

BEYOND WILDLIFE HABITAT:

socio-economic benefits of greenways as pillars of the green economy

RESEARCH STATEMENT

Cities and municipalities can often make the case for greenways and biodiversity corridors based on qualitative benefits, such as recreation and biodiversity. However, existing research on the social or economic benefits of this land use strategy may provide evidence of more quantifiable benefits related to jobs, operational savings and revenue. Compilation and dissemination of this research in city-relevant format can lead to better informed land use policies, increased implementation and greater overall impact.

BACKGROUND

The interface between nature and the built environment is an urban design challenge. As natural habitat is converted to developed spaces for housing, transportation and industry, critical ecosystems can be degraded or destroyed and the result often leads to points of conflict along the human-nature interface. The opportunity to better manage the intersection between the built environment and nature is becoming a priority in city planning. However the current understanding of costs vs. benefits has yet to elevate greenways from a consideration to a policy requirement.

While the body of research on the environmental benefits of large-scale greenways, such as wildlife corridors, is extensive, it does not fully consider the incentives for city planners or present evidence for policies in a way that make this design strategy imperative. The socio-economic case for greenway planning is evident in research related to ecosystem services in global environmental forums but it has yet to be integrated into the urban design discourse.

Current research indicates that social and economic benefits may provide strong incentive for municipalities to adopt greenways as part of sustainability strategies. These incentives may be more compelling than those currently conveyed in city strategies and could lead to more stringent planning policies that prioritize greenways. This paper intends to consolidate findings towards the socio-economic argument in a manner that is relevant to the planning objectives of cities.

The case for integrating greenways into urban planning is most often approached from an environmental perspective with goals related to biodiversity, water, soils and other nature-related priorities. The environmental benefits of greenways are typically more quantifiable than studies related to socio-

economic aspects. While an important aspect of urban design strategies, this focus tends to overshadow socio-economic benefits and present them in a more qualitative manner.

In terms of urban biodiversity the Curitiba Declaration on Cities and Biodiversity (2007) affirmed the importance of biodiversity within cities, signalling the need “to integrate biodiversity concerns into urban planning and development, with a view to improving the lives of urban residents . . .” {...}Natural areas are fragmented. Indigenous fauna are marginalised and extirpated. Hydrologic cycles are irrevocably altered while impervious surfaces increase. Productive soils, centuries in the making, are contaminated, compacted, and/or removed.¹

It is generally accepted that the integration of nature into urban settings can increase the quality of life and bring desirable results such as healthier lifestyles. Economic aspects are often related to tourism, recreation and property values.² These can be considerable but typically apply to individuals or businesses and not the city itself. Additionally, the environmental benefits and secondary social and economic benefits, such as job creation and revenue, have only provided limited incentive for city planning strategies to incorporate greenways and the adoption of greenways as policy is still limited.

The argument for protecting biodiversity and reducing costs related to habitat loss are quantified in statistics about wildlife conflicts along transportation lines. According to the National Wildlife Federation, a vehicle hits an animal at least every 26 seconds on U.S. highways resulting in a threat to vulnerable species populations.³ Additionally, according to the National Highway Traffic Safety Administration, \$1 billion annually in property damage and cause an average of 165 human deaths. However, these types of statistics are often used by proponents of wildlife protection rather than as an argument for sustainable cities. In other words, saving money (and lives) is an argument that city planners can use to advocate this ‘green’ strategy.

The case for greenways based on environmental concerns alone, or at least as the primary justification, has not led to adoption of this design strategy at an effective macro-scale – a scale that allows contiguous greenway space beyond the boundaries of cities, regions or even states. A change in focus towards the socio-economic benefits of greenways could reveal indisputable evidence that greenways are central to

¹ Connery, Kevin. *Biodiversity and urban design: seeking an integrated solution*. 6/15/09. Journal of Green Building V4 N2.

² United Nations Environment Program (UNEP) website. Accessed 10 February 2012.
<http://www.unep.org/greeneconomy/AboutGEI/WhatIsGEI/tabid/29784/Default.aspx>

³ National Wildlife Federation website, www.nwf.org/wildlife/what-we-do/wildlife-conservation/wildlife-corridors.aspx, accessed 16 January 2012.

successful urban design, thus furthering the uptake and having greater influence on planning policy.

SIGNIFICANCE

Most often, sound strategies for greenway development are found in cities that are well established and economically stable. Increased dissemination of the socio-economic benefits of greenways could play a significant role in city revitalization efforts and create more opportunity for nature connections that cross municipal and state boundaries. This approach intends to promote greenways as foundational elements of sustainable development rather than only as mechanisms to improve quality of life or protect nature.

