State of Equity Practice in Public Sector

Green Stormwater Infrastructure

2021 BASELINE REPORT

the green infrastructure leadership exchange

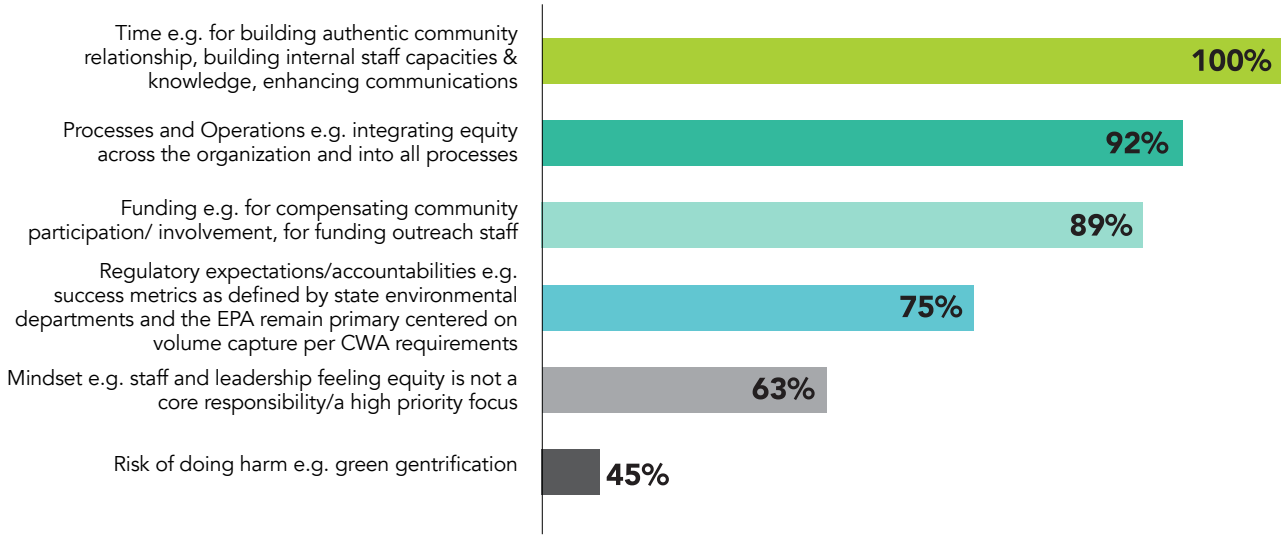
Table of Contents

Key Messages

Green Stormwater Infrastructure (GSI) is a water management approach that can, if done properly, contribute to community equity outcomes. It can reduce residents' exposure to harm from polluted water, localized flooding, severe heat, poor air quality, and blight that invites crime and communicates worthlessness. It can also increase their opportunities to thrive through visible investments that communicate worth and increase access to naturalized spaces that support health.

However, these outcomes do not just happen automatically. Practitioners must be intentional during planning, implementing, and monitoring of GSI to realize these benefits. The Green Infrastructure Leadership Exchange (Exchange), a peer learning network of public sector practitioners, sought to better understand the extent to which GSI leaders in the public sector are incorporating equity best practices into their work. Through a survey and a supplemental literature search, the Exchange found the following:

1. **Many public sector water entities are investing in building internal equity focused capacity.** This is happening through building staff equity awareness and knowledge, increasing funding allocations for equity targeted activities, and creating equity-enabling policies, plans and evaluation systems. Concerted effort and an authentic desire to more deeply understand how equity does and can manifest within GSI work is clearly evident.
2. **There is still much work to be done and multiple barriers exist to achieving the full equity potential of GSI.** When public sector entities were asked to rank the biggest challenges they face to centering equity and communities within GSI efforts, the number one response was time. Resolving process and operations challenges, insufficient funding and finding the acceptable balance between meeting regulatory mandates and addressing more socially driven accountabilities were also notable in the ranking order.



3. **Unless these barriers are overcome, the public sector is likely to miss this opportunity.** A study by the New School Urban Systems Lab of the green infrastructure plans of 20 US cities found that only 12% of plans recognized that some people are more vulnerable to health disparities, to environmental injustice, or to suffering from structural racism than others (2020). Without an explicit naming of this reality, and a deliberate decision to explore how GSI can help reduce some of those vulnerabilities, it is unlikely that GSI will fulfill its potential to deliver equity outcomes.

4. **There is a clear path forward to ensure that the full equity benefits of GSI are achieved.** The proceeding report includes evidence-based recommendations for activities with the greatest likelihood of accelerating stormwater progress. Examples include:

    - **Investing in equity-focused GSI staff capacity building,** including leadership development to create internal change agents, and community engagement skills to elevate community voices in GSI decision-making
    - **Expanding innovative project partnerships** to access external sources of funding that are more responsive to community identified priorities
    - **Developing more equitable processes** for project siting, design and implementation
    - **Supporting networking activities** as a means of building a critical mass of equity-centered GSI practitioners that can share experiences, socialize good practices and shift cultural norms within and across their entities, and
    - Continuing to **invest in research and dissemination** to identify and address knowledge gaps.

Introduction

Why was this report developed?

In 2022, the Exchange plans to work with partners to develop an inaugural '**National State of Green Stormwater Infrastructure Report'**. This report will aim to create a shared vision for future investments needed to accelerate equitable implementation of GSI. The report will tell a data-informed story about the national state of GSI including the pace and direction of implementation progress. It will identify current barriers and information gaps to further scaling, and will recommend where to focus future efforts to accelerate progress. It will offer a set of high-level metrics to better measure such progress.

This **'State of Equity Practice in Public Sector GSI Report'** will be incorporated within the full report. It also stands on its own, telling the equity part of the story from the perspective of those public sector entities primarily responsible for managing stormwater. Drawing mainly from a comprehensive survey issued to capture equity-focused experiences, it is an attempt to develop a national baseline understanding of the extent to which equity considerations are being centered within GSI planning, implementation and monitoring and are contributing towards achieving the equity objectives of communities. Future editions of this report will include additional data that informs a collective understanding of the extent to which this is playing out in different parts of the country.

The voices of communities are absent in this baseline report. The degree to which communities would agree with how public entities have self-evaluated on different GSI equity elements would enrich this report significantly, and is a critical element that will be built into the full 'State of GSI Report' 2022 report. In the meantime, this report aims to serve as a solid foundation from which to start or continue those critical conversations between communities and the public sector needed to ensure that GSI efforts realize their full potential to deliver water quality and quantity outcomes, but also the promise of other critical co-benefits.

How is equity defined?

The term "equity" moves beyond just and fair inclusion towards a societal end state in which one's race, economic status, zip code, and other forms of personal and community identities do not define one's privilege or oppression. Situating this within the water context, the US Water Alliance (2017) sees water equity playing out in communities when they:

- Have access to safe, clean, affordable drinking water and wastewater services
- Share in the economic, social and environmental benefits of water systems, and
- Are resilient in the face of floods, drought, and other climate risks.

In 2020, to build further upon this, the Exchange spent significant time exploring the question "what is the relationship between equity and GSI?". The resultant *Equity Statement of Purpose* defines the types of equity that green infrastructure can and should seek to advance, namely:

SPATIAL	Describes where communities are/have been underinvested or disinvested and where communities are experiencing multiple forms of systemic vulnerability and environmental injustice related to housing, poverty, access to transportation, food, pollution and/or environmental burdens.
IDENTITY	Describes the multitude of ways individuals hold racial, gender, ability, age, economic status, and other identities. For green infrastructure in particular, this asks practitioners to consider the trends around access to green infrastructure and green infrastructure investment for communities, given the identities they hold. It explicitly asks whether communities who are traditionally given marginalized identities (Black, Indigenous, and People of Color, People with Disabilities, Age, LGBTQIA2+, etc.) are included and provided access to projects directly affecting their communities and whether communities who suffer vulnerabilities due to multiple forms of systemic marginalization are centered and included.
PROCESS	Describes the degree of access various communities have to public decision-making. It asks who has access to government leaders; who is consistently engaged or not; and what different kinds of barriers are present for communities that limit engagement, such as access to information, engagement platforms, language accessibility, time and child care.
POWER	Describes who has influence and control over resources and considers whether the profiles of these influencers align (or do not align) with who is most marginalized from the benefits. It asks whether power over resources, problem-definition, and solution-making is shared. It also invites us to ask who is being considered the "expert" and whether that group can be expanded to be more inclusive.

Why is equity important in GSI work?

Approaching GSI work with equity front of mind compels practitioners to better understand who benefits from green infrastructure and who is marginalized from these benefits. Further, it reminds practitioners that one's race, wealth, zip code, or other forms of identity do not and should not define the benefits one receives.

What is contained within this report?

This report is broken into a number of sections that address different parts of the GSI lifecycle. Each section includes:

- A brief introduction to the section topic
- The presentation of public sector GSI survey results, complemented by findings from relevant external reports or research that support, refute or expand further on the survey results
- A selection of 'spotlights' celebrating good practices of public sector entities across the US, and
- A 'gaps and opportunities' table capturing practical opportunities to support the acceleration of equity-targeted actions relevant to the section focus.

How can this report be used?

This report has been designed to serve the needs of three primary audiences:

For 'investors' in GSI, including federal or state governments, national and multi-site non-profits, regional networks, philanthropy and private sector organizations

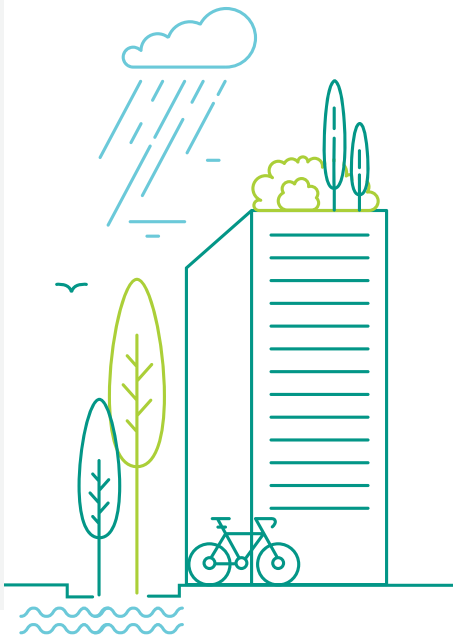
- This report can be used to better understand the degree to which equity is being centered within GSI work, what the current barriers or gaps are to further mainstreaming equity, and where to invest to most effectively accelerate progress.

For city, municipal, regional or county level public sector water leaders seeking a better understanding of their own progress in centering equity within their work

- This report can support benchmarking efforts against national GSI equity implementation trends.
- Cited resources throughout the report can be used to build internal equity-focused capacity.
- It can support greater accountability to communities served, better understanding of community priorities, and increased sharing of decision-making power with these communities.
- A complementary forthcoming Exchange *Equity Guide for Green Infrastructure Practitioners*, introduced towards the conclusion of this report, can support the development or refinement of public sector systems for tracking equity efforts.

For communities, CBOs, grassroots, social justice and health equity organizations

- This report provides a solid basis and some common language with which to talk with stormwater officials and others around how to more effectively implement GSI to enhance equity outcomes and sustainable development of neighborhoods. It can be a starting point for making inroads towards more equitable processes and outcomes.



Acknowledgements

The Exchange firstly acknowledges the generous and ongoing support of the report's primary funder, The Kresge Foundation.

Support for this report was also in part provided by a grant from the Pisces Foundation, which seeks ways to accelerate to a world where people and nature thrive together.

The Exchange would also like to thank a number of individuals and organizations that have made contributions either directly to the production of this report, or to informing the thinking around this report, noting that their contributions do not necessarily imply endorsement from themselves or their organizations of any report conclusions and recommendations:

- The US Public Sector entities implementing GSI programming that took the time to respond to our survey
- External project advisors:
  - Dr. Jalonne L. White-Newsome from Empowering a Green Environment and Economy
  - Drew Williams Clark, Dr Peter Haas and Anna Wolf from the Center for Neighborhood Technology (CNT)
- The New School Urban System Lab for sharing their extensive research with us and for report peer review
- Renee Willette from US Water Alliance for providing peer review
- Bina Patel from Saathi Impact for her work supporting the Exchange to develop our own equity 'Point of View'
- Julie Ulrich from The Nature Conservancy for providing technical feedback on survey questions, report framing, and peer review
- Greenprint Partners who have provided report peer review as well as worked with Exchange members in the development of a forthcoming *Equity Guide for Green Infrastructure Practitioners* introduced towards the conclusion of this report
- The Exchange Equity Learning Circle and Project Team members and the Exchange Strategic Planning and Policy Committee members.

