

The Rise of Jeju as a Global Model Environmental Hub: The Confluence of Nature, People, Government, Corporations and the NGO Sector

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ARTICLE INFO

Article history:

Received 30 October 2012

Accepted 15 December 2012

Keywords:

Environmental Hub model,
Jeju Special Self-Governing
Province, world environmental
hub special law, IUCN,
collaborations

ABSTRACT

During the past decades, the island city of Jeju, through considerable multi-sectoral efforts, has grown to be a shining example of an environmental hub model. The origin of Jeju's growth as a global environmental hub can be traced primarily to two major characteristics: 1. The willingness of the people of Jeju to share their island's vibrant cultural heritage and unique natural beauty with the rest of the world, and 2. The tireless endeavors of Jeju Special Self-Governing Province to manage Jeju's environment, and share its environmental best practices to urban centers across the world. These endeavors are expressed as the principal of policy that conservation is prior to development. In order to achieve its goal of a World Environmental Hub status, Jeju Special Self-Governing Province is promoting 1) institutional strategies, 2) supplementation of its existing master plan, and 3) restructuring of existing social system. The first includes the promotion of this project on a joint base with IUCN and the Ministry of Environment of the Republic of Korea, establishment of head office of world environmental hub promotion in Jeju Governmental organization, and enactment of world environmental hub special law by the National Assembly of the Republic of Korea. The second is considering collaborations with the members of IUCN commissions, domestic experts, and consultants who will be recruited from overseas. The third is for improving the effectiveness and efficiency of the master plan through the restructuring of exiting socio-economic system to a new one focusing on maximizing the eco-efficiency and environmentally friendly behavior.

"The prosperity and environmental sustainability of cities are inextricably linked..... If economic development and related urban activities are pursued in an environmentally sustainable manner, they can facilitate urban prosperity."
- UN-HABITAT

Introduction

Cities around the world have always played vital roles in the growth of nations and their societies. However, they have also become central locations for industrial production, trade, and other allied economic activities that have resulted in over consumption of natural resources that have placed tremendous stress on their environment.

According to the World Bank estimates, about half of the world's population live in urban areas at present. Current urban population of the world is expected to double by the year 2030, but the total built-up area in urban centers across the globe is expected to triple during the same period (Angel et. al. 2005). The proportion of people living in urban areas is projected to reach 70% by the year 2050. Historically urbanization has been fueled by rapid industrial and commercial growth and industries have always been among the major sources of polluting urban air, water, soil and other natural elements.

Due to high concentration of people, disproportional utilization of carbon emitting fossil fuels for transportation, and lack of renewable energy for households, cities are often blamed for ecological harms on a global scale. Cities consume as much as 80% of the energy production across the world (World Bank). They get about 72% of their energy from fossil fuels which are the main contributors to green house gases. According to the International Energy Agency estimates, urban areas around the world currently contribute to more than 67% of energy related global green house gas emissions. This proportion is expected to rise to about 74% by the year 2030. Overall, cities have become major contributors to climate change, at present producing more than 60% of all carbon dioxide and higher proportion of

other greenhouse gas emissions through energy generation, automobiles, industries and biomass use (UN Habitat). To further compound the issues, dire scarcity of green space (trees) and soil in cities that can absorb carbon dioxide by acting as 'carbon sinks' exacerbate the release of excessive carbon in to the atmosphere.

Negative environmental effects of urbanization is more pronounced in developing countries. While urban population trends are relatively stabilized in developed countries, they continue to grow unabated in developing nations. As the result of the push - pull factors due to lack of income generation in rural areas and opportunities in urban areas, urbanization processes persist at rapid paces in these countries. According to UN Habitat estimates, this trend is expected to continue for several decades due to spatial growth and income generating job opportunities in cities. Needless to say, such uncontrolled growth is likely to place tremendous stress on existing urban infrastructure and contribute to serious environmental problems on a global scale. Thus urban environmental degradation in any parts of the world have ramification for the entire humanity and future generations.

