Environmental Impact Bonds: Overview + Case Studies

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Chesapeake Executive Council

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Quantified Ventures is an outcomes-based capital firm that drives transformational health, social, and environmental impact.

What We Do

We develop projects and structure financing for innovative environmental and health solutions using an outcomes-based or “pay-for-performance” approach that aligns financing with project results.
QV offerings span the entire project financing process, from initial solution scoping to raising capital

**Consulting**
We assess, model, and deliver outcomes-based financing solutions to resolve protracted health, social, and environmental challenges confronting communities.

**Project Development**
We work with diverse partners to design and develop programs and projects that create health, social, and environmental benefits for people and ecosystems.

**Investment**
We offer creative financing solutions for public and private organizations seeking to drive improvements by tying payments to achievement of positive outcomes.
QV develops outcomes-based solutions across 4 practice areas

<table>
<thead>
<tr>
<th>Practice area</th>
<th>Example projects</th>
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<tbody>
<tr>
<td>Urban and Coastal Resilience</td>
<td>Urban green infrastructure installations to address CSO overflows, flooding, and water quality; coastal restoration and resilience; water quantity issues</td>
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<td>Forestry and Land Use</td>
<td>Proactive forest health treatments to reduce risk of wildfires; reforestation; outdoor recreation for economic development; and reclaiming biomass byproducts for commercial use</td>
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<td>Agriculture</td>
<td>Introduction of sustainable agriculture practices that sequester carbon and reduce nitrogen, phosphorus, and sediment runoff</td>
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<td>Health and Human Services</td>
<td>Scaling social determinant of health programs to address the health and community needs of underserved populations</td>
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Municipal bonds 101: a type of loan taken out by a municipal government to fund public projects for community benefits

Typical bond transaction

Issuer (Borrower) → Interest payments → Investors (Lender) → Proceeds (Principal) → Official Statement (Loan document) → Funded Public Projects → Community Beneficiaries → Outcomes

Issuer

Investors

Official Statement

Proceeds

Community Beneficiaries

Outcomes

Funded Public Projects
Most municipal investments lack post-implementation evaluation to know how effectively the projects served the community.

Typical bond transaction:
- **Issuer (Borrower)**: Official Statement (Loan document)
- **Interest payments**
- **Investors (Lender)**: Proceeds (Principal)
- **Outcomes**
- **Community Beneficiaries**
- **Did the projects generate outcomes?**
- **Did the outcomes impact the community?**
- **How wisely were public dollars spent?**

Did the projects generate outcomes? Did the outcomes impact the community? How wisely were public dollars spent?
Muni bond investors, too, are increasingly asking for proof that their investments generate positive community impact.

Industry-standard labels defined by the Int’l Capital Market Association (ICMA):

ICMA labels are earned by “use of proceeds”: the issuer declares intent to use investor dollars for projects that fit categories of green, social, or green + social projects.

With explosive growth in the ESG bond market, investors are looking for more than just pre-issuance intent to have impact. They’re seeking investments with increased transparency, impact quantification, and credibility beyond simple use of proceeds.
An Environmental Impact Bond is a label given to a bond when the issuer predicts, evaluates, and discloses actual project outcomes.

An Environmental Impact Bond does three things:

1. Quantitative prediction of a project outcome metric
2. Post-implementation evaluation of actual project outcomes
   - Simple low-cost protocols, ideally using existing issuer expertise and capacity
3. Disclosure of actual outcomes to investors and stakeholders (e.g., the public)
   - Some EIBs may have some terms of the investment change with outcomes
An EIB provides transparency for the community, credibility for investors, and performance data for issuers.
For the right issuer, turning a bond into an EIB conveys multiple benefits over a standard municipal bond.