Graphic design by Olga Vanegas / Intercreativa Design

SECTION 1

Whose Story does this Report Tell?

While recognizing that many entities (public, private, non-profit, community) implement GSI across the US, this report primarily captures the GSI-related perspectives of **public sector entities at the municipal, city, county or regional level who hold primary or significant responsibility within their jurisdictions for stormwater management**[1], be that policy development, regulatory/reporting accountability, implementation and/or monitoring. The focus on this group is because their stormwater accountabilities mean they are undertaking the majority of GSI implementation across the country and therefore have the potential to make significant equity impacts, be they positive or negative. That said, it is important to clearly acknowledge that achieving equity within GSI practice is **not solely the responsibility of, nor uniquely within the control of local level government entities.** State and federal governments, particularly their environmental protection agencies, have substantial influence on water entity priorities and timelines, requiring enhanced coordination and collaboration between different levels of government in order for equity outcomes to be achieved from GSI efforts.

By GSI we refer to "...the range of measures that use plant or soil systems, permeable pavement or other permeable surfaces or substrates, stormwater harvest and reuse, or landscaping to store, infiltrate, or evapotranspirate stormwater and reduce flows to sewer systems or to surface waters (USEPA, 2015)". It has also been well documented that GSI also has the ability to deliver a wide range of co-benefits in addition to water quality and quantity benefits (Center for Neighborhood Technology, 2011). This document uses "GSI" to refer to these systems or "GI" when a cited report uses this acronym instead.

A total of 47 public sector entities, **serving 10-15% of the US population**, participated in a **'Equity in GSI'** survey issued in August 2021[2], with all but one currently implementing or in the process of developing a GSI program[3]. **The majority of the data contained within this report comes from the results of this equity-focused survey.** Broader GSI related trends and progress will be part of the full State of GSI report planned for 2022.

An estimated[4] 85% of survey respondents are members of the Exchange, meaning that they are already using GSI within their jurisdictions. Additionally, Exchange members have explicitly committed to mainstreaming equity considerations within their work. As such, survey results are likely skewed towards a more optimistic version of where the nation is with regards to placing equity at the center of GSI. But that also means that valuable lessons have already been learned, which can pave the way for future equitable adoption of GSI for those only starting their GSI journeys.

1 While the majority of survey respondents are responsible for stormwater, there are exceptions to this with a few survey response entities pursuing GSI for broader beneficial outcomes such as heat mitigation, air quality improvements etc.

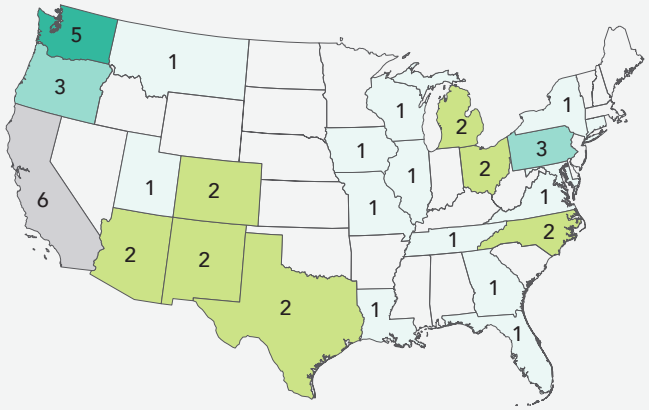
2 See the methodology annex for a full understanding of how entities were selected to participate.

3 This includes investing in, managing, or building any GSI projects or pilots, whether directly implemented by them, or incentivized by them but implemented by others.

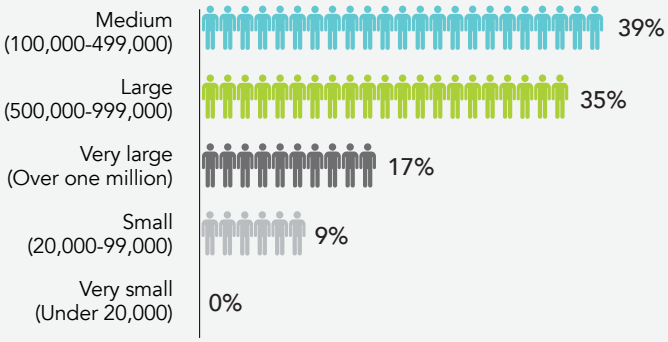
4 As noted in the methodology annex, the survey was anonymous and confidential. As such we can only estimate the percentage of respondents that are Exchange members based on supplementary bilateral correspondence with them.

These 47 entities serve approximately 40 million people across all regions of the United States.

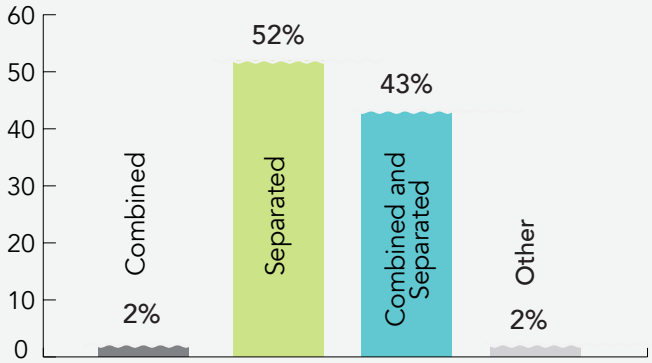
They operate in 26 different states or territories.



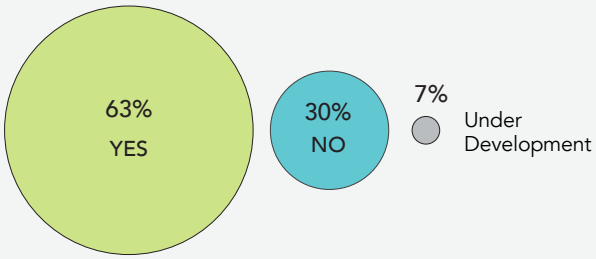
They serve a mix of population sizes.



They operate different types of stormwater systems.



The majority, 70%, have a stormwater fee or are in the process of developing one[5].



It also means that there remains much untapped potential for equity dividends to be realized out of stormwater investments.

It is important to note that many of the report's findings are informed by survey questions framed to better understand equity outputs, rather than speaking directly to equity outcomes. For example, having an equity policy is only an output indicator of equity progress, whereas effective implementation of that equity policy is what could result in concrete, tangible and measurable equitable outcomes such as equitable investment and performance of GSI across neighborhoods. The decision to focus more on output level survey questions for this baseline report reflects the reality that most public sector stormwater entities are in the earlier stages of mainstreaming equity throughout their work.

Within the report, survey findings are complemented by findings from other publicly available studies or reports that shed light on different aspects of GSI and equity. On some aspects, there is strong alignment between the different sources, while on others there is significant divergence.

5 This is significantly above the estimated US average, with the American Society of Civil Engineers 2021 Infrastructure Report Card reporting that in 2018, approximately 26% of MS4 communities operated a stormwater utility or had a stormwater fee.

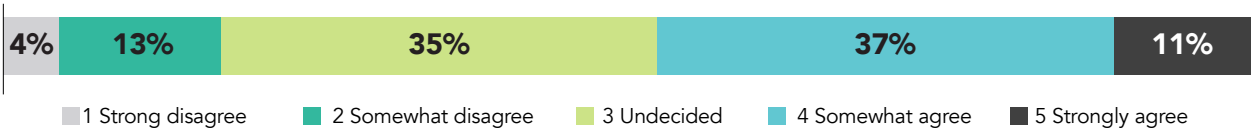
SECTION 2

Internal Readiness

To what extent do GSI staff, including leadership, understand equity, and how committed and equipped are they to advancing it through their work?

This section speaks to the enabling environment within a public sector stormwater entity to support equity-centered decision making and implementation. While there are many dimensions to be considered, this section focuses on one particular element: whether staff at multiple levels have sufficient capacity (knowledge, skills, attitudes, funding, leadership support) to engage, develop and implement GSI programs that center equity. The existence of enabling policies and plans are also critical elements of an enabling environment, but is covered in the subsequent section.

What is your reaction to the statement: My entity has made an effort to increase staff capacity around the topic of equity.



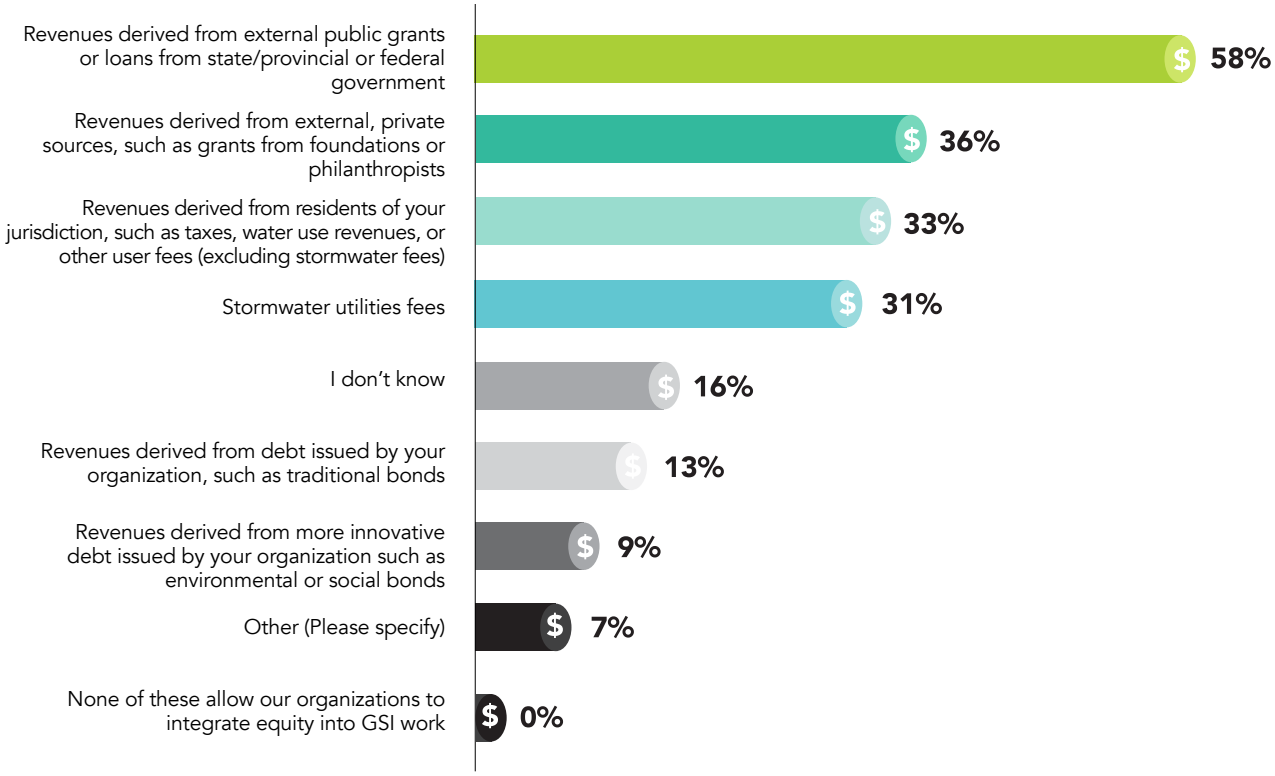
While 48% of respondents agree that investments in building staff capacity are being made, the slight majority indicate that significant effort is still needed to equip staff and leaders with the knowledge, skills and attitudes to center equity within GSI programs.

These findings are corroborated in a 2020 Needs Assessment White Paper entitled *'Building an Equitable and Just Green Infrastructure Strategy in the North Central Region'* (Heath et al.). Developed out of 18 listening sessions conducted with 30 communities across nine North Central states, report authors indicate that, particularly in more rural or smaller communities, staff cite knowledge, funding and political support as being the primary barriers to pursuing any kind of GI work, let alone equity-targeted activities. This is because they can only justify implementing GI where it is a more effective stormwater solution than traditional gray infrastructure.