Environmental Model Cities

Against the backdrop and trends of environmental degradation, industrial pollution, overconsumption of natural resources, and the destruction of green spaces, fortunately some cities have launched laudable measures and set positive trends in protecting their environment, conservation, sustainability, and environmental vitality.

They have taken upon themselves the responsibilities and arduous tasks of balancing present needs for energy & natural resources consumption

while considering future requirements for them. These cities have set good examples of environmental sustainability for other cities to learn/emulate from. They continue to define various models of best practices in sustainable urban development and have become to be known as sustainable cities, eco cities, green cities, etc. Although there are no generally agreed upon definitions of these model environmental cities, the following may be the broad characteristics of them:

Eco-cities: The concept of ecologically friendly cities or eco-cities emerged in the mid 1970s and was promoted by urban planning/development scholars. Although no specific criteria has been developed to classify a city as an eco-city, cities that have the following general characteristics are considered as eco-cities: protection and growth of green space, public transportation systems that reduce pollution and waste of energy, efficient solid waste management system, policies that promote environmental conservation, involvement of people in ecological preservation.

Sustainable cities: The concept and practices of sustainable development in cities came in the wake of uncontrolled urbanization, industrialization, and growing world poverty. United Nation's 1987 report titled *UN Report of the World Commission on Environment and Development: Our Common Future* (also known as *The Brundtland Report*) defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." Based on this principle, several cities followed initiatives that reduced over consumption of energy and natural resources, promoted practices of recycling, and prevented urban environmental degradation.

Green cities: Green city concept is relatively new and has captured the attention of major cities around the world by the work of Germany based global corporation Siemens. Siemens, as a part of its commitment to environmental protection, recently commissioned a research project that developed a 'Green City Index,' and measured the environmental performance of 120 cities in the five continents of Asia, Africa, Europe, North America, and South America. This Green City Index measures cities based on the following nine categories: CO2 emission, energy consumption & renewable energy, buildings, transportation, solid waste management & land use, water consumption & treatment, air quality and environmental governance.

Global Examples of Environmental Model Cities

During the past decade, through strong environmental planning and implementation, the following cities have emerged as 'best practice models' of urban environmental protection. Each of them focused on its unique set of policy and program interventions to achieve considerable level of environmental sustainability. The following section provides brief information on the environmental strategies of these cities:

Freiburg, Germany: Freiburg's environmental protection measures began four decades ago and the city was chosen as Germany's Environmental Capital in 1992 for its proactive environmental policies. The city's pioneering efforts in the reduction of CO2 emission resulted in the honor of The European City of the Year in 2010. Freiburg's sustainability strategies include: high usage of renewable energy sources including solar energy, efficient and effective environmental

management, and adaptation of new technologies in waste management.

Curitiba, Brazil: Curitiba's major success is its reduction of pollution and enhancement of air quality through an innovative and extensive public transportation system. The city is ranked as the best city by Siemens' *Latin American Green City Index*. Curitiba's environmental authority follows an effective integrated approach in urban development, transportation, and waste management through good recycling practices.

San Francisco, USA: San Francisco has always been considered as one of the most environmental friendly cities of USA, mainly due to its residents' pro-environmental characteristics. It ranks as the best city in Siemens' *US and Canada Green City Index*. The city's major environmental strategies include: public-private partnerships for green technology growth, promotion of green movements through awareness programs, and strong emphasis on recycling.

Singapore: Singapore has impressive environmental track record. The Singapore government has consistently promoted effective environmental policies through excellent public transportation, high density housing, green space conservation, waste management, and water management. Singapore is ranked as the best green city in Asia by Siemens' *Asian Green City Index*.

What is an Environmental Hub?

In the very recent years, a small group of cities have emerged to be known as 'environmental hubs'. These cities, in general, encompass most characteristics of sustainable, eco, and green cities. In addition, they also have unique natural environmental features and practices.