In this way, greenways can become an essential component of the ‘green economy’ - one that results in improved human well-being and social equity globally, while significantly reducing environmental risks and ecological scarcities.⁴ Within this broader scope, greenways can contribute towards solutions of global concerns while providing direct financial benefits to the local economies of cities in both developed and developing countries. This widened scope also opens opportunities for cities to identify new incentives for revenue related to global markets, such as ecosystem services, for example provision of clean drinking water, and carbon trade.

CITY SURVEY

A survey of three prominent US cities – Denver, Philadelphia and San Francisco - revealed that each has an extensive greenway plan. While promotion and PR of each initiative highlighted the recreational and environmental benefits of the strategies, research behind the plans revealed strong underlying economic incentives for implementation.

Denver’s South Platte River Master Plan identifies project goals are aimed towards qualitative benefits such as connecting neighbourhoods, enhancing safety and augmenting existing parks, among others. Philadelphia’s North Delaware River Greenway is an example of a ‘21st century revitalization project’⁵ that touts water quality, recreation and safety as benefits. In San Francisco’s Blue Greenway, guiding principles include: identity, health and environment, connectivity and economy and development.

⁴ United Nations Environment Program (UNEP) website. Accessed 10 February 2012.
<http://www.unep.org/greeneconomy/AboutGEI/WhatIsGEI/tabid/29784/Default.aspx>

⁵ Greenways website. Accessed 11 February 2012. <http://www.greenways.com/northdelaware.html>

Each city used comprehensive studies to determine cost-benefits; of these the most explicit was found in Philadelphia. The project analysis showed that a greenway strategy could increase local and state tax income:

Table 5.1c: Local Tax Impacts of Private Development (\$ Millions)

Local Taxes	"As Is Riverfront"	Borrowed Landscape	Greenway
Wage and Earnings (Philadelphia)	\$ 7.30	\$ 8.42	\$ 12.92
Sales (Philadelphia)	\$ 0.72	\$ 0.83	\$ 1.27
Business Privilege (Philadelphia)	\$ 4.26	\$ 4.92	\$ 7.54
Total	\$ 12.28	\$ 14.17	\$ 21.73

Figure 1: Local tax impacts of Philadelphia's North Delaware River Greenway.

<http://www.drcc-phila.org/reports/NDR-Chapters/NDR-Chapter%204CostBenefit.pdf>

Similar gains were projected at the state level:

Table 5.1d: State Tax Impacts from Private Development (\$ Millions)

State Taxes	"As Is Riverfront"	Borrowed Landscape	Greenway
Personal Income	\$ 18.55	\$ 21.39	\$ 32.82
Sales and Use	\$ 17.23	\$ 19.87	\$ 30.48
Corporate Net Income	\$ 4.46	\$ 5.14	\$ 7.89
Capital Stock and Franchise	\$ 2.90	\$ 3.35	\$ 5.14
Total	\$ 43.14	\$ 49.75	\$ 76.33

Figure 2: State tax impacts of Philadelphia's North Delaware River Greenway.

<http://www.drcc-phila.org/reports/NDR-Chapters/NDR-Chapter%204CostBenefit.pdf>

These and other findings projected that Philadelphia could expect an annual return on the greenway project investment equal to or near three times that of current annual return.

The expected quantitative benefits to the city were related to:

- Increased capital investment
- Increased land values adjacent (to greenway)
- Increased residential / commercial investments
- Increased commercial business activity
- Increased city fiscal (tax) revenues
- Increased income, employment

As a case study, Philadelphia's greenway is an example of how cities can utilize 'a valuable and virtually untapped resource'⁶ in its natural capital to stimulate economic growth. This project used an

⁶Delaware River City Corp website. Accessed 12 February 2012. <http://www.drcc-phila.org/plans.htm>

economically viable approach to transform industrial land into a greenway that supports not only environmental and recreational benefits but also delivers measurable benefits to the local economy. The scope and research from Philadelphia indicate that greenways not only provide qualitative benefits to residents, but also have direct socio-economic benefits to the city overall.

SHARED LEARNING

Like many successful sustainable initiatives, greenways can be organized under common guiding principles and goals. Turning the experience of successful existing greenway initiatives, such as the one in Philadelphia, into practical toolkits for cities with similar conditions could provide step-by-step guidelines for other municipalities to not only make the case for greenways but have implementable tools. Expanding the understanding of the benefits of greenways beyond environment and recreation is a first step.

Under current understanding, cities with limited resources may consider greenways to be a luxury that can be addressed only after pressing social and economic issues are remedied. With better propagation of the practical (quantitative) benefits, and clear guidelines for developing greenway strategies, cities that may not consider greenways feasible could find both incentives and models based on the examples of other municipalities.