SPOTLIGHT

The City of Seattle has created a whole-of-government 'Race and Social Justice Initiative' committed to acting accountably, creatively, and strategically for racial justice. Of the four key strategies, Strategy 1 focuses on 'Build an anti-racist network within City government', with a strong emphasis on building equity and justice capacities within city government including expanded use of a 'Racial Equity Toolkit' and targeted executive level equity convenings. Strategy 2 focuses on 'transforming the internal government culture of the City toward one rooted in racial justice, humanistic relationships, belonging and wellbeing' (City of Seattle, 2021).

Based on your experience, which sources of funding and financing allow for the greatest level of equity related investments within your GSI work (e.g. staff capacity building, community engagement, monitoring, etc.)?



Less restricted funding from external sources such as revenues derived from external public grants or loans from State, County or Federal government or private external sources such as those from philanthropy are considered to be the most equity-enabling sources of funds. Survey results indicate that it continues to be difficult for public entities to spend ratepayer dollars on community-identified outcomes that do not have a direct nexus with the entities' core accountabilities, be they drainage, wastewater or drinking water systems.

SPOTLIGHT

The Baltimore Department of Public Works (DPW) established the Office of Equity and Environmental Justice in 2019, informed by Baltimore's Equity Ordinance passed by city council in 2018 that requires the appointment of equity-dedicated human resources within each department. To date, DPW's Office of Compliance and Research has integrated socio-economic, racial, and health equity into their prioritization strategy for its MS4 permit, and the Office of Engineering and Construction is integrating equity as a prioritization factor into a decision-making tool for project selection and allocation of Capital Improvement Program funds. The overall goal is to move towards equity-oriented action in the coming year through establishing and building the capacity of internal equity teams spread across various functions within the agency. Following building the strength of internal equity practices, DPW will expand out to address external equity (Hazer. M., personal communication, October 29, 2021).

Looking Forward: Internal Readiness

GAPS

- There is insufficient investment in equity related capacity development of staff and organizational leadership.

OPPORTUNITIES

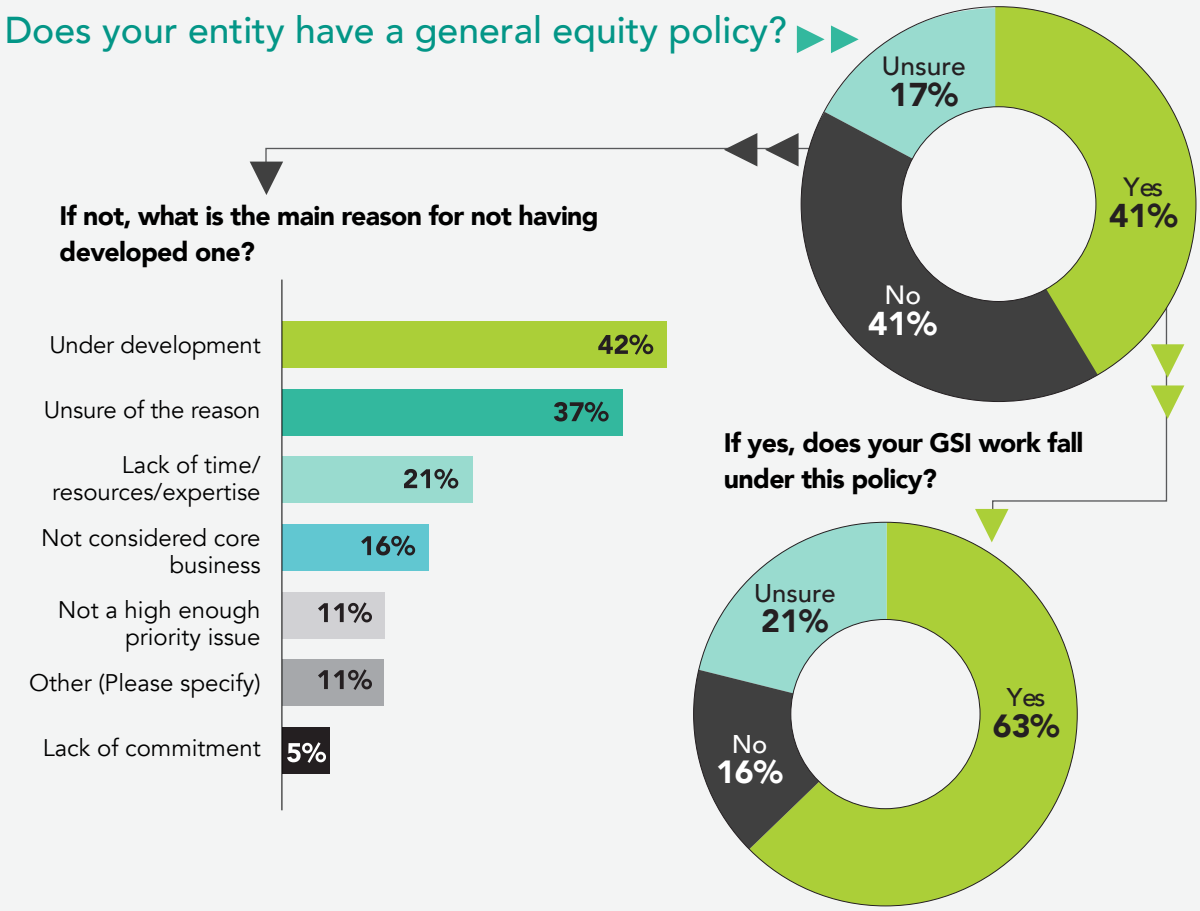
- **Leverage use of existing sources of funding.** Explore innovative ways that current sources of public water sector funding can be used to target equity capacity development. For example, work with states where State Revolving Funds are more restrictive to increase eligibility of GSI given its potential to support equity outcomes.
- **Identify additional sources of funding.** Increase public sector capacity to identify and access public sources of funding, such as federal grants, that allow or require equity-targeted spending.
- **Expand use of partnerships and philanthropy.** Create partnerships between public entities and non-government and philanthropic partners so that less restricted sources of funding can fill the equity gaps prevalent in public funding sources. Direct greater levels of philanthropic, equity-targeted funding toward public sector entities and their communities to directly fund activities, build the case for equity-related work and leverage other resources.
- **Hire equity-minded people.** Increase recruitment of equity-minded people into leadership positions (general managers, commissioners, department heads), as a strategy to increase budget allocations toward equity-targeted activities.
- **Expand access by the public sector to low-cost resources.** Support public sector entities to tap into existing, lower cost, equity capacity-building opportunities and resources and support the expansion of such offerings. Examples include:
  - Green Infrastructure Leadership Exchange - Facilitates a monthly "Centering Equity within GSI" Peer Learning Circle
  - US Water Alliance - Hosts a Water Equity Network, which provides training and peer exchanges for cross-sector city teams that focus on place-based strategies for equitable water management
  - RiverNetwork - Provides a range of Equity, Diversity, Inclusion and Racial Justice resources for non-profit members
  - The Government Alliance on Race and Equity - Provides peer learning opportunities, resources, and other offerings tailored to local and regional governments
  - Equity focused offerings from State Stormwater or Professional Associations
- **Broaden adaptive leadership skills.** Complement more equity focused capacity development with investments in building the broader set of adaptive leadership skills (empathy, self awareness, systems thinking, change management) needed to enable equity mindsets and for GSI practitioners to become agents of change.
- **Expand formal equity training.** Grow, replicate and further build equity into more formal leadership and equity type training programs such as the Water Innovation Leadership Development (WILD) program offered annually by Duke University's Nicholas School of Environment.
- **Expand access to self assessment tools.** Socialize more widely self assessment tools such as the Coalition of Communities of Color's Tool for Organizational Self-Assessment Related to Racial Equity, a resource that evaluates an organization's internal racial equity practices and provides recommendations for how to better prepare staff to engage with equity-related issues.

SECTION 3

Policy, Planning, Evaluating and Reporting

To what degree do GSI policy and program design, management, evaluation and reporting proactively elevate and drive transparency around equity?

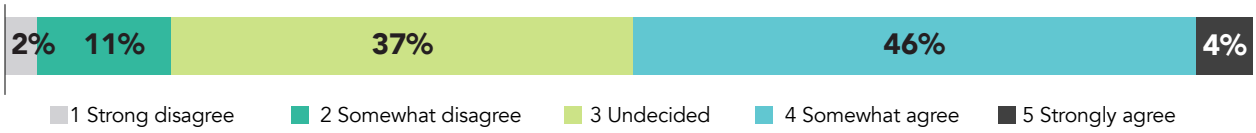
While policies and plans are not on their own sufficient for ensuring equity is centered within all aspects of public sector GSI efforts, it is clear that without high level guiding targets, efforts to embed equity within GSI work can become uncoordinated and ad hoc at best, or at worst, completely overlook or even perpetuate existing inequalities. Consistent with the adage 'you manage what you measure', development of transparent monitoring, evaluation and reporting systems to track progress and provide corrective signals when needed may be particularly useful for entities aiming to embrace cultures of learning and continuous improvement. If intentionally designed to do so, such systems can also increase levels of accountability and transparency to communities.



For those entities with general equity policies (41%), the majority were introduced over the past five years, with only 10% of entities indicating their equity policies pre-date that period. Encouragingly, nearly 50% of entities that do not yet have an equity policy indicate that such policies are under development. Twenty one percent of those without equity policies indicate the primary reason for not having one is due to a lack of time, resources and/or expertise.

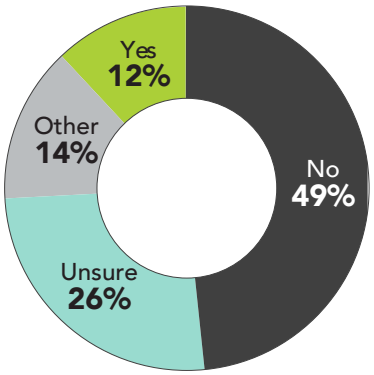
While the absence of a guiding equity policy does not necessarily imply the absence of equity considerations within more operational GSI planning documents, the New School Urban Systems Lab 2020 analysis of equity within GSI plans for 20 large US cities found that only 26% of the 122 plans they analyzed explicitly referred to equity, with only 16% of them actually defining it[6].

What is your reaction to the statement: My public entity uses equity tools or resources to evaluate new policies, programs, investments or project proposals.



Does your public entity undertake any performance analysis that assesses GSI equity inputs, outputs or outcomes?

About a quarter of entities surveyed are using equity tools to evaluate policies at the time of their development. A similar number are assessing whether they are on track toward achieving equity outcomes. This leaves nearly 50% of entities operating somewhat blindly. Consistent with this result, the New School Urban Systems 2020 analysis of GSI policies and plans concluded that cities appeared to treat equity as an aspirational goal, and included no "mechanisms for assessment or enforcement". In particular, the analysis found that there were virtually no mechanisms for communities themselves to evaluate these programs.



If yes, please elaborate on the nature of this performance analysis, such as what systems you use, how you approach this work etc.

