

INVESTING IN INNOVATION AND OUTCOMES

The Story of DC Water's Environmental Impact Bond

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Combined sewer overflows (CSOs), the unfortunate byproduct of old sewage systems and increased weather severity, are a major source of pollution, a cause of poor water quality, and a health threat. CSOs have become an increasingly urgent environmental challenge as a result of climate change, which has intensified both the severity and frequency of the rainfall events that overwhelm aged stormwater infrastructure.¹ In Washington, DC, the water utility, DC Water, operates under a landmark legal settlement that requires a substantial intervention to reduce this damage.

There are two main ways to address challenges with CSOs: gray infrastructure (tunnels) and green infrastructure (mimicked natural habitats). Gray infrastructure is a known, trusted, and tested solution. Green infrastructure has great potential and many positive externalities but is largely unproven at scale.

After years of negotiations, DC Water reached an agreement in 2015 with the U.S. Environmental Protection Agency, U.S. Department of Justice, and District of Columbia that modified their legal settlement to allow DC Water's Clean Rivers Project to deploy large-scale green infrastructure installations to reduce CSOs to the Potomac River and Rock Creek. So

¹ When a rainfall event exceeds the capacity of a combined sewer system, a CSO event occurs in which untreated stormwater and raw sewage are discharged into local waterways to prevent the system from backing up. In an average year, approximately 2 billion gallons of CSOs pollute the Anacostia and Potomac Rivers and the Rock Creek in the District of Columbia.

when faced with a choice, DC Water's chief financial officer, like all entrusted stewards of public funds, was haunted by the simple question, "What if green infrastructure does not achieve the outcomes we need?"

Fast-forward 18 months to September 2016, when DC Water issued the nation's first environmental impact bond (EIB) to finance its maiden green infrastructure project. This \$25 million deal was sold in a private placement to Calvert Foundation and Goldman Sachs' Urban Investment Group, with Quantified Ventures serving as DC Water's Pay for Success transaction coordinator.² This was not only DC Water's first foray into green infrastructure, but also the first large-scale green infrastructure project in the District. Because the effectiveness of green infrastructure depends on local climatic conditions, DC Water faced a challenge in measuring the risk of performance outcomes. The resulting EIB represents a groundbreaking approach to partially transfer the risk of performance outcomes from the issuer to the investor, allowing DC Water to move forward confidently with its green infrastructure experiment.

The EIB is unique in many respects. With the assistance of Quantified Ventures, DC Water structured the EIB with an outcomes-based financing mechanism that leveraged private impact capital to support public "interventions" to produce measurable social and environmental outcomes for the community. Payment on the bond will depend on the intervention's demonstrated success, as measured by a rigorous evaluation that will be independently validated. To date, such contracts, also known as social impact bonds, have been used to address critical social issues, such as prisoner recidivism and homelessness. Unlike previous social impact bonds in the United States, DC Water's EIB is the first Pay for Success deal structured as a traditional bond instrument, and the first to fund environmental interventions like green infrastructure. At \$25 million of investor capital, it also represents the largest Pay for Success transaction in the United States.

The defining characteristic of DC Water's EIB is that the total rate of return to the investors will depend on the green infrastructure's performance in managing stormwater runoff. Standard municipal bond

² Other parties to the transaction included Public Financial Management, Inc. (financial advisor), Harvard Kennedy School Government Performance Lab (technical advisor), Squire Patton Boggs LLP (bond counsel), and Orrick, Herrington & Sutcliffe LLP (investors' counsel).

investors invest solely on the creditworthiness of the issuer. In contrast, DC Water's EIB investors are "betting" on the outcome of the funded project—in this case, the green infrastructure's ability to reduce the volume of stormwater runoff, thus decreasing the incidence of CSOs. DC Water accomplished this by embedding a two-way contingent payment feature into the bond itself, the first time a tax-exempt municipal security explicitly tied financial payments to measurable outcomes. If the green infrastructure outperforms mutually agreed-upon performance targets, DC Water will make an additional "outcome payment" to its investors. If the green infrastructure underperforms, the investors will make a "risk share payment" to DC Water, partially offsetting the expense of testing this solution. If the green infrastructure meets performance expectations, the EIB will pay the investors the stated interest rate on the bond.

With this structure, all parties' interests are well-aligned. The investors, seeking ways to leverage private capital to promote innovation for greater social and environmental impact, are able to share risk with DC Water and help induce the agency to apply a green infrastructure approach with positive externalities that the investors value. DC Water, interested in testing green infrastructure but with a mandate to make the best financial decisions on behalf of its rate payers, is able to shift downside risk to a third party so that they are comfortable taking this promising but unproven approach.

Incentivizing this innovative approach could reap outsized benefits for DC Water, its citizens, and other communities. If the green infrastructure outperforms, DC Water will prove, with a scientific and verified evaluation, that green infrastructure is as effective as gray infrastructure, allowing it to manage a growing problem at likely a lower cost. This will trigger at least six additional green infrastructure projects across the Potomac and Rock Creek sewer sheds. In addition, DC Water's experiment will give U.S. communities a new tool to manage similar waste- and stormwater system challenges. In addition to reducing stormwater runoff, this tool improves local air quality, generates more resilient local habitats, and creates quality, local green jobs,³ all without the cost and disruption that large-scale gray infrastructure projects cause.

³ U.S. Environmental Protection Agency, "Benefits of Green Infrastructure," available at <https://www.epa.gov/green-infrastructure/benefits-green-infrastructure>.

This cross-sector, multi-stakeholder approach to financing innovation was not without its challenges. Creating a common language among mission-driven investors, a water utility, green infrastructure engineers, bond counsel, and many more parties required a collaborative and open approach to problem-solving along the way. The cultural and knowledge gaps that were unveiled early and often were overcome by listening, learning, and trusting that all actors were committed to shared objectives.

Investors have expressed a strong interest in the EIB model, highlighting its transparency, simplicity, rigor, and scalability. We believe these are the primary drivers that can lower transaction costs and enable faster deployment of impact capital for vexing social and environmental challenges, and we are excited to share our lessons to facilitate more of these deals.

Beyond its application to infrastructure projects, we can envision this outcomes-based financing mechanism being leveraged so that public officials, alongside private investors, are comfortable pushing the envelope in pursuit of more effective solutions. The core insight—that identifying the outcomes a project requires and then organizing financing that shares the risk and cost of generating these outcomes—can support public officials as they embrace innovation when the status quo is proven but the alternative can potentially deliver better long-term results. We have seen this approach applied in other areas, ranging from criminal-justice reform to health care to education, and we hope that this EIB will serve as a template that local authorities can replicate as they evaluate green infrastructure and other innovative social and environmental interventions.

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