to maintain and enhance their physical infrastructure.

Economic capital is built most effectively and the economy works best when operations are transparent and guided by appropriate policies. Sound regulations provide the guard-rails that keep the economy on the road of growth. If those who criticized sub-prime lending as predatory had been heard, the economy would have saved trillions of dollars and the world would not now be experiencing the great recession.

Over the long run, the government (the public corporation) needs to live within its means and partner with private businesses so that both private and public sectors operate in an economically responsible fashion, while maintaining a sound financial system and reliable physical infrastructure.

This will be facilitated by a transparent, accurate, timely national economic information reporting system that will include a national balance sheet and profit and loss statement to measure the health of the economy, society, and the environment and the degree to which the economy is building all three forms of capital.

### III. Market Observations

While the theory of natural, social, economic capital is sound, it is also important to recognize that the sustainability revolution is being propelled by market forces. A set of seven market observations can assist cities, communities, and regions in understanding the sustainability revolution, as it manifests throughout the U.S. and the world, and to formulate the Sustainable Economic Development strategies they need to embrace the economic opportunities offered by building a sustainable economy.

**Observation 1:** The goals of improved environmental performance and energy independence (climate mitigation; climate adaptation; resource/energy efficiency; and alternative energy development) are driving the development of new products, services, companies, and markets that will outperform their non-green counterparts over the long run.

**Observation 2:** Many of the specific climate mitigation strategies (such as clean renewable distributed energy and large-scale building retrofits) have natural economic development potential for stimulating new businesses and jobs.

**Observation 3:** Environmental gains must generate tangible economic benefits to be successful. Sustainability solutions that combine improved environmental performance and economic benefits are

the key to successful climate-change mitigation/adaptation strategies. If the benefits of reduced greenhouse gas (GHG) production are externalized, distant, and delayed, the motivation to make voluntary large scale reductions will eventually dissipate. Goals for reducing GHG emissions need to be translated into self-reinforcing market dynamics.

**Observation 4:** Leadership on climate change and regional/global economic competitiveness can reinforce each other rather than cancel each other out. Environmental performance can drive economic prosperity that can be equitable for different groups and places.

**Observation 5:** As energy and natural resource efficiency become increasingly important competitive advantages in regional and global economies, urban sustainability strategies can be integrated with economic development and community development strategies that leverage the competitive advantage of urban density.

**Observation 6:** Economic benefits can be realized in two basic ways. (1) Increased participation in the emerging sustainable economy can generate new enterprises, new jobs, and new wealth. (2) The hidden advantages of “urban form” can create significant reductions in the cost of living and the cost of doing business through the integration of community design, energy efficient buildings, and mobility systems.

**Observation 7:** A “Sustainable Economic Development” strategy can use many of the same best practices as other kinds of economic development strategies—it is just focused on different kinds of technologies, products, processes, companies, markets, and career pathways.

#### IV. Economic Development That Is Sustainable

The seven market observations listed above can be summarized into one proposition: *For cities and regions to prosper and be successful in the 21<sup>st</sup> Century, their economic development strategies need to engage with the economic opportunities offered by the sustainability revolution.*

The generally recognized best practices for economic development in a city or region include:

- Identifying the business clusters in the city, community, or region that are already strong and the nascent business clusters for which there are the preconditions for becoming strong, particularly those business clusters that are effective job producers and wealth producers.
- Assisting existing businesses, particularly those in the identified business clusters, to thrive, while growing new businesses in those clusters.
- Strengthening businesses that produce products and services for export out of the city, community, or region to a national and global market, in balance with city, community, or region serving businesses.
- Attracting businesses, particularly those in the identified clusters, to move to the city, community, or region.
- Encouraging real estate development that locates housing that is affordable near where the businesses are located.
- Promoting the revitalization of low- and moderate-income neighborhoods and communities.
- Fostering robust economic, social, and environmental infrastructures in the city, community, or region that provide the financial, workforce development, educational, and resource systems that businesses need.

- Branding and marketing the region, highlighting its business clusters and its economic, social, cultural, physical, and natural advantages to attract businesses to locate and grow in the region.