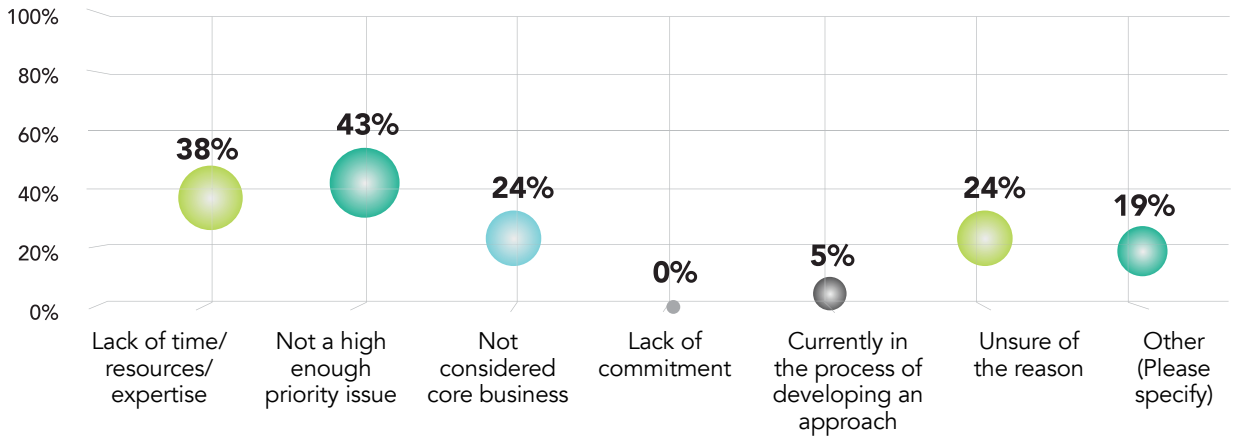
- Pre and post-construction monitoring and assessments
- Market analysis
- GSI mini grants gathers demographic information and performance metrics on outreach grants and what populations were reached
- Customer survey with optional demographic information for customers
- Through language proficiency preferences for contractors and customers
- Analysis of the number of installations in neighborhoods across the service area
- Use of a GIS layer that shows opportunity areas and currently a tool is being developed that will prioritize future systems throughout the city
- Employment of a staff member dedicated to evaluating utilization of Minority Business Enterprise(MBE)/Women Business Enterprise (WBE) participation on all projects at the organization, with this being reported up to the board.

6 In this work, 122 plans featuring the term 'green infrastructure' were identified so as to examine more deeply how plans conceived of GI, its social impacts, relationship with equity, and justice, as well as the equity of the process of GI planning itself. The research used three key equity dimensions, namely visioning, process and distribution as the basis of assessment of equity inclusion levels within plans.

It is noteworthy that while all elements on the above list are worthy and important initiatives, a number of them are not performance evaluation tools per se. More research is needed to identify lessons learned and best practices in regards to equity related performance analysis.

A follow up survey question asking that entities share examples of the equity input, output or outcome metrics that they are using within GSI work received only two responses, likely indicating that few entities have established equity metrics frameworks.

If not, please elaborate on why such equity performance analyses are currently not being undertaken.



In reality, time and resources are always in short supply, which is indicated above as the most commonly cited reason for performance analyses (or other equity related activities, as can be seen consistently throughout other parts of this report) not being undertaken. Whether to dedicate time and resources towards equity is often viewed as a question of political feasibility as much as it is a question of resources. The perception of scarcity may itself be a key barrier to implementing more equity focused approaches, if equity continues to be seen as something additional to be achieved rather than a necessary dimension of all decision making.

SPOTLIGHT

The Rain Check 2.0 city-wide plan for Buffalo, NY seeks to "establish a green culture" through a holistic approach to stormwater management, including a Green Infrastructure Equity Index based on 17 socioeconomic and environmental factors, context-based analysis of existing equity challenges, and a collaborative framework to involve multiple stakeholders and agencies in advancing equity and sustainability-centered outcomes (Buffalo Sewer Authority, 2019).

Looking Forward: Policy, Planning, Evaluating and Reporting

GAPS

- Significant GSI work is still being undertaken without the guidance of an equity policy at either the entity level or GSI/stormwater management level.
- There is a reported lack of time, resources and expertise to develop equity policies.
- Equity considerations are still insufficiently articulated within GSI plans.
- Very few stormwater entities are undertaking a robust, systemic approach to performance analyses that assess equity inputs, outputs or outcomes. Even fewer have established equity related metrics to track performance.

OPPORTUNITIES

- **Leverage existing resources.** While equity policies and plans should be centered within local realities and co-developed in partnership with stakeholders, there are numerous resources that can provide a foundation and possible inspiration.
  - The range of public sector water equity policy examples hosted in the Exchange Green Infrastructure Library, a resource soon to be available to non-Exchange members
  - The US Water Alliance Equity Taskforce Roadmaps which provide examples of multi-stakeholder developed equity plans, and also shed light on process related good practice (2019a)
  - The New School Urban System Lab conceptual framework that provides concrete entry points within GSI plans for centering equity (2020)
  - The Georgetown Climate Center Green Infrastructure Toolkit that features a chapter on equitable GSI planning and investments (2016).
- **Support the development and standardization of equity metrics.** The Exchange Equity Guide for GSI Practitioners to be released in early 2022 provides a baseline set of equity guidance and metrics. Support public sector entities to adapt these metrics to their specific context and capacities. Support standardization of these metrics across all types of entities (MS4, CSO, etc), so that regulators, funders, communities and others can aggregate progress over time and geographies. Develop complementary metrics that are more flexible and responsive to community priorities.
- **Normalize equity in performance analyses.** Build equity into existing general performance assessment capacities.

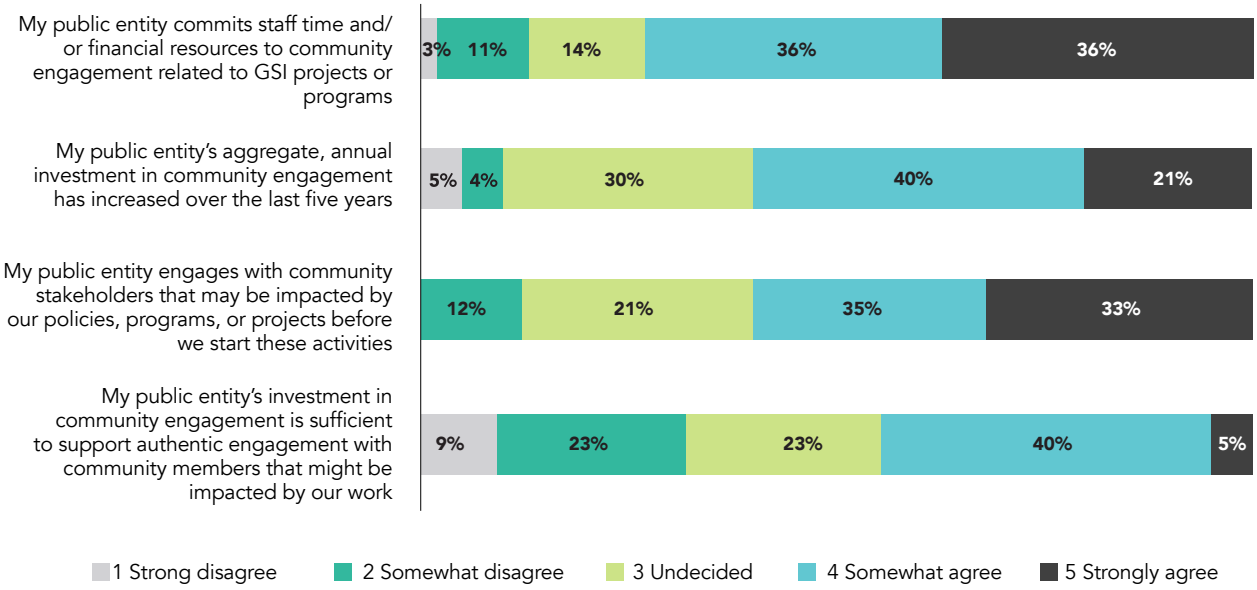
SECTION 4

Centering Community

To what extent are community members considered essential partners and participants in all GSI program, policy, and project development?

Often referred to as 'procedural' or 'process' equity, this section focuses on understanding the degree to which equity considerations are featured throughout the GSI planning process, rather than just in the outputs and results. Achieving procedural equity in GSI-related public engagement includes starting early, ensuring equal access to decision making, working at the speed of trust, and building that trust through holistic engagement that extends beyond stormwater performance goals. When done well, community engagement promotes representation, ownership, and positive experiences with GSI within communities.

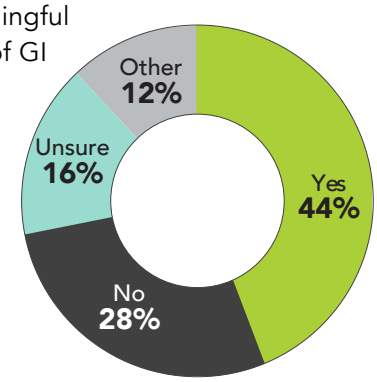
What is your reaction to the following statements:



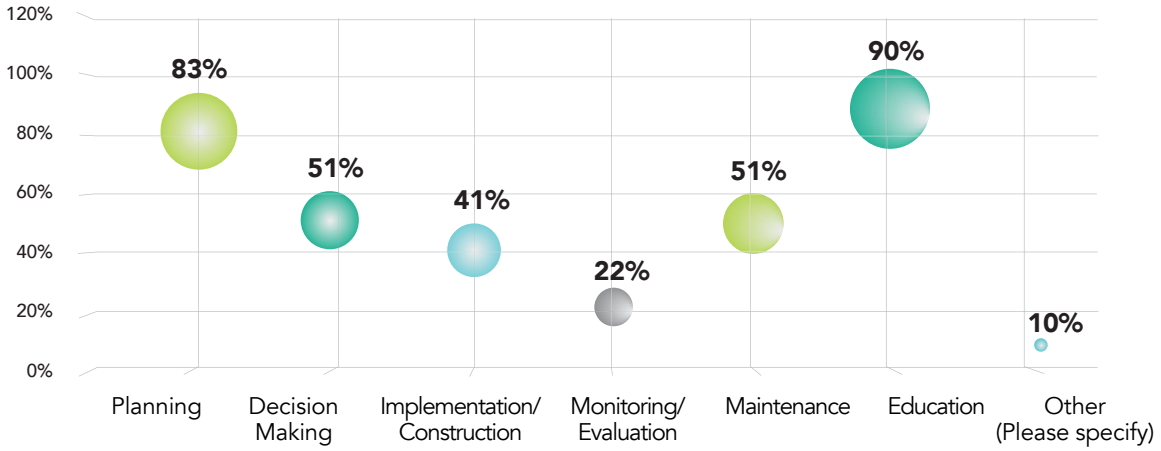
Nearly 75% of respondents indicate that resources (staff time or funds) are being committed to community engagement and 61% signal that the level of that investment has increased over the past five years. These percentages are relatively consistent with the New School Urban Systems Lab city GSI plan analysis that found 67% of plans claimed engagement with communities (2020).

Nevertheless, the above survey results indicate that less than half of the respondents feel such investment to be sufficient to achieve authentic engagement. This may reflect a sense that current engagement strategies are not sufficient for achieving procedural or process equity. New School's analysis found that only 20% of reviewed city plans showed utilization of best practices in the initial stages of planning, with less than 6% describing avenues for meaningful community involvement in the design, implementation, and evaluation of GI (2020). 'Information dissemination' was the most common engagement strategy indicated within plans reviewed.

Does your public entity have either an overall or project/pilot specific GSI community engagement plan/s?



In what types of activities do you involve the external community?



Around a half of respondents use community engagement plans to guide how they work with communities. Also, undertaking community-targeted GSI related education appears to be well within the comfort zone of public water sector practitioners, most likely due to MS4-type requirements. An equally significant number (83%) also report undertaking community engagement at the planning stages. But only half of the respondents engage communities in decision making, implementation or maintenance activities, and less than 25% ask communities to contribute to monitoring and evaluation analysis.

While celebrating engagement progress made to date, research conducted by Qi and Barclay in 2021 finds that addressing the glaring gaps is critical. Their documentation of many cases of ineffective community engagement reveals it to be one of the major barriers to greater levels of GSI implementation. They conclude that *"...the general public's involvement is the fundamental building block that could be influential in shaping the direction of GSI implementation"* (Qi and Barclay, 2021, p7)

The Urban Systems Lab New School 2020 GSI analysis of GSI plans builds further on this, indicating that *"...the democratic planning requires upfront investments of time, energy, and financial resources to build relationships and establish forums for expressing concerns and collectively determining paths forward."*

They go on to recommend that "*...planners … move beyond a framework of minimum required consultation, and build participatory processes and good governance through deeper and supported engagement between city agencies and residents. Such efforts should re-center decision-making power with communities themselves….. includ(ing) participatory budgeting, community oversight of public agencies, and compensation of communities for involvement in planning exercises"* (New School Urban System Lab, Insights and Recommendations, bullet point 3, 2020).

