Analysis and Design of Tools to Enable Sustainable Holistic Planning Systems in Non-Urban Community Contexts

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Background, Justification, Broader Impacts

"Good government is no substitute for self-government."[1] Gandhi's concern rings as true today as it did in 1920. Wicked problems such as climate and anthropogenic environmental change require systematic and transformational actions at many governance scales, including the local community. An approach to community action and decision making -- *sustainable holistic planning systems* (SHPS)-- attempts to do this work in ways that are "smart and connected." To date, however, SHPS have been applied mostly in densely urban or urbanizing contexts[2,3] and not in non-urban communities (i.e. peri-urban[4] spaces and rural small towns) for which Gandhi was advocating.[5] Our project seeks to assist in, and evaluate the implementation of, a non-urban community SHPS approach. In particular, we seek to integrate the goals of divergent and sometimes conflicting non-urban stakeholder groups into coherent sustainable community development priorities. Our initial partner community - the New York Olympic Region (NYOR), anchored by the village of Lake Placid, New York - is working to implement such a SHPS (the US Green Building Council's LEED for Communities (LFC) Program).

Non-urban communities number in the millions globally.[6] In the US, they comprise the largest amount of land area, account for most of the counties, contain the vast majority of agricultural output, and encompass spaces with varying degrees of environmental sensitivity.[7] Nevertheless, tax revenue, resources, and "smart planning" expertise tend to skew away from them toward places with greater population density. Indeed, most SHPS approaches have been geared to urban settings and tend to cast non-urban communities as residual or scenic backdrops to growing urbanism."[8] This presents significant challenges for non-urban communities that aspire to adopt SHPS.

Our project will contribute toward the development of theories and best practices of non-urban SHPS implementation. It will focus on: (i) single and comparative assessment of how well SHPS works in non-urban communities; (ii) creation of flexible best practice frameworks for a variety of non-urban community settings, and (iii) development of civic and community engagement methods that non-urban communities can use to include various stakeholder groups. In the NYOR, stakeholder groups include permanent and seasonal residents, tourists, and members of the global community, particularly permanent non-resident stakeholders. Although focused on the US Green Building Council's LFC program implementation in the NYOR, our study will inform research across a spectrum of non-urban localities throughout the world.

Research Methods and Experiment Design Approach

The research team will utilize and assess in a non-urban setting three well-known community and civic engagement approaches that promote citizen participation within the urban planning process: 1) Analytical Hierarchy Process (AHP) and Data Envelopment Analysis (DEA), 2) Economic Choice Experiments (ECE), and 3) Participatory GIS (PGIS). Both AHP and ECE will begin from a survey study that short-lists priorities (for instance, environmental quality, educational achievement, community health, or energy efficiency) relevant to community stakeholder groups. AHP will help identify stakeholder preferences for various sustainability objectives and will be especially useful when stakeholder priorities are heterogeneous, imprecise and difficult to quantify. When coupled with AHP, DEA is particularly useful because it addresses decision contexts where the performance outcomes might have mutual influence and groups responsible for implementing sustainability initiatives might emphasize those differently. By contrast, ECE will evaluate priorities using economic value and will assess trade-offs across priority areas through analysis of respondent choices. Through careful experimental design, ECE will allow derivation of an implied economic value for different possible priorities, which can then inform policy choices and justify implementation costs. PGIS is a more hand's- on approach than either AHP or ECE. In community workshops and surveys, community stakeholders will contribute their geographic knowledge to determine collectively valued spaces and potential strategic targets for SHPS activities. Accompanying community-training sessions for stakeholder groups and affiliated nonprofits on GIS technologies, should allow a wider array of community members to collaborate with 'expert' decision elites during the SHPS process.

Independently, each of these approaches helps communities determine policy priorities. Together, they allow us an opportunity to understand how the methods themselves might drive communities towards different solutions. To the extent that more than one of these approaches highlights some priorities, they will provide us with more confidence about the robustness of each approaches. In the end, the three techniques will each be applied to four classes of stakeholders (full-time residents, temporary non-resident stakeholders (e.g. visitors/tourists), permanent non-resident stakeholders (e.g. seasonal homeowners), and the global community) thus allowing the creation of a 4 x 3 matrix that highlights commonalities and differences across stakeholder groups and analytical approaches.

