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## Green Infrastructure on Vacant Land: Achieving Social and Environmental Benefits in Legacy Cities

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'For a complete copy of the 2016 White Paper, email [newgi-contact@umich.edu](mailto:newgi-contact@umich.edu).'

### About NEW-GI

**NEW-GI** (*Neighborhood, Environment, and Water research collaborations for Green Infrastructure*) is a transdisciplinary research project that contributes to knowledge about green infrastructure in legacy cities by integrating research about water quality, community well-being, governance and ecological design. Involving community, government and academic collaborators, it produces evidence-based guidance for sustainably managing stormwater in ways that enhance landscapes and the lives of residents in Detroit and other legacy cities.



IMAGE CREDIT: K. SHABU  
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### Executive Summary

Research indicates that green infrastructure (GI) has potential to enhance neighborhood attractiveness, increase property values and improve the health and well-being of area residents. This makes GI a particularly promising strategy for addressing some of the social and environmental effects of population loss and infrastructure decay in legacy cities such as Detroit. In these cities, vacant land may create an opportunity for GI to be designed to manage stormwater and also to serve as attractive green spaces for neighborhoods. Achieving these benefits requires understanding the social dimensions of GI, and designing GI that reflects the needs and preferences of residents.

To support decision-making, this White Paper synthesizes scholarly literature related to three key factors affecting GI performance in legacy cities:

**1. How governance affects planning and implementation of GI on vacant property: Existing laws, regulations, policies and institutional arrangements typically do not adequately support the construction and maintenance of GI on vacant property. Although GI stakeholders are developing strategies to overcome these impediments, governance reforms may be needed.**

- *Fragmented responsibilities impede GI implementation*, but some cities are overcoming this through collaboration between departments and across municipal boundaries.
- *GI development and maintenance may be hindered by limited involvement from stakeholders outside government*. Well-conceived public-private partnerships are important to the effectiveness of GI.
- *Uncertainties about land control slow implementation efforts*. Acquiring vacant properties for GI is often difficult even when land banks or other government entities control the land.
- *Lack of land use policies, plans and monitoring affect implementation of GI*. In reuse of vacant land, plans are needed to target GI development where it will have the greatest social and environmental benefit.
- *Nonprofits, businesses and private land owners may not have the technical expertise to implement GI effectively*. Government entities more often do have access to necessary technical knowledge.

**2. How GI in neighborhoods may affect residents: GI has the potential to enhance residents' health and satisfaction with their neighborhood if GI design and maintenance reflects their preferences for neighborhood landscapes.**

- *GI landscapes should appear attractive to residents*. Residents want neighborhood landscapes to look neat and well cared-for. GI's design and visible, ongoing maintenance should reflect these preferences.
- *Neighborhood residents may realize immediate social benefits from attractive GI landscapes*. This includes increased satisfaction with their neighborhood and increased interaction with their neighbors.
- *GI design and maintenance may affect perceptions of neighborhood safety*. GI designs that are well-maintained and avoid vegetation that obscures sight lines may promote a sense of safety.
- *GI landscapes may reduce stress, improving health*. Well-designed and maintained GI landscapes may reduce chronic stress levels and contribute to improved mental and physical health of residents in the long-term.
- *GI landscapes may invite physical activity that improves health*. Neighborhood landscapes that appear attractive and safe may enable residents' physical activity.
- *Environmental functions of GI also may impact public health*. Appropriate design and maintenance approaches to GI may alleviate potential health impacts of water pollution, air pollution and elevated urban heat.

**3. How residents and governance may affect the long-term success of GI: GI requires ongoing care to provide long-term stormwater management and social benefits. This care should be managed by local government, but nearby residents can act as GI stewards by reporting maintenance issues, advocating for GI and sometimes participating in certain types of maintenance.**

- *Aesthetic and social benefits motivate residents to act as stewards of neighborhood GI landscapes*. For stormwater management functions to be sustained over time, GI sites should elicit this stewardship through design and maintenance that reflects residents' preferences and expectations.
- *Community engagement during GI planning enhances resident stewardship*. Residents are more likely to act as stewards for neighborhood landscapes if they are involved and their insights absorbed throughout planning.
- *Maintenance is essential for long-term success, and ensures that GI continues to provide social and environmental benefits over time*. Plans and funding for maintenance of GI should be integrated with design and implementation, and local governments should lead the coordination of maintenance activities.