The reality is that within government settings, regulations often define the state of practice around community engagement. Without internal champions who are experienced in authentic co-creation or community engagement, there exists an understandable temptation to do only what is required. In the absence of regulations that set the 'community engagement' bar higher, external partners must support their government agencies in identifying other drivers or incentives for authentic engagement.

A further consideration is that investments around community engagement should not be limited to better equipping public entities. Resources should also be directed towards community leaders, residents and organizations. Community partners need to be resourced to adequately participate at the same level as public entity staff.

SPOTLIGHT

Strong equity champions at the Atlanta Department of Watershed Management (DWM), and foundational efforts in the early 2010's to begin building trust with community-based organizations, provided the necessary enabling environment for an investment in authentic community engagement to advance projects that impact neighborhoods. DWM staff collaborated with Water Equity Task Force partners and Proctor Creek community leaders to plan implementation of $14m in green infrastructure financed through an Environmental Impact Bond. Key lessons learned are that building trust takes significant time, resources, and leadership and requires a willingness to alter designs and plans in response to community feedback (US Water Alliance, 2020).

SPOTLIGHT

The City of Chester's Green Infrastructure Plan centers a Community Based P3 model to achieve its stormwater management goals. The plan centers community benefits and equity. It also outlines the City's process for establishing a GSI taskforce with the Shade Tree Commission to consult and oversee the project with innovative stakeholder-led processes (Delaware Valley Regional Planning Commission, 2017).

Looking Forward: Centering Community

GAPS

- There is insufficient capacity to undertake authentic community engagement.
- There is insufficient funding allocated towards community engagement, both for public sector entities and community partners.
- There are insufficient external 'carrots or sticks' for engaging communities throughout all aspects of GSI.

OPPORTUNITIES

- **Provide public sector entities with tools to enhance their community engagement capacity.** This requires the development of new tools, learning opportunities and resources as well as enhanced distribution of existing resources such as:
  - The Georgetown Climate Center compilation of case studies and synthesized a guide to procedural equity as part of their Equitable Adaptation Legal & Policy toolkit (2020).
  - The American Anthropological Association (AAA) list of guidelines with the Society of Medical Anthropology's Disability Research Interest Group (DRIG) meant to provide walkthroughs for best practices to accommodate physical, perceptive, and cognitive disabilities at public events and presentations (2019).
  - Oxfam Australia's introductory guide to Free, Prior and Informed Consent (FPIC) provides basic information about the right to FPIC and how this right can help people to have a say about development projects which affect them in some way (2010).
- **Support public entities in Identifying flexible funding sources**. Because the rules of what activities public sources of funding and financing resources can and cannot be used for differ across jurisdictions, entities must investigate which sources are most flexible to meet their particular needs.
- **Provide resources to community partners**. Provide funding to community partners to allow them to engage on an equal footing with their public sector partners.
- **Leverage partnerships.** Increase partnerships between water entities and non-governmental partners to cost share in a way that recognizes the restrictions that exist for certain types of public sector funding. Examples include:
  - The District of Columbia is prohibited from spending its funding on food or childcare at public meetings. Local non-profits act as essential partners by providing funding for these needs.
  - The Camden Collaborative Initiative in Camden, NJ is an excellent model for how government and non-government entities have established long term partnerships that distribute responsibilities and costs (US Water Alliance, 2019b).
- **Enhance regulatory requirements for community engagement.** Build upon existing regulatory requirements to engage communities and other stakeholders in outreach and education activities while allowing flexibility for specific situations. For example, introduce a requirement that a certain percentage of funding must be allocated to any engineering procurement to support community engagement. Enhance available federal and state funding sources to support these efforts.

SECTION 5

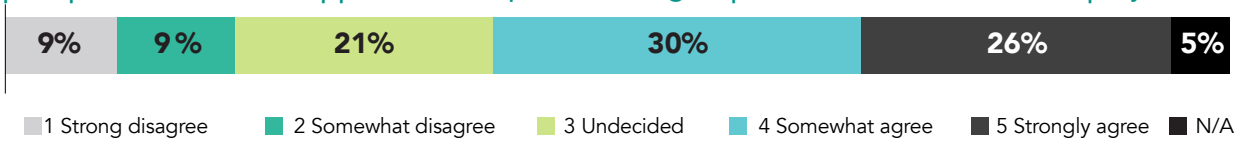
Siting and Investment

To what degree do project selection approaches and investment types and levels proactively consider potential to advance equity?

Historic planning and inequitable policies are responsible for creating lines of racial, economic, and social inequality in communities across the country. Redlining[7], racially restrictive covenants[8] and inequitable zoning and land use regulations are examples of policies that have created or exacerbated such inequities.

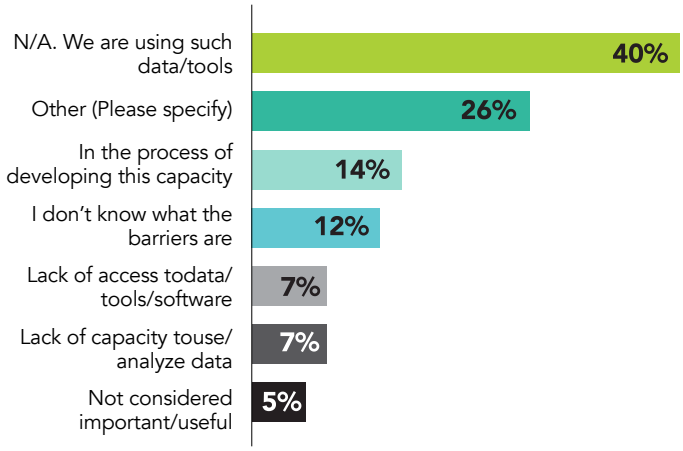
In contrast, by embracing spatial equity considerations, GSI leaders have the opportunity to gain a much deeper understanding of which communities within their jurisdictions have been or are currently suffering from a lack of investment. A spatial equity perspective can also lead to more proactive identification of those communities experiencing multiple forms of vulnerability and environmental injustice in the areas of housing, poverty, access to transportation, food, pollution and environmental burdens, etc. GSI can then be utilized as a tool to begin to make improvements in authentic partnership with affected communities.

What is your response to: My public entity uses demographic and/or environmental (e.g. precipitation) data to support more equitable siting or prioritization of future GSI projects.



If you are not using such data/tools, what are the main barriers/obstacles to doing so?

Only a relatively small percentage of respondents (18%) indicate they are not using different forms of data to support more equitable siting and prioritization. In those cases, the common reasons include internal capacity-related deficiencies, be they access to data or the absence of analytic skills. Unpacking some of the responses in the 'other' answer choice category, barriers explicitly noted include:



7 The practice of denying credit-worthy applicants housing loans in specific neighborhoods (FSG & PolicyLink, 2017 p6)

8 Racial covenants were obligations inserted into property deeds that typically forbade the premises from being occupied or owned by persons not of Caucasian descent (Santucci, 2020, p241)

- The weighting of factors such as quantity of pollutants removed and feasibility often 'drown out' other considerations.
- Ambitious program timeframes can lead to site selection decisions favoring faster implementation. Such timeframes are often set by federal or state governments in order to meet Clean Water Act requirements.
- Decision makers are yet to be influenced by the data and therefore continue business as usual.
- Regulatory requirements don't allow for decision making based on broader criteria.

Some of these same barriers also feature in a 2021 paper by Hoover et al. exploring the criteria that 19 cities claimed to use to site GI, and what the environmental justice implications of said criteria was likely to be. Results indicated that GI siting criteria was strongly driven by technical criteria (e.g. feasibility, stormwater management), with a particular focus on managing flooding and runoff. In particular:

- Of the 19 cities analyzed, 16 cited hydrology or stormwater management, and all 19 used cost or economics as siting criteria.
- In comparison, environmental justice or equity siting criteria were only explicitly articulated in seven cities.
    - It accounted for only 1.2% of all criteria, or 2% when heat, health or well-being criteria were included.

While cost and economics are of course critical criteria for a functioning and affordable GSI system, the report concluded that given how seldomly justice-focused criteria featured, it was unlikely that GI siting decisions would intentionally lead to just outcomes. The study also found that while many communities are explicitly targeted for GSI as an approach to address equity, little attention is paid to establishing meaningful community involvement or addressing the potential negative impacts of GSI projects such as displacement or community disruption.

Consistent with this, the New School Urban System Lab analysis of the GI plans of 20 US cities found that only 12% of plans recognized that some people are more vulnerable to health disparities, to environmental injustice or to suffering from structural racism than others (2020). Without an explicit naming of this reality, and a deliberate decision to explore how GSI can help reduce some of those vulnerabilities, it is unlikely that GSI will fulfill its potential to deliver equity outcomes.

Further corroborating these findings, Heath et al. North Central Region white paper states that "hydrological considerations are still the chief driver of where, when and how GI projects are implemented" (2020, p23). The report further indicates that many of their interviewed communities actually had specific policies to ensure demographic factors were not considered in siting decisions in order to avoid possible biases, instead ensuring 'equal' levels of deployment across the jurisdictions[9]. In many places, the pursuit of 'equality' may be undermining achievement of 'equity' objectives.

With the potential to address some of these prioritization gaps, and inspired by sectors such as transportation and energy, a number of knowledge-focused organizations have been experimenting with using GSI equity scorecards, dashboards or rankings. These approaches provide tools for self evaluation

EQUALITY— *indicates a system where everyone has the same opportunities and resources—a "one size fits all" approach to human rights.*

EQUITY— *is a system that recognizes each person has different resources and opportunities and seeks to understand and provide what people need based on these differences.*

(Bergen, 2021)

9 This is partly a function of how Title VI of the 1964 civil rights act has been interpreted and implemented – where protected class identity cannot be used for the basis of allocating funding / preferential treatment which can actually hinder restorative justice approaches (Martens et. al, 2010).

and help drive a healthy competition and a race to the top among jurisdictions. One example of this is Heckert and Rosan's work with the Philadelphia Water Department to develop an equity index to support better equity planning (2015). The GI Equity Index is a prototype of a Geographic Information Systems (GIS) planning tool covering 14 indicators of environmental and socio-demographic conditions. The tool allows communities and their public officials to collaboratively agree on what different weightings to give to different indicators based on local preferences, contexts and needs. This process allows for collective identification of the geographic locations of communities most likely to experience the greatest benefits from the implementation of GSI projects. These are promising approaches, with the caveat that the census data often used can mask inequalities at smaller units of analysis than census blocks and tracts.

SPOTLIGHT

Montgomery County, MD has introduced an equity assessment mapping tool to factor equity into project selection and implementation processes. The tool uses American Community Survey data from the 2019 version of the US EPA EJSCREEN* for census block groups in the County. A demographic index was created that is compared to the census block groups that exist within Montgomery County, which develops a percentile based on local demographic data. The map displays the demographic index percentiles and is used as a high-level equity assessment tool (Montgomery County, 2019).

SPOTLIGHT

The City/County Association of Governments of San Mateo County has created a countywide Sustainable Streets Master Plan to help equitably adapt the roadway network to climate change and clean stormwater runoff to meet municipal stormwater regulatory requirements. Development of the Master Plan included an interwoven focus on equity, with prioritization criteria supporting projects in areas where 1) vehicle ownership is low and residents are more likely dependent upon active transportation or transit, 2) runoff volume is likely to increase the most due to climate change and lead to potential roadway flooding, 3) heat impacts are expected to worsen due to climate change, 4) multiple environmental or social vulnerable or disadvantaged community indicators overlap, and 5) there is lower tree canopy coverage that could benefit from increased urban greening (Green Infrastructure Leadership Exchange, 2021a).

Looking Forward: Siting and Investment

GAPS

- There is no mandate (and at times there exists a counter-mandate), to use data to prioritize equitable deployment of GSI.
- Many entities report insufficient capacity, often related to inadequate data or analytical tools, to help them make more equitable decisions.

OPPORTUNITIES

- **Support development of equity based GSI siting criteria.** Support entities to develop transparent GSI siting criteria to increase accountability and increase the likelihood that equity and justice considerations are addressed in planning and decision-making. The Hoover et al. paper recommends cities develop stated justice goals and the methods and criteria to match (2021).
- **Support "equity" above "equality".** Support entities to employ policies that prioritize equitable, versus equal, deployment of GSI.
- **Share data**. An important role for knowledge partners such as universities and research organizations is to share data and analysis tools that could support equity focused siting decisions. For example, ensuring that all research data sets are open access, and therefore accessible to public sector decision makers, would be an important first step in the right direction.
- **Make the case.** Provide funding for data collection and analytical tools to make the case to leadership for why deploying GSI in specific areas is good policy.

