Planning the Resilient Rural Community - The Case for Using Green Infrastructure (GI) as a Foundation

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Changing Lives Improving Life

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Outline

- Definition of GI Planning – elements & conceptualization
- Examples of GI Planning – historical examples and current applications
- GI Planning opportunities & challenges in building resilient rural communities
- Recent GI Planning research in Ont

What is GI planning?

- A form of land use planning based on a foundation integrating natural elements (both real/artificial) into linked environmental networks; these networks in turn provide multi-functional benefits to both human and natural environment communities.
- It recognizes environmental features in an area and turns them from being "development constraints" for human activity into community assets.

What are example elements contained within a GI planning framework?

Local, neighbourhood and village scale	Town, city and district scale	City-region, regional and national scale
• Street trees, verges and hedges • Green roofs and walls • Pocket parks • Private gardens • Urban plazas • Town and village greens and commons • Local rights of way • Pedestrian and cycle routes • Cemeteries, burial grounds and churchyards • Institutional open spaces • Ponds and streams • Small woodlands • Play areas • Local nature reserves • School grounds • Sports pitches • Swales, ditches • Allotments • Vacant and derelict land	• Business settings • City/district parks • Urban canals • Urban commons • Forest parks • Country parks • Continuous waterfronts • Municipal plazas • Lakes • Major recreational spaces • Rivers and floodplains • Brownfield land • Community woodlands • (Former) mineral extraction sites • Agricultural land • Landfills	• Regional parks • Rivers and floodplains • Shorelines • Strategic and long distance trails • Forests, woodlands and community forests • Reservoirs • Road and railway networks • Designated greenbelt and strategic gaps • Agricultural land • National parks • National, regional or local landscape designations • Canals • Common lands • Open countryside

Neumann et al., 2012

Illustrative Example –
A Southern Ontario Community with Typical GI Elements

GI Conceptual Framework for Planning Healthy Communities

Tzoulas et al., 2007 as adapted

GI Planning – An Introduction

- An evolutionary construct . . . The Garden City

GI Planning – Some Historical Community Form Plans

Copenhagen Green Fingers Plan 1947

Melbourne 2030 – Planning for Sustainable Growth Plan

GI Planning in Europe

- Significant literature on the subject. . . Strong EU interest in biodiversity protection/climate change impacts on communities

Holistic GI Example
- Northwest England

1.0 What is Green Infrastructure?

DEFINITION

GREEN INFRASTRUCTURE IS THE REGION'S LIFE SUPPORT SYSTEM – THE NETWORK OF NATURAL ENVIRONMENTAL COMPONENTS AND GREEN AND BLUE SPACES THAT LIES WITHIN AND BETWEEN THE NORTH WEST'S CITIES, TOWNS AND VILLAGES WHICH PROVIDES MULTIPLE SOCIAL, ECONOMIC AND ENVIRONMENTAL BENEFITS.

Components

In the same way that a transport system is made up of a network of roads, rail, airports etc. green infrastructure has its own physical components. These include:

Woodlands
Street Trees
Open Spaces
Lakes
Waterways
Open Countryside
Fields
Hedges
Ponds
Wildlife Habitats
Parks
Private Gardens
Village Greens
Open Spaces
Degraded land
Moorland
Agricultural Land
Allotments, community gardens and urban farms
Grassland and Heathland
Cemeteries, churchyards and burial grounds
Outdoor sports facilities
Coastal habitat

Holistic GI Example - UK Planning Policy Advocating for GI

- *Policy 99 requires that local planning authorities use* ***green infrastructure*** *as a tool in providing adaptation measures to climate change.*
- *Policy 114 requires planning authorities to set out a strategic approach in their plans, to plan positively for the creation, protection, enhancement and management of networks of biodiversity and* ***green infrastructure****. . .*
  - ***Green infrastructure*** *is defined as: A network of multi-functional green space, urban and rural, which is capable of delivering a wide range of environmental and quality of life benefits for local communities.*

Source: UK 2012 National Planning Policy Framework

GI Planning in the United States

- A significant interest in 'low impact development' storm water management forms (EPA Clean Water Act interests)
- Some plans directed at defining growth/no-growth areas

Benedict & McMahon, 2006

US - GI Plans for Various Jurisdictions

Figure 5 – Green Infrastructure Plan – Hope Township

GI Examples in the USA – State of Maryland Smart Growth Planning

Best Practices

The Plan for the Valleys

The Plan for the Green Spring and Worthington Valleys in Baltimore County has been widely recognized as a seminal model for sustainable growth management. Baltimore County was one of the first jurisdictions in the country to use urban growth boundaries and conservation design as a method for controlling sprawl and directing growth away from sensitive dscapes. The results include ource conservation zones designed rotect farmland and natural ources, more than 50,000 acres and in permanent protection ler conservation easements, d the creation of an urban-rural narcation line restricting water d sewer service to urban areas. The n by Wallace-McHarg Associates w WRT) received a National nning Landmark Award from the erican Planning Association, but county deserves recognition for tained implementation efforts.

The Plan for the Valleys

US - GI Plans for Various Jurisdictions

Lancaster County Green Infrastructure Plan

GI Planning in Canada

- A few examples

TVO Agenda website

Recent Research on the Topic of GI in Ontario

- Notion of the utility of a GI Planning approach informed by:
  - New Economic Activity in Rural Ontario http://waynecaldwell.ca/Projects/greeninfrastructure.html
  - Healthy Rural Communities http://ruralhealthycommunities.ca/
  - Green Jobs http://workgreen.ca/

Elements that are Components of a GI Planning Framework

Innovative Practice Survey Result – Innovative Use of GI Practices in Rural Ontario – OMAFRA

Nature Heritage Systems & Open Space Networks Planning

Artificial Wetlands for Stormwater Management – Rural Nonpoint Sources

Maitland Valley Conservation A

Artificial Wetlands for Stormwater Management – Settlement Point Sources

Staten island bluebelt
http://www.nyc.gov/html/dep/html/stormwater/bluebelt.shtml

Rouse & Bunster-Ossa, 2013

Artificial Wetlands for Wastewater Treatment

Cobalt, Ont. Constructed Wetland - www.cobalt.ca

Floodplain Riparian Buffers

Maitland Valley CA Stormwater infiltration and remediation galleries

Private Yards & Community Gardens

Strategic Tree Placement for Windbreaks, Living Snow Fences, Shading

Active Transportation along Greenway Networks

Natural Screening & Streetscape Beautification

Using Nature Assets for Tourism & Economic Development

Carbon Sequestration & Community Development

- The Munsee-Delaware First Nation Tree Plantation example

http://www.forestcarbonportal.com/project/munsee-tree-corporation

Environmental Stewardship Funding

- ALUS/Ducks Unlimited programs being created with multiple benefits (leveraging scarce funding to provide environmental habitat)
- Environmental Farm Plan implementation

Conclusions

A GI Planning framework is possible . . .

- Evidence is available from other parts of the world
- Important to link individual GI elements together as the "whole is greater than the sum of the parts" in forming a resilient community foundation

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