While the environmental model cities mentioned

in the above section are excellent examples of best practice approaches to environmental protection, they tend to follow unidimensional, bi-dimensional or tri-dimensional approaches for sustainable development. An environmental hub is a city which has the multi-dimensional approach to environmental protection and conservation that includes: an integrated policy framework that covers social and economic factors impacting the sustainability of environment and based on the mutual mechanism among the components of environment, society and economy; a comprehensive realization of sustainable development that focuses on conservation of nature, sustainable use of energy, and implementation of various green growth schemes based on available resources; adaptation of a systematic environmental evaluation process that identifies right indicators for efficient implementation process and effective environmental outcomes.

Environmental hubs are vanguards of urban environmental protection & conservation, sustainability, and ecological vitality. Characteristics that constitute an environmental hub are yet to be decided and agreed-upon by environmentalists. However there are some ideas emerging about these characteristics. For example, Dr. David Maddox, the New York based urban environmentalist and the founder of The Nature of Cities, suggests the following seven characteristics that make a city move beyond a green city designation into the realm of an environmental hub: green space, eco system services, bio diversity, environmental justice, natural areas, connectivity & placement, and proximity to wilderness or natural areas (Maddox, 2012).

In essence, environmental hubs are cities that are shining examples of how urban centers can thrive (in terms of the triple bottom line of sustainability: nature, people and economy)

within a sound, effective and efficient policy framework for environmental protection. They can set high standards in environmental sustainability through cohesive efforts of various sectors: citizens, governments, corporations, and the civil society. Such multi-sectoral urban environmental management practices need to have features that can be replicated, adopted or emulated by cities around the globe.

Evolution of Jeju as an Environmental Hub

During the past decades, the island city of Jeju, through considerable multi-sectoral efforts, has grown to be a shining example of an environmental hub model. The origin of Jeju's growth as a global environmental hub can be traced primarily to two major characteristics: 1. The willingness of the people of Jeju to share their island's vibrant cultural heritage and unique natural beauty with the rest of the world, and 2. The tireless endeavors of Jeju Special Self-Governing Province to manage Jeju's environment, and share its environmental best practices to urban centers across the world. These endeavors are expressed as the principal of policy that conservation is prior to development.

In addition to its ground breaking environmental management efforts, Jeju has also consistently claimed its legitimate environmental leadership by hosting major international environmental conventions that have resulted in resolutions, agreements, policy initiatives and program implementation for environmental conservation around the world. In 2004 Jeju hosted the eighth special session of the Governing Council of the United Nations Environment Programme (UNEP) and its Global Ministerial

Environment Forum which strengthened scientific foundations of UNEP. In 2007, Jeju hosted the 2nd United Cities and Local Governments (UCLG) World Congress. Under the broad theme of "Changing Cities are Driving our World," this Congress defined UCLG and its members' international agenda. In 2010 Jeju hosted the 2nd Ministerial Regional Forum on Environment and Health in South-East and East Asian Countries, which reviewed regional and national progresses of members after the 2007 Bangkok Declaration. This Forum also developed agreements on regional environmental and health priorities for the period of 2010 - 2013.

In 2012 Jeju staged its largest global environmental event yet, the 2012 World Conservation Congress of the International Union for Conservation of Nature (IUCN), the largest, once-in-four-years international convention of about 10,000 people representing various countries, governments, international agencies, corporations, and non-governmental organizations aimed at effective and efficient management of natural environment on a global scale. Preparation for this landmark 'Environmental Olympics' began long before the Jeju Special Self-Governing Province hosted the Jeju Forum on World Environmental Leaders in February 2011 to seek input from world environmental leaders. Intense planning and collaboration between numerous officials/representatives of the Jeju Special Self-Governing Province and IUCN culminated in the success of 2012 World Conservation Congress held in Jeju 6 - 15 September, 2012 under the slogan of "Nature +". The vision of Jeju Governor Kuen Min Woo, dedication of the WCC Promotion Office under the strong leadership of Mr. Yang Bo Kim, and the hard work of hundreds of officials and volunteers to stage this grand global environmental gathering

are testaments to Jeju's commitment towards environmental leadership.

The Jeju Advantage

Nature has endowed the volcanic island of Jeju with unique topographic, geological, ecological, and weather features. But it is the concerted efforts of its people, governments, institutions of higher learning, tourism & other corporations, and the NGO sector that preserve Jeju's natural treasures almost untouched by environmental degradation. The cohesive and effective partnerships between these entities play a vital role in Jeju's ascent as a model environmental hub from which other cities can emulate.