SECTION 6

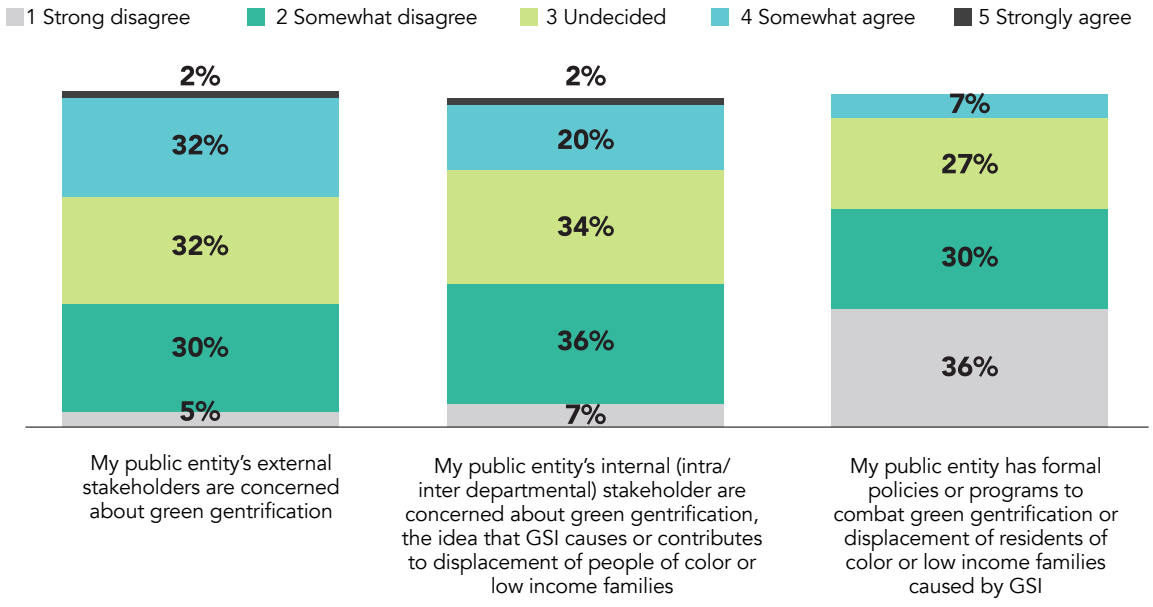
Preventing Displacement

How extensively is displacement risk being proactively addressed in all GSI program, policy, and project development?

Gentrification describes changes in historically marginalized neighborhoods characterized by the arrival of higher educated, higher income residents that result in rising house costs and a physical transformation through renovations and property upgrades. The common result of this process is the displacement of the original and often more vulnerable residents, and a change in the cultural character of the neighborhood (The University of Texas, 2021).

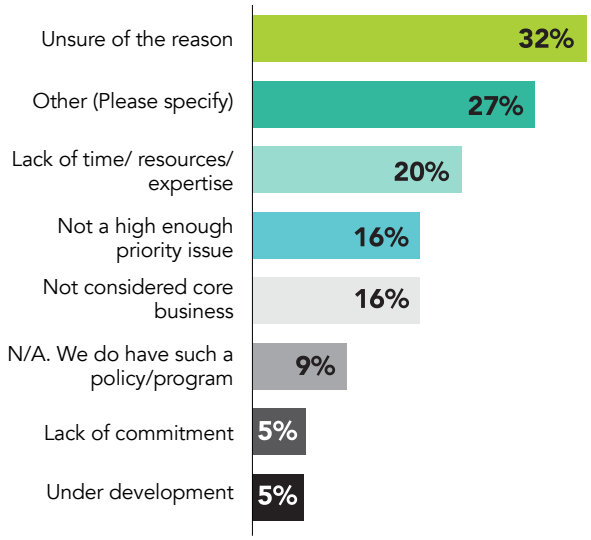
While GSI planning has only a limited role to play in the forces that drive gentrification, GSI processes can have some influence over displacement.

What is your reaction to the following statements:



It is likely that the relatively low rate of agreement to the question related to internal entity concerns (central graph - 22% strongly agree or somewhat agree) is due to some respondents and their colleagues being unsure about the direct link between GSI and gentrification. On the other hand, there is greater agreement (left graph - 34%) where their external stakeholders are concerned. Internal and/or external concern regarding GSI and gentrification is translating into 34% of entities strongly agreeing or somewhat agreeing that they have developed or are in the process of developing formal gentrification or displacement mitigation policies or programs.

If you do not have an anti-displacement policy/formal program, what are the main reasons for this?



Here, once again, references to capacity constraints feature. Leadership is also noted as a barrier, leading to this issue not being seen as high enough of a priority or as core business. Finally, several references within the relatively large 'other' category (27%) indicate a lack of comfort with the framing of this set of questions, specifically around what is perceived to be the explicit assumption that GSI leads to gentrification and displacement.

The research literature is not yet conclusive regarding the strength of the relationship between GSI and gentrification and/or displacement. A 2020 study by Shokry et al. looking at Green Resilient Infrastructure (GRI) in Philadelphia, a subcategory of which is GSI, points to a strong positive relationship between GRI siting, gentrification and reduced minority populations. Walker's 2021 study of GSI related gentrification in Minneapolis likewise concludes that GSI may ultimately deepen environmental inequalities, and that planning and policies must proactively mitigate gentrification risks. There have also been many references to this relationship within more mainstream news over the past few years, but the peer reviewed research base to support this is still considered somewhat light. Regardless, anecdotal community experiences that raise the possibility of a positive relationship between GSI and gentrification suggests that intentionally considering the possibility for it in the earliest stages of planning, and building in safeguards to guard against it is warranted.

SPOTLIGHT

The 11th Street Bridge Park project is Washington, D.C.'s first elevated public park, positioned over the Anacostia River. A GI partnership between Ward 8 non-profit Building Bridges Across the River and the District Department of Transportation, the project received early community pushback on the grounds of potential gentrification-related impacts. In response, project managers invested significant resources in developing equity-focused development strategies alongside community leaders. This included setting up community land trusts, safeguarding affordable housing investments, providing skills training and jobs for local residents, and investing in local small businesses (Cartier, 2021).

SPOTLIGHT

Living Cully is a Portland based grassroots coalition investing in local residents through leadership development and job training. The goal is to provide opportunities for lower-income residents to contribute to positive change in their communities and build their capacity to stay in place as revitalization occurs. All of Living Cully's green infrastructure work is explicitly linked with wealth building and anti-displacement goals. Living Cully was formed out of Portland not-for-profit Verde. Living Cully coalition helps Verde identify community capacities and local and regional needs around which viable businesses can be built. Verde then uses the social enterprises as a mechanism to invest deeply in resident capacity building (Wilson, 2019).

Looking Forward: Preventing Displacement

GAPS

- There is limited research into the links between GSI, gentrification and displacement.
- There is a lack of understanding of the full suite of harm reduction tools and policies that could be deployed to significantly reduce GSI gentrification risks.
- Many of the policy tools and programs to reduce GSI related gentrification and displacement risks sit outside of the realm of stormwater.

OPPORTUNITIES

- **Support more displacement research.** Support research into the relationship of GSI and gentrification and/or displacement and the effectiveness of different policy tools being used to reduce or manage risks.
- **Build awareness of current tools**. Build capacity and awareness of the tools and policies that have had success in addressing gentrification and displacement risks, whether from GSI work or other "greening" initiatives. Examples include:
  - The University of Minnesota CREATE Initiative's Sharing in the benefits of a greening city (2020). This is a policy toolkit to address the intersections of housing and environmental justice.
  - The Audubon Center at Debs Park's Greening in Place Toolkit (2020).
  - The Democracy Collaborative's Building Resiliency through Green Infrastructure (2019)
- **Support "whole of government" convenings and coordination.** Support convenings that provide opportunities for stormwater departments to work alongside other city agencies to reduce risk of displacement from development. For GSI investments that may trigger gentrification related impacts, support greater coordination with broader city level planning strategies that also address lack of affordable housing, economic development, and transportation.
- **Build capacity of GSI practitioners to affect policy change.** Build the capacity of GSI practitioners to support policies and tools that reduce the risk of displacement and to connect advocates to decision-makers.

SECTION 7

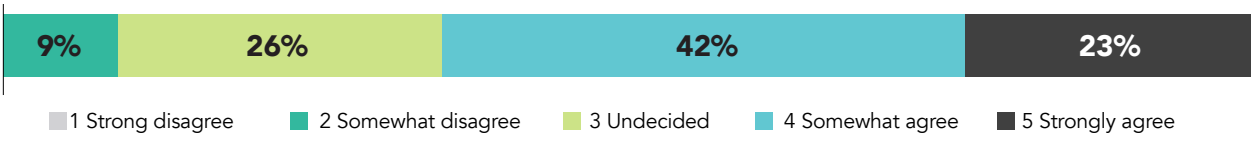
Benefits-driven Project Development & Maintenance

To what extent are GSI projects being designed, constructed, and maintained to provide lasting community benefit?

The physical design, construction and maintenance of a GSI project, as well as the processes used while moving through these phases of work, can all contribute positively or negatively to equity related outcomes. Speaking to both procedural and power equity, examples include:

- Different forms of GSI contribute to different social and environmental co-benefits.
- GSI design can impact cultural identity, social cohesion, and community pride.
- Construction processes, quality, and appearance can have significant neighborhood economic and environmental impacts (see section 8).
- Design decisions have implications for maintenance requirements and stewardship opportunities (see section 8) as well as project acceptability and sustainability.

What is your reaction to this statement: My public entity integrates community needs, preferences, or priorities in the design of GSI. E.g. designing according to community preferences, nuisance/ disturbance factors.



This survey question attempts to capture community leadership around priorities and preferences (the design aspects) but also more process related aspects such as anticipating and managing the disruptions and negative impacts of construction activities on the community by engaging in dialogue with them. While two thirds of respondents agreed that their entities indeed integrated community needs, preferences and priorities within design, the Hoover et al. review of city GSI policies cautions that the language in the policy documents related to the incorporation of community preferences is often vague, with little specified with regards to the process for negotiating priority or interest conflicts (2021).

Focusing on the more technical aspects of GSI project design, construction and maintenance, Taguchi et al. provide a comprehensive analysis of the potential unintended negative consequences that can result from ill-attention to equity throughout all of those stages of work (2020).

SPOTLIGHT

The San Francisco Public Utility Commission (SFPUC) Green Infrastructure Grant Program Guidebook includes a list of equity co-benefits which must be achieved (at least 2) in order to be eligible for the grant program. Co-benefits ranging from locating in an Environmental Justice Area, granting public access, and educational opportunities are all included with descriptions of how each may be achieved with different BMPs. This ensures that the design of projects have equity goals embedded in the process, with equity goals stated at the outset and present throughout the grant process. The guidebook also provides a step-by-step guide of how to apply and navigate the process to increase accessibility and lessen barriers to applications (SFPUC, 2021).

Looking Forward: Benefits-Driven Project Development and Maintenance

GAPS

- Some design, construction and maintenance staff do not perceive equity practices to be within the scope of their jobs.
- There is insufficient consideration or knowledge of how GSI design, construction and maintenance decisions can either reinforce existing inequities or be used to reduce such inequities.

OPPORTUNITIES

- **Expand the equity conversation into GSI design, construction and maintenance.** Work with stormwater leadership to determine how equity considerations and goals could manifest within design, construction and maintenance processes as a first step toward building accountability within these phases of work.
- **Create equity guides for the design, construction and maintenance phases of work.** Support the development of a "good practice" reference guide that shares equity-targeted strategies and actions for these phases of work.