A Sustainable Economic Development strategy uses all of these best practices in a modified fashion to encourage:

- Businesses that specialize in environmental products and services (the clean- tech business cluster) to start-up, locate, and grow in the city, community, or region.
- All businesses in the city, community, or region to become greener and, at the same time, more profitable and economically productive.
- Sustainable real estate development to take place--development that is mixed use, mixed income, walkable, energy and resource efficient, and transit oriented.
- The regional financial, workforce, and educational infrastructure to understand sustainable enterprises, in order to encourage investment in the sustainable economy and to prepare people to participate effectively as workers, entrepreneurs, managers, consumers, and investors.
- The regional physical infrastructure to provide energy, water, materials, buildings, and mobility in a way that is both ecologically and economically efficient.
- The region to be recognized as a place that is in the forefront of the sustainability revolution, becoming an economically, socially, and environmentally better place to live, work, and locate a business.

Separately, each of these best practices can make a significant contribution to the emergence of Sustainable Economic Development in a city or region, but taken together, they can show the way to building a sustainable economy that provides strategic economic advantage in the global economy.

## Appendix D: THE CLEANTECH CLUSTER

(Excerpted from *Sustainable Economic Development*, a paper by Global Urban Development President, James Nixon.)

### I. Defining Cleantech

The term “Cleantech,” often used interchangeably with “greentech,” has emerged as an umbrella term encompassing a diverse business cluster with a range of environmental products, services, and processes, all intended to:

- Provide superior performance at lower costs.
- Greatly reduce or eliminate negative ecological impacts.
- Improve the productive and responsible use of natural resources.

The emergence of Cleantech is a response to the challenges of climate change and ecological disruption that resulted from the way older industrial technologies operated. However, in a very large and growing number cases the new Clean technologies are turning out to be highly cost effective with a return on investment (ROI) coming within relatively short time periods.

### II. Cleantech Industry Sub-Sectors

While the boundaries of the Cleantech Cluster are not precise, the Cleantech Group, organizers of the Cleantech Network and the Cleantech Forums, has suggested that Cleantech includes 11 industry sub-sectors:

- **Energy Generation:** wind, solar, hydro/marine, biofuels, geothermal, and other forms of energy generation.
- **Energy Storage:** fuel cells, advanced batteries, and hybrid systems.
- **Energy Infrastructure:** management, transmission, and “smart grids.”
- **Energy Efficiency:** lighting, buildings envelope, insulation, glass, and other forms of energy efficiency.
- **Transportation:** vehicles, logistics, structures, and fuels.
- **Water and Wastewater:** water treatment, water conservation, and wastewater treatment.
- **Air and Environment:** cleanup, safety, emissions control, monitoring/compliance, and trading and offsets.
- **Materials:** nano, bio, chemical, and other forms of new, more efficient materials.
- **Manufacturing and Industrial:** life cycle design, advanced packaging, monitoring and control, smart production, and industrial ecology.
- **Agriculture:** organic farming, natural pesticides, land management, sustainable forestry, and aquaculture.
- **Recycling and Waste:** waste minimization, recycling, and waste treatment.

### III. Key Elements Involved in Cleantech Cluster Development

There are seven key elements involved in a Cleantech Cluster in a city, community, or region. They include:



1. Entrepreneurs and managers that are starting up and growing businesses in the Cleantech sector.
2. Sources of equity and debt finance prepared to make investments in Cleantech businesses.
3. Workforce with the appropriate skill sets to meet the employment needs of Cleantech businesses.
4. Business services (legal, accounting, marketing, strategy, management assistance etc.) with domain expertise at the level of operations to which Cleantech businesses aspire.
5. Suppliers and customers for the businesses in the Cleantech Cluster.
6. Universities and educational and research institutions that are educating entrepreneurs and managers who want to start-up businesses and/or work in the Cleantech businesses, as well as whose research activities are developing new intellectual property that can be the focus of new Cleantech business development through technology transfer.
7. Networks that link the various aspects of the Cleantech Cluster together.

While some regions will come to be known for being home to specific aspects of the Cleantech industries, all regions need to make effective use of them. They will come to be key differentiators for regional prosperity that is sustainable.

