

# Barriers to Green Infrastructure in the Hudson Valley: An electronic survey of implementers



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## Introduction

Nonpoint source pollution remains a major problem for water quality in the Hudson Valley. According to NYS DEC, stormwater runoff is the leading cause of stream impairments in the Hudson River estuary watershed.

Green infrastructure practices (such as rain gardens, porous pavement, green roofs, etc.) maintain or restore stormwater's natural flow by allowing water to slowly soak into the soil and be used by plants. These practices can improve many of the water quantity and quality issues associated with traditional stormwater management. While there are examples of green infrastructure practices in the Hudson Valley, there may be difficulties to its being adopted as a routine aspect of development and redevelopment.



Participants on a green infrastructure bus tour on Marist College's green roof (photo: Mary Ann Cunningham)

## Methods

The Hudson River Estuary Program conducted a web-based survey (Dec. 2011 – Jan. 2012) to identify roadblocks to green infrastructure implementation in the ten counties of our program area. We received 127 completed responses from a wide range of implementers (Figure 1, Figure 2). We sent the survey link to people who have been involved in our programs and asked that they forward it to others; as such, this is not a representation of the general public's opinions.

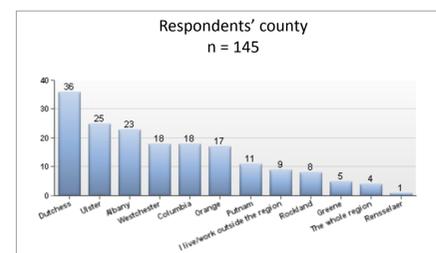


Figure 1: Geographic distribution of survey respondents

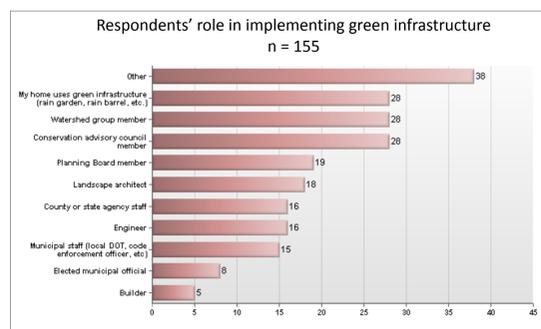


Figure 2: Respondents' roles

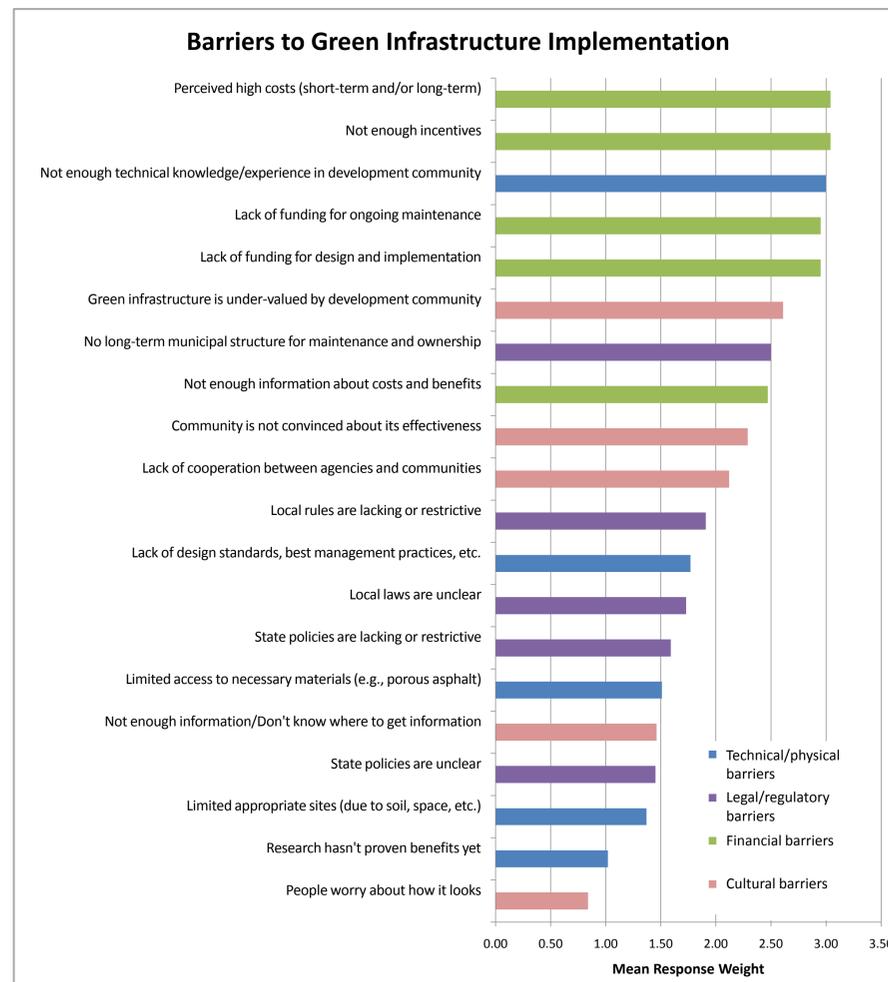


Figure 3: Barriers to implementation, ranked by survey participants

## Results

Respondents were asked an open-ended question about the largest barrier to implementing green infrastructure in their community; their responses fell into three main categories:

- Cost (30% of the total responses),
- Lack of knowledge (25%), and
- Unfamiliarity/resistance from local governments (22%).

A series of questions asked respondents to rank barriers as "large," "moderate," or "not barriers" to green infrastructure implementation (Figure 3). These were grouped into categories: technical/physical, legal/regulatory, financial, and cultural barriers.

Certain groups had different perceptions of barriers, when compared to the average responses of all survey participants:

- **Municipal officials and staff** felt that technical and physical barriers were greater, and in general, were looking for more information.
- **Landscape architects and engineers** felt that legal and regulatory barriers were greater. They were more concerned about public perception of how green infrastructure practices look.
- Residents of **communities that are not MS4s** tended to rate barriers higher than the average respondent. This was especially true for legal/regulatory and financial barriers (Figure 4).
- Residents of **MS4 communities** were most concerned about lack of design standards, limited appropriate sites, and that people don't like how the practices look (Figure 4).

## Conclusions

In addition to more funding sources, there is a great need for outreach and education to local governments to familiarize them with green infrastructure practices. Respondents did not feel that local laws were restrictive or unclear, but cite the local level of development review (including planning board members, conservation advisory council members, consultants, and building inspectors) as one of the largest barriers.

Results from this survey will help us create targeted outreach initiatives to continue working towards protecting and restoring waterbodies in the Hudson River estuary watershed.

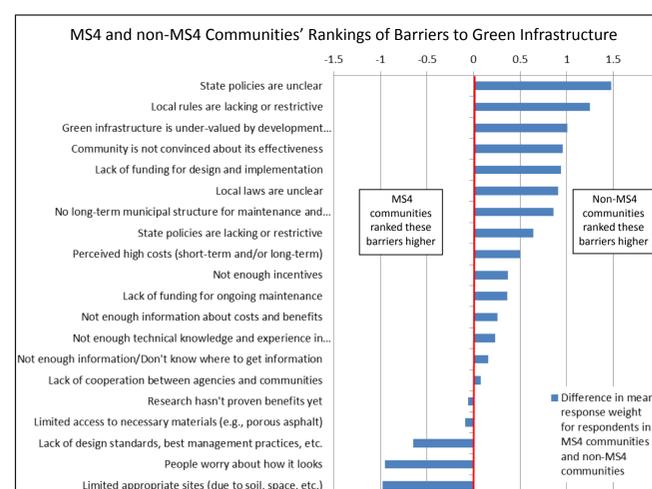


Figure 4: Differences in mean response weight for MS4 and non-MS4 communities