The Nature

Jeju has the rare distinction of having three major accolades and distinct designations by UNESCO. In 2002 UNESCO designated Jeju as a Biosphere Reserve for its preservation of biodiversity and sustainable utilization of natural resources. 'Jeju Volcanic Island and Lava Tubes' received UNESCO's World Natural Heritage designation under the global organization's 1972 "Convention concerning the Protection of the World Cultural and Natural Heritage." In 2010, Jeju received the third UNESCO designation as the Global Geopark for its geological importance and attempts for proper preservation. Jeju is the home to four ecologically valuable Ramsar Wetlands. About 360 Oreums (small parasitic volcano), which are very rare in the world, of the island show a unique landscape and biological diversity as well. Gotjawal (lava stony forest) being distributed across the entire Jeju Island is another uniqueness of nature that pulls

all lives into green vegetation all the time through four seasons. In addition to these Jeju was also selected as one of the New 7 Wonders of Nature in 2012. All these designations and accolades clearly highlight Jeju's uniqueness for having numerous natural assets.

The People

Although the people of Jeju faced hardships during various periods of Korea's history, they have enormous pride in their island home and its cultural heritage. Among the most important characteristics of Jeju's sustainability framework is the day-to-day environmental sustainability practices (conservation, recycling, green space, energy consumption, etc.) of its people and their willingness to share their island home and cultural heritage with visitors from around the world. People of Jeju are naturally very hospitable and graceful. A survey of 500 Jeju residents (Jeong, 2004:202-257) found that the people of Jeju possess high levels of commitment to environmentalism and environmentally friendly behavior in their everyday life. This study showed that in the range of 1 - 100, Jeju residents have a high score of 70.3 for environmentalism and an even higher score of 79.3 for their environmentally friendly behavior.

Promoting sustainability seems to come naturally for the people of Jeju. Visually appealing home and community spaces with lush green spaces, and urban gardens in every single piece of un-built land that produce a variety of vegetables and Jeju's reknown tangerines are good examples of sustainable environment practices of Jeju residents in their day-to-day lives.

The Government

In accordance with such advantages described above, in the early 1980 the Central Government of Korea launched Development of Tourism in Jeju with a principle of conservation and sustainable utilization of nature. A particular note is that the Central Government designated Jeju as a Special Self-Governing Province in 2006. Since that time, Jeju Government has launched a wide range of independent policies and projects that successfully balance environmental conservation and tourism development within the framework of sustainable development. Recently, the Ministry of Environment designated Jeju a model province for its responses to climate change and for promoting environmental education in 2007 and 2008, respectively.

Such policies of conservation and development are implied by two ambitious goals. They are: Promotion of Jeju Free International City and

Promotion of World Environmental Hub as a model city in the world. Jeju Government symbolizes the former as ‘Jeju Goes to the World’, and the latter as ‘The World Comes to Jeju’.

In promoting itself towards, and claiming its place as, a global environmental hub, Jeju Special Self-Governing Province has followed a systematic planning process with a solid vision and implementation of several prerequisite projects. With the powerful vision of “The Island of Life, Jeju as the World Environmental Hub,” Jeju has made major strides towards achieving the environmental hub status by adopting the principle that preservation is more important than development. The following table illustrates Jeju government’s environmental management goal, principle of promotion, and promotion strategies.