Our research also aims to develop a framework to help communities periodically assess the efficiency and cost-effectiveness of different efforts towards accomplishing the overall performance goals in SHPS. In NYOR, such assessment would suggest potential modifications to different LEED initiatives for greater cost-effectiveness over time.

The Test-Bed: LEED for Communities and The New York Olympic Region (NYOR)

In December 2016, the US Green Building Council (USGBC) introduced the LEED for Communities (LFC) sustainability planning and assessment system. This SHPS develops essential benchmarking goals in infrastructure, economic competitiveness, quality of life, environment, and public health within participating communities.[9] The New York Olympic Region (NYOR) chose LFC as a strategy for environmentally and economically sustainable development in 2018. NYOR itself is a unique non-urban multi-jurisdictional partnership consisting of the Village of Lake Placid, Town of North Elba, the Olympic Regional Development Authority, and the Lake Placid Central School District. It faces particular challenges created by high volumes of tourists and seasonal residents, a rapidly developing rental housing market, and the juxtaposition of agricultural and outdoor and winter sports activities. It is a unique yet optimal partner and place, in part because it represents a *most difficult* case study,[10] for rigorous investigation LFC effectiveness, and of our implementation agenda. The community has encouraged the research team to execute this study and has pledged strong cooperation and active collaboration. NYOR sees our team as a partner as they pilot and implement LFC. Through preliminary projects completed thus far, NYOR and our group already recognize the extent to which non-urban communities have different needs than their urban counterparts.

Expected Results/Outcomes

We anticipate that this research will lead to the development of a "toolbox" or "playbook" that other non-urban communities can use while implementing LFC or any other SHPS. This can have a substantial transformative effect, similar to the effect that *building sustainable rating systems* (e.g. LEED building ratings) have had globally in creating millions of jobs and hundreds of billions of dollars in GDP.[11] Further, the research will enable more analysis on SHPS systems in non-urban community contexts and enable places that see themselves as being "left behind" by smart urban planning and community development practices to develop effective self-governance systems that inculcate individualized, coherent, and sustainable communities.

Endnotes

1 Mahatma Gandhi, Young India (2 September 1920) p. 1. https://en.wikiquote.org/wiki/Mahatma_Gandhi.
2 Cocchia, Annalisa (2014). "Smart and digital city: A systematic literature review." In Smart city, pp. 13-43. Springer, Cham
3 Flory, Megan, Barber, Paul, Buck, Benjamin, and Ulrich-Verderber, Louisa, "Review of Available Smart Cities Literature in Non-Urban Contexts," Clarkson University, Forthcoming.
4 Peri-urban defines the transect of space between town and country. It is a rural-urban landscape interface or transition zone beyond the urban.
5 Backus, Erik, Bird, Stephen, Heintzleman, Martin, Mahaptra, Santosh, and Mosher, Ann (2019). "Best Practices for Implementation of Sustainable Holistic Planning Systems (SHPS) in the NY Olympic Region (NYOR)," Proposal and Presentation, Clarkson Ignite Fellowship Competition, 28 February 2019
6 Duany, A., & Talen, E. (2002). Transect planning. American Planning Association. Journal of the American Planning Association, 68(3), 245-266. doi:http://dx.doi.org/10.1080/01944360208976271
7 Source: Local Governments by Type and State: 2012 - United States -- 2012 Census of Governments, Table ORG002
8 Scott, Mark, Gallent, Nick, and Gkartzios, Menelaos (2019). "The Routledge Guide for Rural Planning," Routledge
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10 Eckstein, Harry (1992), "Regarding Politics: Essays on Political Theory, Stability, and Change", University of California Pres, Berkley and Los Angeles, CA, pp 157-160
11 Booz Allen Hamilton (2015). "Green Building Economic Impact Study," 8283 Greensboro Drive, McLean, VA 22108, September 2015