#### IV. Global Private Cleantech Business Investment

*Washington, DC – December 4, 2009* – Ethical Markets Media (USA and Brazil) and the Climate Prosperity Alliance today launched their Global Climate Prosperity Scoreboard® which tracks private investment in companies growing the green economy globally. This new, never before reported number, showing \$1,248,740,645,993 (nearly \$1.25 trillion) in total investment since 2007, indicates how investors and entrepreneurs are leading governments in promoting sustainable growth. The scoreboard totals investments in solar, wind, geothermal, ocean/hydro, energy efficiency and storage, and agriculture. We indicate which investments have been publicly announced and committed by major companies for 2010 and beyond.

Dr. Marc A. Weiss, Chairman and CEO of Global Urban Development and Chair of the Climate Prosperity Alliance, said, "This nearly \$1.25 trillion of investments are not only from North America and Europe, but also from China, India, Brazil and other developing countries. They indicate that the private sector currently is ahead of governments in understanding that during the 21st century, people, places, and organizations can only get richer by becoming greener and only earn more money by using fewer resources and reusing more. Private capital investment is now leading globally in promoting technological innovation and resource efficiency that will accelerate environmentally and socially sustainable industrial growth and economic development throughout the world."

Dr. Hazel Henderson, futurist, author of [Ethical Markets: Growing the Green Economy](#) (Chelsea Green, 2006) and president of Ethical Markets Media, serves as vice-chair of the Climate Prosperity Alliance. Dr. Henderson said, "Ethical Markets Media's mission is reforming markets and growing the green economy globally. Our Global Climate Prosperity Scoreboard® will be updated regularly to show progress toward the ecologically sustainable economies that are vital to our common future. Societies are transitioning from the 300-year old, polluting, fossil-fueled Industrial Era to the advanced technologies of the information-rich Solar Age."

The Climate Prosperity Alliance, a volunteer, global network of financiers, businesses, economic development authorities, scientists and NGOs is based on earth systems science, showing the widespread evidence of destruction caused by the now-obsolete technologies of the combustion-based Industrial Revolution and its extraction and exploitation of the Earth's capital: oil, coal, gas,

minerals, forests, water, land and biodiversity. Human societies are now gradually re-industrializing our economies using the Earth's income—the renewable energies of sun, wind, ocean/hydro, geothermal and non-agricultural biomass—based on human capital: new knowledge of planetary processes and ecosystems, designing our economies with Nature.

The Climate Prosperity Alliance uses the Climate Solutions 2 computer model of Australia's Climate Risk Pty., showing how \$1 trillion invested every year for the next 10 years can assure the global transition to sustainable prosperity and job growth. This \$10 trillion is less than the bailouts of failed banks in the USA and Europe and less than 10% of the world's pension and institutional funds of \$120 trillion. Institutional fund managers can shift 10% of their assets away from hedge funds, risky derivatives and commodity speculation to real investments in a greener global economy, thereby assuring their beneficiaries a healthier future.

(The new Global Climate Prosperity Scoreboard® is researched and compiled by the Ethical Markets Media expert team: Timothy Nash, M.Sc., principal, Strategic Sustainable Investments, Toronto; Rachel Tubman, M.Sc., senior researcher/futurist; assisted by The Cleantech Group and members of the Ethical Markets Sustainability Research Group. As these investments increase, the scoreboard will track totals, providing investors and governments with tangible evidence of the growing green economy.)

## Appendix E: AN EXAMPLE OF A SUSTAINABLE ECONOMIC DEVELOPMENT INITIATIVE WITH ASSOCIATED ACTIONS

(Excerpted from *Sustainable Economic Development*, a paper by Global Urban Development President, James Nixon.)

This is an example of one Initiative with potential associated Actions that could be incorporated in a Sustainable Economic Development Strategy.

### Green Business Initiative

*Improvement of the environmental and financial performance of existing business firms in a city*

#### Context

The purpose of a Green Business Initiative is to establish a system for assisting all businesses in a city, community, or region to “go green” by improving their environmental performance in ways that also improve their financial performance over the long run. Cleantech businesses provide the green products and services. Other businesses use those products and services to go green.