Category (Goal)	Principle of Promotion	Promotion Strategies (12)	# of Projects
Society (Green Autonomy)	Participation	<ul style="list-style-type: none"> - Establishment of the best environmental education system in the world - Establishment of cultural ethos as an environmentally friendly lifestyle - Establishment of environmental governance as an international model - Leading global cooperation system of environment 	10
Environment (Clean)	Conservation	<ul style="list-style-type: none"> - Conservation of ecological environment and expansion of carbon sink - Switch to a region of low carbon and environmentally friendly metabolism - Establishment of green transportation system - Maintenance of clean air and water 	27
Economy (Green Growth)	Harmonization	<ul style="list-style-type: none"> - Expansion of energy independence and new/recycling energy industry - Promotion of environmentally friendly first industry, and expansion of local food - Establishment of MICE Industry Hub - Expansion of green management 	15

Jeju government is implementing a total of 52 specifically targeted projects covering the 12 strategies with a target of completing them by the year 2020. The following are a few examples of projects by category that are already launched and well underway:

Category: Society; Promotion Strategy: Establishment of the best environmental education system in the world; Projects being implemented: 1. Compulsory environmental curriculum in primary and secondary schools, 2. Establishment of Asia Climate Change Education Center that educates local, provincial and central government officials on environmental issues and solutions. The Center has already reached out to a few Asia-Pacific countries, especially in climate change education, 3. Proposing the establishment of UN World Environmental University in Jeju to serve as a global center of environmental education.

Category: Environment; Promotion Strategy: Conservation of ecological environment and expansion of carbon sink; Projects being implemented: 1. Expansion of protected areas and integrated systematic management, 2. Environmental management system based on environmental resources as a whole, 3. Expansion of carbon sink responding to climate change, 4. Afforesting ecological marine belt in the coasts, 5. Purchase and conservation of Gotjawal (stone forest) being owned privately.

Category: Economy; Promotion Strategy: Expansion of energy independence and new/recycling energy industry; Projects being implemented: 1. Expansion of new/recycling energy supply, 2. Construction of SmartGrid electrical network, 3. Construction of tidal power generators, 4. Construction of bio-gas plant using pork waste,

As evidenced by the above active projects, Jeju government is completing all prerequisites to launch the environmental hub project.

Institutions of Higher Learning

Educational institutions, especially the Jeju National University, have played strong supportive roles in Jeju's environmental promotion efforts through their environmental teaching and research programs. Among the notable contributors are Jeju National University's (retired) Professor Dai-Yeun Jeong and Professor Chang Hoon Ko. Professor Jeong is one of Asia's pioneer environmental sociologists who was instrumental in developing the proposal (which eventually became a successful reality) for Jeju to host IUCN's 2012 World Conservation Congress. In 2010, Professor Ko, the reknowned expert on peace studies, established Jeju National University's World Environment and Island Institute (WEII) with collaboration from the World Association of Island Studies. Since then, WEII has conducted the annual World Environment and Island Summer School that offers courses for students, government officials, practitioners and environmentalists from the Asia-Pacific region. Taught by expert academics and researchers from around the world, the Summer School offers valuable courses on environmental education, environment and cultural heritage, climate change, environmental justice, peace studies, conflict of resolutions, etc. Thus, in addition to teaching environmental and island studies to the students of Jeju National University, these academics also reached out to global audience to increase their knowledge and awareness of environmental issues and their solutions.

Jeju Special Self-Governing Province's promotion of the Jeju Global Education City is also likely to position the island as a leader in international education. Plans are also underway to incorporate environmental education at the secondary and post-secondary levels.

Business Corporations

Following the sustainable tourism guidelines of the Environmental Ministry of Korea and the Jeju Special Self-Governing Province, the corporate sector has transformed Jeju as a major international tourism location. Jeju's tourism industry has done a tremendous job in promoting Jeju as a premier tourist destination for conventional vacation tourists who are attracted by the pristine beaches; eco tourists who come to enjoy the ecological treasures such as Mount Hallasan, Olle trails, lava tubes, etc.; cultural tourists who are served by a plethora of museums, cultural attractions, and folk village. The tourism industry has also promoted Jeju as a prime destination of corporate and other conventions.

The tourism industry has adopted culturally appropriate marketing strategies that support and celebrate Jeju's rich cultural heritage. Featuring the endearing images and statues of Dolharubang as a tourism promotion logo and branding is a good example of this.