The recent economic crisis has left many cities in the U.S. financially unstable and resulted in a national housing market collapse. While legislation and other measures can alleviate the economic issues, cities where the effects are most detrimental could consider additional innovative measures to turn conditions around. For example, Detroit, Michigan, is a city with ongoing high unemployment and projected property values still heading downwards. Detroit property values are already amongst the lowest in the nation and the city experienced a 13% decrease in home values during 2011.⁷ Cities like Detroit, where greenways and similar investments are often considered a luxury, could use the examples from the (social and economic) success of greenway projects in other municipalities as opportunity to create long-term social and economic benefits to the city and occupants.

⁷ National Association of Realtors website. <http://www.realtor.org/research/research/reportsstatisticc>. Accessed 22 February 2012.

INNOVATIVE INCENTIVES

In addition to conventional benefits associated with greenways, the broader global sustainability discourse holds opportunity for cities to find innovative incentive programs. Worldwide, the issue of carbon mitigation has led to numerous programs that aim to increase or preserve green space. In China, the city of Beijing has started a project to develop carbon accounting and monitoring of urban greeneries as a foundation for, among other objectives, the potential carbon market. Through a decade of studies involving low and high-tech methods, the city has established the 'Provisional Regulations of Carbon Accounting & Monitoring System for Urban Greeneries in Beijing'.⁸

The project serves as another example for cities worldwide to consider the direct, measurable economic benefits green space as a way to benefit from access to larger, global initiatives towards mitigating climate change. Similar projects related to climate change and carbon mitigation, such as the United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (UN-REDD), hold untapped potential for cities to implement local strategies that provide local and global benefits.⁹ This potential is particularly suited to countries in the Global South where emerging markets and turning to sustainability as a foundation for a stronger future under a just, green economy.

SUMMARY

Greenways are touted for their recreational benefits, as well as their contribution to nature protection. For cities with limited resources, these incentives may be too abstract to justify as a priority. However, behind successful greenway initiatives is tremendous data that can be used to promote the socio-economic benefits of this sustainable planning strategy. The more subjective attributes are complemented by concrete, quantifiable financial incentives that can lead to greater uptake on a larger scale. Additionally, in today's global economy, cities working toward broader sustainability goals can find access to new and innovative markets that can increase revenue potential.

⁸ Beijing, China website. Accessed 10 February 2012. <http://www.bcs.gov.cn/english/projectview/12697>.

⁹ UN-REDD programme website. Accessed 21 February 2012. <http://www.un-redd.org/>.

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1) **Farr, Douglas. 2008. Sustainable Urbanism: Urban Design with Nature.**

Commentary from the Environmental Law Institute highlights key issues addressed by biodiversity corridors, as well as new research findings and the role that local, country and state planning can play the development of effective biodiversity corridors. The reference provides good overview, although very general and brief, on important aspects of well-planned landscapes. Presented within the context of the book's overall scope, the information is well linked to other sustainability issues. Useful to my research in the scope, which is general enough as an introduction to key issues and factors in planning. Also provides good benchmarks for land use planners and identifies what experts to involve and when.

2) **Gaston, Kevin J. (edited by). 2010. Urban Ecology.**

This book provides an overview on urban ecology, including the impact of the built environment on ecosystems and ecosystem services. As a research reference for the topic of wildlife corridors, it is a good resource for understanding the human-nature interface and the issues (conflicts) that need to be considered at this unique junction. Towards my research topic and paper, this reference provides case studies and examples that outline the successes to date and the problems outstanding.

3) **Harvard University Graduate School of Design. (Edited by) Mostafavi, Mohsen with Doherty, Gareth. 2010. Ecological Urbanism.**

This reference is a comprehensive look at the multitude of variables that define ecological urbanism. In whole, it provides inspiring examples of ecological approaches to design and planning challenges in today's city and the city of the future. My assessment of this reference is its bible-like compilation of what we can influence on sustainable urbanism and a useful collection of case studies. For my research, this book serves as inspiration for how to identify a problem and strategy. It is imaginative and presents a cross-disciplinary perspective that speaks to the need for collaborative approach to sustainable design issues.

4) **Hellmund, Paul Cawood, and Smith, Daniel Somers. 2006. Designing Greenways: Sustainable Landscapes for Nature and People.**

This reference addresses the link between ecological science and land use planning / design. As a practical guide (for scientists, planners, etc), it provides more in-depth details on aspects of greenway design including two chapters on wildlife (and riparian) corridors. While broad in scope for a limited research project, the principles and approaches presented provide useful insight to the challenges and some solutions in greenway design. As the most in-depth reference towards my research, this reference is useful towards narrowing the research topic and also providing insight on available methodology. (*Peer review: Nicholas Sakellariou <nikolas@berkeley.edu>, PhD student, Department of Environmental Science Policy and Management, University of California-Berkeley. Electronic Green Journal, Issue 27, Fall 2008.*)

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