**Businesses Going Green:** Recognizing the economic opportunities inherent in going green, many leading larger corporations are taking significant actions. For example:

- According to its Sustainability Progress Report, Wal-Mart has committed to an environmental responsibility program, aiming to cut greenhouse gas emissions by 20 percent by 2012, while targeting 100% renewable energy, zero waste, and the sale of sustainable products. Wal-Mart has invested \$500 million in sustainability, increased building and fleet efficiency by 15%, built a set of experimental green stores, and is requiring its suppliers to go green through its Sustainable Value Networks.
- In its 2007 report, GE indicated that its Ecomagination initiative now has 60 products generating \$70 billion in revenue, with overall corporate greenhouse gases reduced by 8% from 2004 levels.
- In its case study on DuPont, the Climate Group reports that DuPont saved \$3 billion while reducing greenhouse gas emissions by 72% over a decade. DuPont is aggressively developing sustainable products for buildings and construction, transportation, agriculture and nutrition, and communication. DuPont reports on its social and environmental progress using the Global Reporting Initiative reporting format and is independently monitored by Environmental Resource Management.
- In its Sustainability Report, Interface, Inc., the world’s largest manufacturer of commercial and residential modular carpet and broadloom, shows that it has grown \$200 million (to over \$1 billion) without increasing resource consumption, and the company has avoided \$250 million in waste management bills.
- According to the *State of Green Business 2009*, 30% of the corporations in the S&P 500 now produce a non-financial report that addresses environmental issues.

- The 2008 study, *Going Green* by Hudson Gain Corporation, found that 214 of the 1,200 largest corporations in the United States had some version of a Chief Sustainability Officer and a sustainability program oriented around achieving a “triple bottom line” of “profit, people, and planet.” These sustainability programs address how the corporations function, independent of whether they produce a specific product or service to benefit the environment.

Other major U.S. corporations with comprehensive sustainability programs include: Dell, Johnson Controls, Hewlett Packard, Johnson and Johnson, Coca Cola, H.J. Heinz, Google, Random House, Nike, Starbucks, TimeWarner, UPS, Whole Foods, Xerox, Target, Walgreens, and many others.

**Sustainability Reporting:** During the last decade, a variety of different approaches to sustainability reporting have emerged to assist corporations to attain and report on environmental progress. The International Standards Organization and the Global Reporting Initiative are the two most widely used systems.

The International Standards Organization ISO 14000 standards ([www.iso.org](http://www.iso.org)) seek to identify what an organization does to:

- Minimize harmful effects on the environment caused by its activities.
- Achieve continual improvement of its environmental performance.

The ISO 14000 standards specify requirements and guidelines for establishing environmental management systems, including labeling, performance evaluation, life cycle analysis, communication, and auditing.

The Global Reporting Initiative (GRI) has developed the most widely used sustainability reporting framework, setting out the principles and indicators that organizations can use to determine both what to report and how to report in measuring their economic, environmental, and social performance. ([www.globalreporting.org/home](http://www.globalreporting.org/home))

Sustainability reports, based on the GRI Sustainability Reporting Guidelines, address “materiality” (economic, social, and environmental impact); stakeholder inclusiveness; sustainability context; and “completeness” (scope, boundary, and time covered); and also include sector supplements and national annexes. The Guidelines can be used to benchmark organizational performance with respect to laws, norms, codes, performance standards, and voluntary initiatives; demonstrate organizational commitment to sustainable development; and compare organizational performance over time.

Typically large corporations have a department with senior staff to address environmental issues, implement sustainability initiatives, and report on progress. However, smaller businesses have difficulty finding the resources to hire a single environmental officer, let alone a whole department. Environmental performance is more hit or miss with small and mid-size companies.

Because of this situation, a city, community, or region will need different approaches for providing assistance to its larger corporations and for assisting its small and mid-size companies.

## Actions

A few of the potential Actions that are succeeding in one or more localities and can be utilized to implement a Green Business Initiative follow.

**Green Business Certification:** To help small and mid-size companies in the San Francisco Bay Area to go green, the Association of Bay Area Governments established the Bay Area Green Business Certification Program ([www.greenbiz.ca.gov](http://www.greenbiz.ca.gov)).