The NGO Sector

For an island city with a population of slightly more than half a million people, Jeju has a vibrant NGO sector. Especially Jeju's environmental NGOs strive to advance environmental awareness among residents and visitors, and promote civic engagement for the citizens of Jeju to participate in overall environmental policy and project implementation processes. Such activities have transpired into two broad roles for environmental protection: 1. the role of a pressure group to government and business enterprises; and 2. the role of an educator to citizens in order to increase awareness. Specifically, the former covers as issue generator,

information provider, alternative policy provider, and monitor, while the latter covers as provider of environmental education through teaching, distribution of printed material, campaign, etc.

Validation of Jeju as a Global Environmental Hub: The IUCN Process

The rise of Jeju as a Global Environmental Hub has been validated by the World Conservation Congress held in Jeju in September 2012 through two events organized by IUCN. One was through the workshop on 'The Promotion of World Environmental Hub as a Model City in Jeju and the Development of Its Evaluation and Certification System', the other one through the Motion 162, 'The Development of an Evaluation and Certification System for World Environmental Hubs' submitted by Jeju Special Self-Governing Province.

The speakers and discussants in the workshop drew conclusions that 1) the promotion of world environmental hub is significant and valuable, 2) Jeju is a suitable region to promote the project as a model city, 3) if the project is promoted jointly together with Jeju Government, the Ministry of Environment of the Republic of Korea, and IUCN, the project will be more significant and valuable.

The Motion 162 has been adapted as a resolution in the General Assembly of IUCN. The main contents having been adopted include: 1) Jeju is an ideal location for launching the endeavor since several steps have already been taken towards setting up an environmentally sustainable habitat; 2) Request to the Director General of IUCN, with assistance from organizations with expertise in developing certification systems, such as the International Standards

Organization (ISO), and with support from IUCN Members, Commissions and the Secretariat, to work on the development and implementation of an evaluation and certification system for *World Environmental Hubs* 3) Further request to the Director General to convene a Working Group on *World Environmental Hubs* composed of IUCN Members, relevant Commission Members and other constituents such as national and local government organizations/representatives; and 3) Urge the Director General to host the first meeting of the Working Group in Jeju at the earliest opportunity and within available resources, together with the Government of the Republic of Korea and the Government of Jeju Special Self-Governing Province in order to prepare the concrete long-termed roadmap and practical programmes for the Evaluation and Certification System for the establishment of *World Environmental Hubs*

Future Directions

During the past decade, there were several attempts to develop environmental performance standards for cities by social scientists, natural scientists, local governments, and environmental NGOs. However, very few of these standards have been accepted worldwide for practical applications of sustainable development. Extrapolating from existing good environmental indices such as Siemens' *Green City Index* that are developed on scientific foundations, and incorporating valid recommendations from environmental researchers and practitioners, a new set of indices need to be developed to measure and rank environmental hubs. Continuing on its attempts to stage global environmental gatherings, and to establish the World Environmental Hub

Network, Jeju can host forums of urban environmentalists to come-up with a practical assessment process to measure and highlight successes of cities towards becoming environmental hubs. Such assessment process should have environmental benchmarks, performance measures and indicators of success that are meaningful and conducive to cities both in developed and developing countries.

In order to achieve its goal of a World Environmental Hub status, Jeju Special Self-Governing Province is promoting 1) institutional strategies, 2) supplementation of its existing master plan, and 3) restructuration of existing social system. The first includes the promotion of this project on a joint base with IUCN and the Ministry of Environment of the Republic of Korea, establishment of head office of world environmental hub promotion in Jeju Governmental organization, establishment of world environmental hub division in the Ministry of Environment of the Republic of Korea, and enactment of world environmental hub special law by the National Assembly of the Republic of Korea. The second is considering collaborations with the members of IUCN commissions, domestic experts, and consultants who will be recruited from overseas. The third is for improving the effectiveness and efficiency of the master plan through the restructuring of exiting socio-economic system to a new one focusing on maximizing the ecoefficiency and environmentally friendly behavior.

Cities in developing countries face the daunting task of reversing environmental decay while balancing the pace of their urbanization. However, if proper policies and implementation towards sustainable development (learned from environmental hubs) are in place, these cities also can gradually move to protect their environment,

thereby contributing to the protection of global environment.

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