

Global Sustainable Communities Design Handbook: From Green Policy Design, Engineering, Health to Technologies, Economics, Contracts, Education and Law

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Each chapter will have a guest editor and one or more sections. Each section will address recent developments in a particular region of the world.

Chapter One: Public Policy and Leadership

Local, regional and national governments must establish in law with resolutions for environmental policies and programs. Ideally, they will have a Plan for basic infrastructures and how each is integrated into the others:

water, waste, energy, transportation, telecom, parks and natural resources

1. North America
2. South America
3. Europe
4. Asia
5. Middle East & Africa

Chapter Two: Design and Build Models

Once a community has a plan that is interconnected to its region and larger state or nation, it must have guidelines, rules and standards for historical, retrofit and new buildings. Standards must be measurable, accountable and able to meet strict criteria and evaluation. The design standards are for the community or subset of communities that range from shopping areas, malls, office buildings to homes, colleges, health centers and government facilities including fire, police, courts and city / village governments.

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Chapter Three: Energy Conservation and Efficiency

The use of global codes, measurements and standards are needed but need to apply to the local community needs, its environment along with weather, climate, pollution and reuse / recycle programs. For example, setting goals to reduce waste are critical with which recycling programs can solve the problems. The reduction and conservation of energy contributes to controlling weather changes locally and globally. Being more efficient through the use of low energy use lighting, appliances, media and computer technologies are critical.

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Chapter Four: Renewable Energy Generation Technologies and Scientific Planning

However, conservation and efficiency are not enough in a world that is increasingly becoming more electronic and in need of power for the devices to perform. The use of solar, wind, biomass, geothermal, wave and ocean power for providing the energy for the modern high tech society is critical for controlling climate change. The US Green Building Council has its LEED (Leadership,

Energy, Environmental Design) program. There are similar ones in Asia and the EU to measure how a building is operating efficiency and using renewable energy and water recycled programs.

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Chapter Five: Life Cycle and Cost Benefit Analyses

A basic issue in mitigating climate change and reversing global warming is the accounting and economics of the technologies, systems and programs to reverse climate change. The conventional accounting methods for businesses and often governments use a “cost benefit analysis” that requires a profit or rate of investment return within 2-3 years from the expenditure. The fact is that any environmental or energy technology has to have financial investment for many years before a positive economic result is found. The factors involved in climate change economics often also include “externalities” or the economic factors such as the environmental pollution, health costs and incentive factors that add to the stranded costs of energy projects, for example, like power transmission lines, waste, operations and maintenance among others.

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Chapter Six: New and Existing Buildings

This topic presents the most challenging aspects of sustainable communities because older buildings, especially those with historical and cultural traditional values and in some cases registered as such, can be the victims of land developers needing space, tenants, and buyers. Often larger more modern buildings are the basic attraction to buyers. The preservation of these buildings, while making the more sustainable in terms of energy use, water and waste, are all significant issues. New buildings must achieve the highest standards for sustainable buildings as well as connect to the entire local region which includes infrastructures.

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Chapter Seven: Sustainable Agriculture

The second largest contributor to climate change, on a par with energy and fuel for vehicles and buildings, are animals in terms of the use of their bodies for food

and the results of their waste. Related to animal impact on the environment are the crops grown in large fields with chemicals and tractors for production, growth and harvesting. The agricultural sector is often overlooked in environmental terms, but represents one of the most critical sectors that impacts climate change.

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Chapter Eight: Legal Innovations

Legal advice, opinions guidance and governance are significant factors for sustainable communities. Aside from establishing the legal aspects of public policy, the issues are setting the standards in terms of issues like ISO and other global levels set up by the UN, WTO and IEA among other international organizations. However, rarely are attorneys involved in advance of the need for contracts that include issues like operation, maintenance, insurance, liabilities and long term oversight. In recent years, the use of Power Purchase Agreements which can obligate a customer for energy purchases maybe a legal obligation for 15-20 years. Above legal advice is needed in terms of the global standards set and how to enforce them.

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Chapter Nine: The Smart Green Grid

This is a top that is still evolving but critical for all sustainable communities. It concerns the need for communications to be transparent, interactive, and responsible for the environment. Sustainable communities need to have technologies for example, that measure or meter energy use in a home or building or cluster of buildings so as to inform and educate the users of the energy. But also a smart green grid provides for parking meters and traffic control devices that provide limits to local use of vehicles, transportation and their infrastructures. Today in many cars, GPS systems guide the driver and reduce the use of fuel and its impact on the environment.

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Chapter Ten: Health Impacts

Sustainable communities provide opportunities for healthy living and facilities to improve lifestyles. They have medical facilities to care for young and old and ways to

train locals to work in the facilities. Sustainable communities have opportunities for recreation and exercise.

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Chapter Eleven: Education and Certification for Sustainable Communities

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Chapter Twelve: Entrepreneurship and Job Creation

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Chapter Thirteen: Agile Sustainable Communities

Sustainable communities are agile. They have the flexibility to change and adapt based on changes to many of the variables discussed in the book – energy prices, new technologies for energy, new building materials, and new patterns of business or employment. Some cities or regions have been successful for many decades, while others have not weathered the changing economic, political and ecological climate. This chapter explores some of the success stories and some of the failures – and what is being done in both places.

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Chapter Fourteen: Conclusions

Review each chapter by Regional issues

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Predict consequences by regions and issues presented

Next steps