This program assists small- and medium-sized businesses in implementing high standards of environmental performance. The Bay Area Green Business Certification Program is a partnership of government agencies and utilities that help local businesses take environmental actions through an easy-to-use framework and check list for improving environmental performance.

According to the Bay Area Green Business Certification Program, certified green businesses bring their operations into compliance with all environmental regulations and then go beyond compliance to implement additional measures to address:

- Water conservation.
- Solid waste reduction and recycling.
- Energy conservation.
- Pollution Prevention.

Certified Green Businesses are recognized as environmental leaders and report that being certified:

- Strengthens their financial bottom lines through operating efficiencies and increased patronage.
- Improves employee morale and the health of the workplace.
- Establishes a marketing edge over the competition

Over 1,000 businesses and public agencies have been certified since 1997. Certified green businesses receive a Green Biz logo to display, are listed in a printed and on-line directory, and receive press and other forms of recognition.

Newly certified green businesses receive their certification at quarterly events hosted by different certified green businesses. These quarterly events also include presentations by green thought leaders and by the companies hosting the events. Typically, these events receive good coverage in the local media.

The Program is implemented by Green Business Coordinators in 9 participating Bay Area counties. The Green Business Coordinators assist businesses to make sure they are in compliance with all applicable environmental regulations and help them to complete the Green Business Certification Checklist. Unique checklists are developed for different industry sectors.

These county programs are funded by their partners, including local and regional government agencies, utilities, special districts, and nonprofit organizations that promote environmental compliance, pollution prevention and resource conservation, with some funding also coming from government and foundation grants.

The city of Los Angeles received a grant from the Los Angeles Department of Water and Power to start a Green Business Certification Program modeled on the Bay Area Program.

Start-up of a Green Business Certification Program will involve:

- Identification of a lead agency.
- Acquisition of start-up and operational funding.
- Determination of the initial industry sectors.
- Establishment of a relationship with all of the relevant environmental regulatory organizations.
- Fine tuning of a questionnaire for the chosen industry sectors in relation to the specific city, community, or region.
- Hiring of a coordinator.
- Launch of the Green Business Certification Program.

**Green Business Forum:** Larger corporations that go green typically create the position of Chief Sustainability Officer, Chief Green Officer, or Chief Environmental Officer at the vice president level to oversee a department that addresses the company's compliance with environmental regulations and overall pro-active environmental performance.

As described above, the International Standards Organization ISO 14000 standards and the Global Reporting Initiative (GRI) have become the most widely used sustainability reporting frameworks applied by a Chief Environmental/Green/Sustainability Officer to report on the sustainability/environmental performance of the business.

Constitution of a Green Business Forum in a city, community, or region can significantly assist the Chief Environmental/Green/Sustainability Officers of the major corporations in the city, community, or region with assigned responsibilities to improve the sustainability and environmental bottom line for their respective entities.

The intent of a Green Business Forum is to conduct a best-practices exchange and support optimization of businesses' improvement strategies by addressing mutual opportunities and barriers. The Green Business Forum can hold forums on corporate sustainability, environmentally preferable purchasing programs, resource efficiency, and other green topics featuring thought leaders, best practices, and leading national and regional examples. A Green Business Forum can also weigh in on public policy as it relates to the environment.

A Green Business Forum can also be a context for the major businesses in a city, community, or region to utilize the "industrial ecology" perspective to explore how businesses can use one another's waste streams as sources of energy and/or feed stock.

Launch of a Green Business Forum would be preceded by identification of the large corporations in the area with green/sustainability programs and a needs assessment to determine the perceived needs of those corporations, as well as their specific programmatic and structural ideas.

The Business Council on Climate Change (BC3) is one example of a Green Business Forum. ([www.bc3sfbay.org/welcome](http://www.bc3sfbay.org/welcome)) BC3 is a partnership of San Francisco Bay Area businesses committed to reducing their green house gas emissions. BC3 companies of all sizes commit to five principles of climate leadership—internal implementation; community leadership; advocacy and dialogue; collective action; and transparency and disclosure.

BC3 members collaborate to share ideas and case studies, identify tools, participate in educational forums, and establish best practices. There are over 90 members including: Cisco Systems, Pacific Gas & Electric, The Gap, Blue Shield of California, CH2M Hill, and Webcor Builders.