SECTION 8

Economic Stability

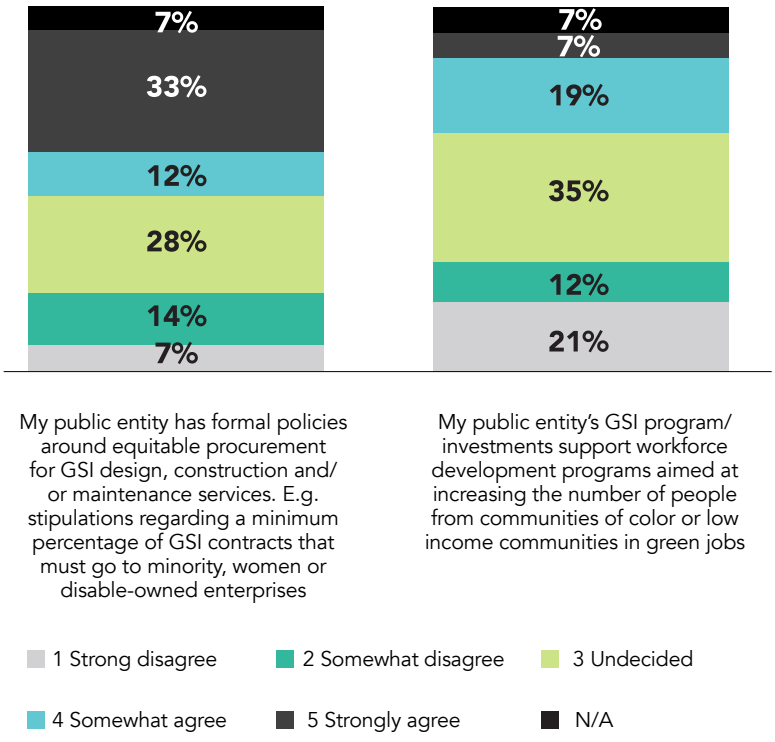
To what degree do GSI procurement, employment, and workforce development practices build economic stability and wealth for underinvested communities?

The potential for GSI to deliver triple bottom line benefits features strongly in case making for this approach to sustainable water management. One such often-cited benefit is economic stability and wealth creation for underinvested communities. The Center for Neighborhood Technology provides examples of some of these opportunities. While workforce development features strongly, other potential community benefits include increased property values, increased vacant land reactivation, increased sales revenues and increased recreational value, all with the caveat related to gentrification and possible displacement impacts (2020). Within the broad workforce development category, potential benefits include job training that create pathways to employment, small business creation and expansion, adoption of more equitable procurement practices, fairer pay and more local sourcing practices.

What is your reaction to the following statements:

While it appears that only a quarter of respondent entities have formally developed and launched GSI workforce development programs, the large number of 'undecided' responses (35%) would indicate that there are pockets of efforts underway, even if not yet institutionalized. On the other hand, deployment of more equitable procurement practices appears to already have momentum with nearly half of survey entities responding affirmatively.

Important questions include, how big is the opportunity for workforce development within the GSI sector, what type of wages and employment are being developed, and are the current workforce development programs being designed actually sustainable in their current forms?



In response to the first question, the most recent comprehensive analysis of the potential for a GI workforce was undertaken by Jobs for the Future (JFF) in 2017. It examined workforce trends in the green job industry with attention to employment opportunities for low-income residents in vulnerable communities. It particularly focused on green jobs for installation, maintenance, and inspection since these were found to have a direct link to entry- and middle-skill level opportunities. The study concluded that nation-wide expected growth between 2015-2020 for GI Installation, Maintenance and Inspection jobs alone was 5%, with strong potential to develop the future for these occupations.

The Sustainable Business Network of Philadelphia's 2021 study of GSI jobs in Pennsylvania also paints a positive picture of GSI-related job opportunities. The study found that from 2011 until 2019, Pennsylvania's GSI industry grew by 9.2%, compared to a statewide growth across all occupations of 6.3%. An additional important equity-related finding was that 52% of GSI workers earned at least $15/hour, even without a high school diploma or equivalent. A 2021 FEMA study found that a $166m investment in nature-based solutions from 2012 to 2014 created more than 2,000 jobs, most being filled by local residents, hence contributing to an enhanced local economy.

Addressing the question of the sustainability of these workforce development programs, the Equitable Needs Assessment from North Central Region Report found that participants in GI training programs reported interest in GI and the skills they learned, but did not see GI as a future career path (Heath et al., 2020). These types of programs were providing GI jobs, but they were not providing a career pipeline for long-term GI opportunities. Low wages of GI maintenance and the seasonality of the work were quoted as major challenges for these programs. Another challenge unearthed during the North Central Region listening sessions was that the supply of candidates trained by these programs outstripped hiring by the GI industry.

SPOTLIGHT

The Cincinnati Lick Greenway Project is a stormwater management/Combined Sewer Overflow reduction project implemented by the Metropolitan Sewer District of Greater Cincinnati (MSD). While originally envisaged as a traditional gray concept, it shifted to a green alternative in recognition that such an approach could meet compliance goals at reduced costs while supporting the revitalization of a socio-economically disadvantaged community. Over three years, the MSD studied GSI opportunities at length, partnering with a multitude of different local community organizations to collectively determine how best to use the opportunity to re-invigorate the neighborhood, help boost its economy and provide opportunities for beautification and recreation (Green Infrastructure Leadership Exchange, 2021b).

SPOTLIGHT

King County and Seattle Public Utilities have launched the 'RainWise Contractor Academy' pilot program. This intensive contractor incubator program covers essential small business skills and in-depth construction and program related skills to produce job-ready contractors to support the expansion of the RainWise program. Special attention has been paid to recruiting a diverse mix of applicants, with the inaugural pilot class ranging in age from the twenties to sixties. Over half of the class are female and almost half the class identify as Hispanic/Asian/Native/Black and/or nonbinary. This program is currently offered as a remote training in conjunction with South Seattle College. The Academy is the most ambitious contractor development training offered by the RainWise program (Seattle Public Utilities, 2021).

SPOTLIGHT

An important element of Milwaukee Metropolitan Sewerage District's (MMSD) green infrastructure (GI) plan of 2013 is to prioritize training and job opportunities to create a diverse and equitable green workforce. The plan spotlights partnerships between MMSD and local community-based groups to employ GSI to build resilience in neighborhoods hardest hit by major flooding events. To support this work, MMSD recently established an internal Diversity, Equity and Inclusion committee and is part of the US Water Alliance Equity Taskforce. Additionally, the scope of the GI training program is being broadened under the Fresh Coast Ambassadors program to introduce young adults to water industry education and career paths (City of Milwaukee, 2019).

Looking Forward: Economic Stability

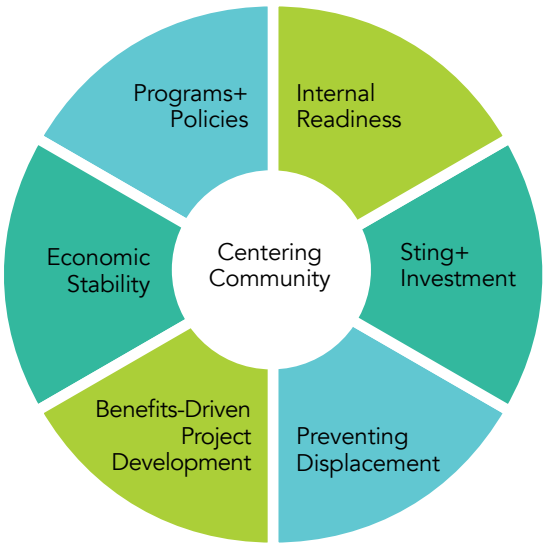
GAPS

- Workforce development programs are too often ad hoc, produce more trained personnel than there are job opportunities, and are not designed with a career trajectory timeframe.
- The seasonal nature of some GSI jobs limits year long gainful employment opportunities. Low wages also reduce the attractiveness of GSI careers.

OPPORTUNITIES

- **Learn from existing workforce development models.** Borrow from the experiences, resources and existing curriculums of entities such as Seattle, King County, Milwaukee and Minneapolis. These locations have already developed comprehensive workforce development programs that build in the skills required for advancement beyond entry level roles.
- **Better connect the GSI industry with workforce development programs.** Create more formal communication channels between the GSI industry and workforce training and development programs to ensure the skills, competencies, and capacities being developed match the current and expected needs of the industry. Specifically, ensure that the National GI Certification Program is in constant communication with utilities to ensure that it remains relevant and is helping to produce future employees with the skill sets sought by the public sector.
- **Broaden the focus of GSI training**. Include additional skill sets of complementary sectors in GSI training, such as energy and transportation, to enhance seasonal job mobility.
- **Connect GSI jobs to the larger water sector**. Ensure that GSI is included as part of an organizational strategy for workforce development. This might translate into recruiting more people into operations and maintenance roles that include, but are not limited to, GSI and create longer term career opportunities.

An Evaluative Roadmap



The previous sections of this report attest to the fact that assessing how implementation of GSI impacts equity outcomes is a complex task. Yet undertaking assessment is critical for reducing unintended consequences as well as for maximizing GSI's potential to increase community equity outcomes. To support practitioners and communities on this journey, in early 2022, the Exchange, in partnership with Greenprint Partners, will release its *Equity Guide for Green Infrastructure Practitioners*, an evaluation roadmap that defines the industry's shared long-term equity goals, mid-term metrics that mark progress toward those goals, and the individual best practices and near-term outputs that will ultimately move the needle. It seeks to help practitioners develop their own individual community-informed plans to measure baseline information, create community-informed equity impact metrics, and evaluate the effectiveness of equity practices in their work. Each element of the Guide will support the following goals:

- Ground the Practice in Research. The literature review and community interviews that went into developing the guide ground it in the best available information.
- Measure Impact Consistently. The proposed impact metrics and guidance on how to collect data to advance meaningful outcomes for equity offer insight at both the project level and organizationally to better understand how departments are (or are not yet) considering structural, procedural, distributional, and transgenerational equity practices in green infrastructure work.
- Create a Shared Language. The Guide's introduction of seven green infrastructure equity "goals" (Internal Readiness, Centering Community, Siting and Investment, Preventing Displacement, Benefits-Driven Project Development, Economic Stability, and Programs and Policy) and definitions help advance and grow the shared language the Exchange is developing to support its members.
- Grow the Community of Practice. The process of contributing and implementing recommendations supports the community of practice started by the Exchange's Equity Learning Circle. It offers a shared language, shared ways of thinking, and moves GSI practitioners toward a shared industry benchmark. This community of practice also supports the Exchange's dedication to facilitating peer learning as individual utilities work together to implement these practices.

Looking Forward

The purpose of this baseline report was to better understand the state of equity practice in GSI implemented by public sector entities at the municipal, city, county or regional levels. Equipped with a clearer picture of both the barriers and the opportunities for further enhancing equity outcomes, its intention was to support GSI partners in more effectively directing resources toward investments with the greatest likelihood of accelerating equity-related progress.

Importantly, we see that while there are many examples of concerted effort and important progress, many opportunities to further center equity within GSI efforts exist. Given that survey findings represent the experiences of public sector stormwater entities that serve only around 10-15% of US communities, many of whom are Exchange Members who have committed to centering Equity within their practice, the potential for equity outcomes to be gained through future efforts of the other 85% of public sector stormwater entities across the nation is significant.

To contribute towards the delivery of such potential impact, the Exchange commits to prioritizing the following equity-centered activities, many of which will be accessible to practitioners beyond the current Exchange membership base:

- Releasing the Exchange *Equity Guide for Green Infrastructure Practitioners*, introduced in the above section, in early 2022. This resource will promote a transparent way of doing things and a way community members can hold practitioners/municipalities accountable, addressing implicit power structures that can undermine equity goals
- Incorporating key findings from this report into a full 2022 State of GSI report, including triangulating public sector perspectives with those of the communities they serve
- Continuing to convene the monthly Exchange member 'Centering Equity' Learning Circle, aimed at sharing knowledge and experiences across member jurisdictions
- Increasingly embedding equity considerations into the conversations and actions of the Exchange's other Peer Learning Circles
- Following up the 2022 State of GSI report with future editions in 3-5 years' time to get a better sense of the direction of movement of the sector.

The Exchange encourages its partners to deepen conversations and act on the opportunities identified in this report that most resonate to advance the equity impact of GSI.