**EIB Candidate**
- Planning to issue a bond in the next 6 – 18 months
- Leadership open to considering bold but market-tested solutions
- Projects with environmental and/or social goals

**Environmental Impact Bond**

Municipal bond +
Actual outcomes of funded projects predicted, evaluated, and disclosed to investors and public

**Financial benefit**
- Increase investor base to include ESG-oriented investors
- Relationships with new investors
- Reduce ESG risk perceived by investors and credit agencies

**Reputational benefit**
- Local, national, and industry news coverage
- Leadership among peer municipalities
- Trust built with taxpayers

**Governance benefit**
- Accountability and transparency in public spending
- Data-driven decisions in future capital spending
- Stronger collaboration and communication across departments
Fighting Chronic Flooding and Water Pollution in Hampton, VA

CASE STUDY: Resilient Hampton Finances Green Infrastructure Through Environmental Impact Bond as Part of “Living with Water” Approach

Challenge

- Coastal location, low elevation, and high impervious surface coverage / groundwater table causes frequent local flooding + polluted stormwater runoff
- Climate change, sea level rise, and increasing storm severity make Hampton and its citizens increasingly vulnerable
- Interdepartmental initiative – Resilient Hampton – searches for solutions

Solution

- $12 million bond issuance to finance 3 green infrastructure projects to manage coastal and stormwater flooding in low- and moderate-income communities
- Outcome metric: gallons of added stormwater storage capacity (8.6M gall.)
- Focus on and measurement of outcomes promotes governance best practices, attracts municipal bond investors with ESG mandates, and informs future planning, financing, and implementation
- 2x oversubscribed; ESG-oriented investor interest contributed to underwriters ability to lower yields
- Financed projects prototypes for a decades-long pipeline of resilience work
Green Infrastructure Proves its Worth in Washington, DC

**Challenge**

- DC’s combined sewer system was dumping 2.5 billion gallons of overflow annually into 3 rivers
- DC given consent decree in 2005 to fix the issue
- Original approach – $2 billion for grey tunnel system – was expensive and didn’t provide community benefits
- DC Water interested in green infrastructure, but performance was uncertain and risky

**Solution**

- $25 million Environmental Impact Bond issued to finance green infrastructure installation
- Outcome metric: stormwater runoff reduction vs. baseline
- Investor payments tied to stormwater volume capture outcomes thereby transferring some performance risk to investors
- 25 acres of new green infrastructure installed across the city reduced stormwater runoff into Rock Creek by nearly 20% (no outcomes payment)
- Green infrastructure workforce program that’s trained 190 District residents
- DC Water made mandatory tender and full repayment of the EIB in 2021
Environmental Impact Bond Structures Are Highly Customizable Based on Local Context, Priorities, and Needs

<table>
<thead>
<tr>
<th>Primary Value Proposition of EIB</th>
<th>WASHINGTON, DC</th>
<th>ATLANTA, GA</th>
<th>HAMPTON, VA</th>
<th>BUFFALO, NY</th>
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<tbody>
<tr>
<td>What is the cost-effectiveness of green vs. grey infrastructure for CSO reduction?</td>
<td>How can green infrastructure improve local flooding, water quality, and economic conditions?</td>
<td>How can outcomes disclosure and reporting signal climate preparedness to investors?</td>
<td>Can an outcomes-based positive incentive help Buffalo over-achieve on its CSO goals?</td>
<td></td>
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<tr>
<td>Size</td>
<td>$25 million</td>
<td>$14 million</td>
<td>$12 million</td>
<td>$54 million</td>
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<tr>
<td>Term</td>
<td>30 years (5 year mandatory tender)</td>
<td>10 years</td>
<td>20 years</td>
<td>30 years</td>
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<tr>
<td>Placement</td>
<td>Private</td>
<td>Limited Public</td>
<td>Public</td>
<td>Public</td>
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<tr>
<td>Outcome Metric</td>
<td>Volume capture (flow / runoff)</td>
<td>Volume capture (capacity / storage)</td>
<td>Volume capture (capacity / storage)</td>
<td>Impervious surface area managed</td>
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<tr>
<td>Regulatory Driver?</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
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<tr>
<td>Outcomes-Based Financing Structure</td>
<td>• 3-tiered performance payment structure (Low, Base, High)</td>
<td>• 2-tiered performance payment structure (Base, High)</td>
<td>• Outcomes evaluation, reporting, and disclosure only</td>
<td>• Outcomes-based early call option, coinciding with step-up in coupon rate</td>
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Please reach out for more information

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