

## URBAN ECOLOGY ELEMENTS

Now Emeritus Professor Bill Perks (University of Calgary) and Assoc Prof David van Vliet (University of Manitoba), then of the Faculty of Environmental Design, University of Calgary, in 1993 published extensive research into existing and planned projects in [Urban Ecology/Sustainable Design/Community Design](#) in over 30 Scandinavian projects. Amongst other things, they identified over 50 sustainability applications, described 5 cases in detail, discussed public policy initiatives, development industry responses and community contexts, reporting on interviews with all concerned and presenting large amounts of complex information in tabular form. These projects were initiated as demonstrations, experimental, and driven by house seeker groups, municipal administrations, private builders or partnerships of these.

**The Canadian Mortgage & Housing Corporation** financially supported and published their work, now unavailable. Two exceptionally useful reports were “Assessment of Built Projects for Sustainable Communities” (the Scandinavian work, 1993) and “Research Report Consumer Receptivity to Sustainable Community Design” (Calgary based, 1996).

An overview of the elements of Scandinavian-style [Urban Ecology](#) have been put together by Associate Professor van Vliet, can be found on the University of Manitoba Architecture Department [Sustainable Community Design](#) site under [Design Features](#), and are comprised of:

### BUILDING ECOLOGY:

#### **Integration of environmental and technical systems:**

- [Indoor air quality](#)
- [Natural ventilation](#)
- [Local materials](#)
- [Daylighting](#)
- [Full spectrum lighting, light balancing](#)
- [Electrical climate \(reduced static charge, shield electromagnetic fields\)](#)
- [Directives for street & building solar/wind orientation](#)
- [Atria - Solariums](#)

#### **Appropriate Building Materials:**

- [Recycled building products](#)
- [Low/non-toxic materials](#)

#### **Building Process Organized Towards The Ecological Cycle:**

- [Low embodied energy materials](#)
- [Maintain air quality](#)
- [Pre-fab modular components](#)

#### **Flexible building form:**

- [Expansion / alteration / adaptability](#)
- [Multipurpose rooms](#)
- [Smaller unit size](#)
- [Low rise cluster](#)
- [Self-reliance / appropriate technology](#)

### LAND USE/LANDSCAPE ECOLOGY

## **Land and Built Form Planned / Developed to Support Vegetation / Wildlife:**

- Introduction
- Predesign analysis considers local resources
- Preservation of buildings and cultural environments
- Protection of site nature-ecosystems
- Retain distinctive features of site
- Locate functions according to local climate
- Minimum grading and disturbance
- Undertaking environmental restoration
- Treatment for climate control, establishing micro-climates
- Plant covers walls and roofs
- Enhancements, tree planting-forestry
- Use hardy native plant species
- Minimize long term maintenance
- Unifying/space shaping elements
- Natural water courses
- Wetland habitats
- Protection of ground water
- Preserve agricultural soils
- Biological controls
- Access to local parks/rec./open areas
- Paths for recreation walk/ski/cycle
- Safe playgrounds

## **Food:**

- Neighbourhood gardens
- Greenhouses
- Community Agriculture
- Household livestock
- Urban farms
- Cold storage
- Nutrient flows- solid/liquid wastes as fertilizer
- Organic techniques

## COMMUNITY DESIGN

## **Culture, Climate, Landscape, Function:**

- Residential Intensification
- Reduce sprawl / limit to marginal land / serviced land
- Streetscapes / space between buildings
- Sense of identity and place
- Condensed lot
- Related clusters
- Mix of housing size and type
- Shared Facilities / Common Buildings
- Social spaces

### **Inclusive Community - Diversity:**

- Mix of Households
- Mix of tenancy type

### **Basic Household Needs:**

- Mix of uses in the area
- Universal Accessibility

## ENERGY

### **Heating/Cooling/Ventilation:**

- District Heating
- Energy efficient cluster of buildings
- Energy storage
- Area zoning, cold buffer
- Heat exchange - water
- Heat exchange - air
- Efficient stove/fire
- Thermal mass

### **Electricity:**

- Energy efficient appliances
- Energy efficient lighting
- Energy efficient outdoor lighting
- Photovoltaics
- Co-generation
- Metering

### **Renewable Energy Sources:**

- Passive solar heating
- Active solar heating air/water
- Wind power
- Geothermal
- Waste wood
- Bio mass
- Local hydro
- Ground/water heatpump

### **Conservation:**

- High insulation
- Tight construction
- High performance windows

## WATER & SEWAGE

### **Home Water Management:**

- Water Saving Appliances
- Waterless toilet
- Grey water circuit and use
- Rain collection and use
- Water metering

### **Community Water Management:**

- Storm water retention
- Water treatment
- Filter/release to groundwater
- Permeable surfacing
- Constructed wetlands

## TRANSPORTATION

### **Reduce Transportation Infrastructure:**

- Street Design
- Reduce Street Width (ROW)
- Reduce and Consolidate Parking

### **Improve Transportation Options:**

- Public Transportation
- Pedestrian Network
- Bicycle Network
- Shared transportation
- Universal Access

### **Reduce Impacts:**

- Traffic Calming / Reconfiguration
- Alternative / Electric Vehicles
- Minimize Noise Disturbance

### **Alternatives to Commuting:**

- Telecommunications Network

## WASTE & RECYCLING

### **Re-use and Recycling:**

- Household separation/compost
- Separation area in local community
- composting near unit in area
- material storage in area
- building materials sorted / re-used
- appliances/bikes etc. repaired and re-used

### **Waste Minimisation:**

- Bulk purchase
- Shared equipment - (tools/appliances)
- Product use controls
- Toxic material collection
- Local biological sewage treatment

## COMMUNITY MANAGEMENT

- User Participation/Collaboration In Planning And Design:
- Resident Management / Maintenance
- Environmental stewardship
- Local council authority
- Housing associations
- Community owned / operated services
- Community land controlled (trusts)
- Community Networks
- Workshops / experimentation (to promote SCD)

## ECONOMIC VIABILITY

- Small scale enterprise / local employment
- Home office
- Employment and Business Enterprise Within the Community
- Community-Based Enterprise
- Economic Accounting of SCD Projects
- Role of demonstration programs
- Full Cost Accounting