References

American Anthropological Association (2019). Presentation Guidelines for Success & Accessibility. https://www.americananthro.org/PresenterGuidelines?navItemNumber=25124 (Accessed August 2021)

American Society of Civil Engineers (2021). 2021 *Infrastructure Report Card for American Infrastructure - Stormwater.* https://infrastructurereportcard.org/cat-item/stormwater/, (Accessed September 2021).

Audubon Center at Debs Park, Public Counsel, SEACA, and Team Friday (2020). Greening in Place: *Protecting Communities from Displacement.* https://static1.squarespace.com/static/5f5ab412f824d83e0eefa35e/t/5f739385c6cc3d63acd8d875/1601409949612/GG-2020-ToolKit-FINAL.pdf

Bergen, A. (August 17, 2021). Equity v Equality: The Difference and Why it Matters. *Idealist.* https://www.idealist.org/en/careers/equity-vs-equality-the-difference-and-why-it-matters (Accessed November 1, 2021).

Buffalo Sewer Authority (2019). Raincheck 2.0 *Opportunity Report.* https://raincheckbuffalo.org/app/uploads/2019/05/190515-RC2-OpportunityReport_sml.pdf

Cartier. K. (2021). Creating Equity in Green Spaces. https://eos.org/features/growing-equity-in-city-green-space

Center for Neighborhood Technology (2020). *Green Values Strategy Guide: Linking Green Infrastructure Benefits to Community Priorities.* https://www.cnt.org/sites/default/files/publications/Green%20Values%20Strategy%20Guide.pdf

Center for Neighborhood Technology (2011). *The Value of Green Infrastructure: A Guide to Recognizing Its Economic, Environmental and Social Benefits.* https://www.cnt.org/sites/default/files/publications/CNT_Value-of-Green-Infrastructure.pdf

City of Milwaukee. (2019). *City of Milwaukee green infrastructure plan.* https://city.milwaukee.gov/ImageLibrary/WCC/Images/GreenLots/FINALGIPLAN--reduced_2.pdf

City of Seattle (2021). *Race and Social Justice Initiative.* https://www.seattle.gov/rsji (accessed November 2021).

Coalition of Communities of Color (2014). *Tool for Organizational Self-Assessment Related to Racial Equity.* https://www.coalitioncommunitiescolor.org/research-and-publications/cccorgassessment (Accessed Aug 2021).

Delaware Valley Regional Planning Commission (2017), City of Chester. Green Stormwater Infrastructure Plan. https://seagrant.psu.edu/sites/default/files/Chester%20City%20Green%20Infrastructure%20Plan%202118.pdf

FEMA (2021). *Building Community Resilience with Nature-Based Solutions: A Guide for Local Officials.* https://www.fema.gov/sites/default/files/documents/fema_riskmap-nature-based-solutions-guide_2021.pdf

FSG and PolicyLink (2017). *The Competitive Advantage of Racial Equity.* https://www.policylink.org/sites/default/files/The%20Competitive%20Advantage%20of%20Racial%20Equity-final.pdf

Georgetown Climate Center, District of Columbia Department of Energy and the Environment. (2018). *A Guide to Community-Centered Engagement in the District of Columbia.* https://www.georgetownclimate.org/files/report/community-engagement-guide_10.05.18_web.pdf

Georgetown Climate Center (2016). *Green Infrastructure Toolkit.* https://www.georgetownclimate.org/adaptation/toolkits/green-infrastructure-toolkit/equitable-planning.html (Accessed September 2021).

Georgetown Climate Center (2020). *Equitable Adaptation Legal & Policy Toolkit.* https://www.georgetownclimate.org/adaptation/toolkits/equitable-adaptation-toolkit/procedural-equity.html (Accessed Sept 2021)

Heath.T., Merrifield.l., Brown.K., Heim.K., Salazar.k., and Walker.C. (2020). *Building and Equitable and Just Green Infrastructure Strategy in the North Central Region.* https://extension.illinois.edu/sites/default/files/equitablegreeninfrastructure-9-16-2020.pdf

Heckert. M., and Rosan.C., (2015). *Developing a green infrastructure equity index to promote equity planning.* Urban Forestry & Urban Greening. 19:263-270. 30 December 2015. https://www.sciencedirect.com/science/article/pii/S1618866715001892?casa_token=tpHtB_tr8BUAA

Hoover.F., Meerow.S., Grabowski.Z., & McPhearson.T, (2021). Environmental justice implications of siting criteria in urban green infrastructure planning, *Journal of Environmental Policy & Planning*, DOI:10.1080/152390 8X.2021.1945916

Jobs for the Future. (2017). *Exploring the Green Infrastructure Workforce – A Nature Works Issue Brief.* https://jfforg-prod-prime.s3.amazonaws.com/media/documents/NatureWORKS-Issue-Brief-032317_v3.pdf

Martens, K., Golub, A. & Robinson, G. (2010). *A fair distribution of transportation benefits: interpreting Title VI for transportation investment programs.* (PDF) A fair distribution of transportation benefits: interpreting Title VI for transportation investment programs (researchgate.net)

Montgomery County (2019). *Watershed Restoration Suitability and Equity Mapping Tools.* https://www.montgomerycountymd.gov/water/restoration/equity.html (Accessed Oct 2021)

Oxfam Australia (2010). *Guide to Free Prior and Informed Consent.* guidetofreepriorinformedconsent_0.pdf (culturalsurvival.org) (Accessed 22 Nov 2021)

Qi. J., and Barclay. N., (2021). Social Barriers and the Hiatus from Successful Green Stormwater Infrastructure Implementation across the US. *Hydrology* 2021, 8, 10. https://doi.org/10.3390/hydrology8010010

San Francisco Public Utilities Commission(2021). *Green Infrastructure Grant Program*. https://sfgov.maps.arcgis.com/apps/webappviewer/index.html?id=09c614e0f12841ad867402ac5926cb27 (Accessed Aug 2021)

Santucci, L. (2020). Documenting Racially Restrictive Covenants in 20th Century Philadelphia. *CityScape: A Journal of Policy Development and Research*. Vol 22, Number 3, pp. 241-267 https://www.huduser.gov/portal/periodicals/cityscpe/vol22num3/ch11.pdf

Seattle Public Utility (2021). *Rainwise Contractor Resources.* https://700milliongallons.org/rainwise/contractor-resources/

Shokry.G., Connolly.J., and Anguelovski.I. (2020). Understanding climate gentrification and shifting landscapes of protection and vulnerability in green resilient Philadelphia. *Urban Climate* 31. 2020.

Sustainable Business Network of Greater Philadelphia (2021). *Green Stormwater Infrastructure: A Tool for Economic Recovery and Growth in Pennsylvania.* https://www.sbnphiladelphia.org/wp-content/uploads/2021/06/GSI_A-Tool-for-Economic-Recovery-and-Growth-in-PA_doubleview.pdf

Taguchi. V., Weiss. P., Gulliver. J., Klein. M., Hosalski. R., Baker. L., Finlay. J., Keeler. B., and Neiber. J. (2020). It Is Not Easy Being Green: Recognizing Unintended Consequences of Green Stormwater Infrastructure. *Water*, 2020, 12, 522; doi:10.3390/w12020522

The Democracy Collaborative (2019). *Building Resilience through Green Infrastructure.* https://democracycollaborative.org/sites/default/files/downloads/GreenInfrastructure_Web.pdf

The Green Infrastructure Leadership Exchange (2021a). *GSI Trailblazers Campaign 2nd Place Winner – San Mateo County.* https://giexchange.org/gsi-trailblazers-campaign-2nd-place-winner-san-mateo-county/

The Green Infrastructure Leadership Exchange (2021b).*GSI Trailblazers Campaign 1st Place Winner – Cincinnati!!* https://giexchange.org/gsi-trailblazers-campaign-1st-place-winner-cincinnati/

The New School Urban Systems Lab (2020). *Equity of Green Infrastructure Planning in 20 US Cities.* https://giequity.org/ (Accessed June 2021).

The University of Minnesota Create Initiative (2020). *Sharing in the Benefits of a Greening City.* https://create.umn.edu/wp-content/uploads/2020/02/sharing_in_the_benefits_of_a_greening_city_-_final_web.pdf

The University of Texas School of Law and the Community and Regional Planning Program at The University of Texas at Austin (2021). *The Uprooted Project.* https://sites.utexas.edu/gentrificationproject (Accessed October 29, 2021).

US Environmental Protection Agency (2015, September 30). *What is Green Infrastructure?* https://www.epa.gov/green-infrastructure/what-green-infrastructure. (Accessed September 2021).

US Water Alliance (2020). *Water Equity Taskforce Insights for the Water Sector.* http://uswateralliance.org/sites/uswateralliance.org/files/FINAL%20Water%20Equity%20Taskforce%20Insights%20for%20the%20Water%20Sector.pdf

US Water Alliance (2019a). *Water Equity Taskforce Roadmaps.* http://uswateralliance.org/about/water-equity-taskforce-roadmaps (Accessed Sept 2021).

US Water Alliance (2019b). *An Equitable Water Future - Camden.* http://uswateralliance.org/sites/uswateralliance.org/files/publications/Water%20Equity%20Roadmap_Camden_Final%20pdf.pdf

US Water Alliance (2017). *An Equitable Water Future, National Briefing Paper.* http://uswateralliance.org/sites/uswateralliance.org/files/publications/uswa_waterequity_FINAL.pdf

Walker. R (2021). Engineering gentrification: urban redevelopment, sustainability policy, and green stormwater infrastructure in Minneapolis, *Journal of Environmental Policy & Planning*, 23:5, 646-664, DOI: 10.1080/1523908X.2021.1945917

Wilson. B.B (2019). 'When Green Infrastructure is an Anti-Poverty Strategy' in *Next City* July 8, 2019. https://nextcity.org/features/view/when-green-infrastructure-is-an-anti-poverty-strategy (Accessed November 2, 2021).

ANNEX 1

Survey Methodology

- While we recognize that many entities (public, private, federal, state) implement GSI across the US, the primary source data used to develop this report came from a survey targeting **public sector entities at the municipal, county or regional level with primary or significant responsibility within their jurisdictions for stormwater management.**
- To select survey recipients, we took the following approach:
  - We issued surveys to the Exchange's existing 59 public sector member US based entities and additionally reached out directly to another 150+ public sector entities, starting with the list of the top 200 largest US cities/municipalities, and from that list, selecting at least two stormwater management public sector entities per state to receive the survey.
  - As we also wanted to learn about the experiences of different sized jurisdictions as well as hear from as many states as possible, we then added additional cities/towns to the list so all states were represented in survey outreach. These additional cities/towns were selected at random, the only criteria being that we could find direct contact information.
  - We requested that only one survey be completed per public entity, also requesting that the respondent should be the person considered to be best positioned within that entity to answer the questions.
  - We also additionally shared the survey link via partners and social media to encourage public sector entities that were not part of our direct survey targets to also share their experiences.
- An initial set of questions screened out organizations that were not our target survey audience.
    - » We recognized the small risk that by sharing the link publicly, and not asking for entity names, two or more people from the same public entity might complete the survey, unaware that the other had done so. While it was not possible to control for this 100% we felt the risk of people being overly enthusiastic about completing a survey, and therefore us receiving multiple responses from the one entity, was minimal.
- Before sending out the survey, the survey questions were peer reviewed by Exchange staff, Exchange Members and external partners. The complete survey was tested by a number of Exchange members before being issued.
- We considered carefully how to phrase questions to ensure they would be commonly understood, including providing definitions where needed.
- We used the Likert scale question type for many of the questions to allow us to track changes in attitudes or opinions over time (for future report purposes). Also, in asking for the respondent's opinion/perspective, we hoped to increase the respondent's level of comfort in responding to a survey on behalf of their entity.
- After the initial communication inviting public sector contacts to participate in the survey, we sent three follow up reminder messages over the 28 day period over which the survey was open.
- The survey was anonymous and confidential. Only the name of the State in which the respondent was residing was asked.
  - The exception to this is where an organization chose to share a case study in response to the final survey question. In that case, we asked for advance permission to attribute the case study to the entity.

the **green** infrastructure
leadership exchange

907 S 16th Street, Philadelphia, PA 19146

paula@giexchange.org

www.giexchange.org