In its *Mission Verde* sustainability plan, the City of San Antonio established a Community Green Leaders Task Force to accomplish the function of a Green Business Forum.

Another example of Green Business Forums are the Sustainable Business Forums in West Michigan and Southeast Michigan ([www.wmsbf.org](http://www.wmsbf.org)) These forums bring together corporate sustainability leaders in these regions to share best practices and develop standards for implementation of internal sustainability initiatives. The West Michigan Sustainable Business Forum has developed a detailed implementation guide and self-scoring system that is used by Forum members.

A Green Business Forum should be able to be coordinated by a part-time staff person, with the requisite knowledge and skills. It is possible that one or more of the corporate foundations in the city, community, or region would recognize the virtues of a Green Business Forum and provide funding.

**True Market Solutions:** Founded by Elliot Hoffman, co-founder and Chair of New Voice of Business, True Market Solutions works with small and mid-size companies that are not big enough to have a Chief Sustainability or Chief Environmental Officer, but that want to go further than a Green Business Certification Program.

True Market Solutions forms Sustainability Circles to work with groups of peer companies in a region by:

- Meeting one full day a month for 6 months with the entire circle.
- Undertaking 2 half-day consultations with each business individually.
- Utilizing a comprehensive proprietary on-line sustainability curriculum.

True Market Solutions assists participating businesses to develop customized Sustainability and Profit Improvement Plans that:

- Assess current resource use, energy efficiency, and savings.
- Reduce CO2 footprint and introduce new resource efficiencies and savings.
- Embed sustainability into the company's business model, operations, culture, and DNA.
- Assist the company to play a sustainability leadership role in its supply chain, industry, and community.
- Engage the company's employees and their families in sustainability practices.
- Formulate marketing and communications in relation to the company's commitment to sustainability.

**Regional Resource Metabolism Assessment:** Regional resource metabolism and urban metabolism are analytical sciences based upon industrial metabolism, which originated during the early 1970s (Robert Ayres at Carnegie-Mellon University) and has since been used as an economic development tool for regions such as Germany's Rhine River Basin and Australia's Southeast Queensland.

A Regional Resource Metabolism Assessment analyzes the resource flows entering and leaving a region in order to:

- Identify which industries add the greatest economic value for the least environmental cost.
- Target the missing sectors that fill the gaps in the resource economy of a city, community, or region.
- Reduce imports and increase the value-added exports.
- Close local/regional resource loops by turning wastes into resources.
- Drive economic development strategy that builds both job creation and environmental performance.

All of a region's stakeholders—whether they are an executive of a large business, the owner of a small business, an elected official, an economic development specialist, an environmental or community activist, or an investor—need to understand the Resource Metabolism of a city, community, or region in order to:

- Grow the sectors that add greatest value.
- Stop investing in sectors that cost too much.
- Increase everyone's efficiency in using common resources to create economic, social, and natural capital.

A Regional Resource Metabolism Assessment provides a reality-based map of the economy of a city, community, or region. Resource Metabolism maps assess actual resource flows through a region to provide a new perspective on efficiency of resource use, and to identify economic strategies compatible with quality of life goals. It is called a "reality based" approach to economic development since it is based on the physical reality—the flows of energy, resources, water and "wastes"—that underlie the economy.

A Regional Resource Metabolism Assessment can be the prelude to establishing a Regional Resource Exchange, a system for enabling businesses in a region to list their "wastes" and their "feed stock" needs and to pursue matches, so that, to the greatest degree possible, there is no waste and all of businesses' wastes become feedstock for other businesses. Natural Logic ([www.natlogic.com](http://www.natlogic.com)) has pioneered the use of Regional Resource Metabolism Assessments.

**Sustainable Supply Chain:** As an aspect of its Sustainable Economic Development Strategy, the state of Delaware may soon be launching a Green Global Supply Chain Service as a research, outreach, and technical assistance initiative for Delaware businesses. In Delaware, this Service will assist businesses in understanding the green markets and green supply chains for their current products and how they can develop new products to tap into these supply chains. For manufacturing businesses, this Service will partner with the Delaware Manufacturing Extension Partnership.