

Ecosystems and Sustainable Human Settlements

Notes from September 15, 2009, Study Session

Presenters: Professors Emanuel Carter (landscape architecture) and Richard Smardon (environmental studies), SUNY-ESF

Emanuel Carter:

Some implications of living in sustainable human settlements:

- Use less energy and less acreage per person—Sometimes even those who believe they are living “lightly” on the earth have a surprisingly large carbon footprint.
- Share resources more equitably with others on the planet.
- Deal with international trade in carbon-neutral way.
- Rely more heavily on public transit, walking, biking.
- Live in more compact patterns—Extremely important factor. It’s very difficult to compensate for long commuting patterns. Even if we adopt other sustainable habits, commuting long distances will far outweigh the good we do.
- Engage in urban and rural design as if human settlements are an integral part of the ecosystem. That changes the way cities, villages and rural landscapes behave and look, and ensures that everything interacts well with one another.
- Embrace stewardship—We share in something larger than ourselves.
- Use tax dollars more efficiently—Fewer problems with storm water runoff, air quality, etc. Allows tax revenue to be used in other ways—enhancing schools, ie.
- Re-establish the value of place identity and function. In sustainable human settlements we invest ourselves in a sense of *place* rather than a sense of *real estate*.

Studies show how much “work” is done by a healthy ecosystem. Among the findings:

- Urban forest canopy has substantial value in terms of air pollution removal and carbon storage and sequestration. Chicago urban forest study revealed that trees in Chicago were responsible for removing 6,145 tons of air pollutants (air-cleansing value of \$9.2 million). They also sequestered 155,000 tons of carbon per year.
- Forest canopies also generate savings in residential heating and cooling costs, which in turn reduce carbon emissions from electricity generating plants. Shade that lowers temperatures and reduces wind speed cuts heating and cooling costs for residents between 5 and 10 percent per year.
- Given the cost of investing in trees, the long-term benefits are worth twice the cost of the investment.

Southwest Urban Forestry study in a three-block area of Syracuse a few years ago: Existing canopy cover was 17 percent. Projected 25 percent canopy and found that it barely registered a change. Increased again, and found that residents were fine with 50 percent canopy but would not tolerate 75 percent. 50 percent canopy in the three-block area created a net uptake per year of 266 tons of particulate matter—extended to the overall neighborhood, it would mean an annual carbon storage rate of 13,300 tons. “Because forest is the default condition, it’s very simple to achieve these levels of working landscape.”

City planning matters—doing the infrastructure work is part of a larger approach and attitude. Good example: Vitoria-Gasteiz, Spain—Very modern and vibrant city. Has a green belt, community gardening. Compared to Syracuse—per person, per year—they save dramatically on water use, electricity and gas.

This illustrates the power of planning, urban design, and environmental management as integral parts of the ecosystem—They're doing the possible.

How to move goods: Best way, in terms of carbon impact, is water or rail. Trucking is the worst way.

All these tasks are within the realm of the possible. Rational people are already making these things happen. We have the energy, talent, resources—and hopefully will discover the will—to do some of this in Onondaga County and the rest of New York.

* * *

Richard Smardon:

Took a comparison look at what Europe and U.S. are doing in terms of sustainability planning.

Agenda 21:

- Came out of the 1992 Rio conference—Relates to the development and support of sustainability from social, economic, and environmental perspectives.
- Chapter 28 of Agenda 21—Focuses on local planning.

Agenda 21 efforts are MUCH more successful in Europe: More than 6,000 cities, towns, and villages have local Agenda 21 implementation plans. In U.S. and Canada, there are only about 100. Why?

- They created the Aalborg Charter—Lays out step-by-step process that local communities can use for sustainability planning.
- Strong support system of organizations that have been around consistently for 20-30- years.
- U.S. lacks continuity in support programs and technical resources because they tend to start and stop with different administrations.
- Europe is more used to intentional planning, maximizing the use of its spaces.

Other programs beyond Agenda 21—More than 500 cities belong to Cities for Climate Protection, including Syracuse. CCP assists cities in adopting policies and implementing quantifiable measures to reduce local greenhouse gas emissions, improve air quality, and enhance urban livability and sustainability.

Why is urban biodiversity important?

- Protects species
- Protects habitat
- Protects genetic diversity

Green spaces are about more than aesthetics—they perform functions. Urban green-space assessments can measure the effects of green spaces on:

- Air quality
- Watershed protection
- Habitat
- Food (particularly important in developing countries)
- Fiber

We already have some examples of what green spaces do for cities, and we can calculate their economic worth. In Syracuse, a study three years ago examined the Rand Tract for air quality—amount of carbon sequestration is in the tract’s trees. Important data source.

Some good news—

- Chicago Wilderness Biodiversity Recovery Plan—Created to protect habitat and species.
- U.S. is strong in research—Need to move into implementation.
- U.S. Forest Service at ESF has conducted studies using the Urban Forest Effects (UFORE) model—sampled vegetation on 100 plots around city, looking for connections to climate and other environmental benefits. Provides an important data set of information. Tells us, for example, which tree species are better at storing carbon, removing air pollutants, etc. In Syracuse, Rand Tract study tells us which species of trees do best at these multiple functions—study highlights 31 best trees. We can tell specific cities which tree species optimize such functions as carbon storage, water uptake, air quality maintenance, etc.
- Micro farm movement—raising food in cities and community-based agriculture
- Wildlife habitat programs
- Development of North American greenways—connecting habitat, transportation, aesthetics, air quality, water quality, urban climate amelioration. Most of this is being done by private land trusts rather than government groups. Private land trusts playing lead role in buying up open space for the last 20 years around cities and suburbs.
- North American waterway restoration—lots of creek restoration around country. Part of greenway efforts.

Conclusion: Agenda 21 is going strong in Europe while U.S. is struggling along. Not-for-profits and land trusts are doing much of the work in North America. There could be more local action on Agenda 21. We just have to use the resources we have and learn from other places. Urban sustainability planning can survive turnover in the mayor’s office because good ideas do outlive the mayor of the moment (ie., Denver/Burlington/Ithaca/University Park, Pa./Pittsburgh/San Francisco/Chicago) The best communities do good planning and can sustain it through changes in administration. We need to embed good ideas into the community.