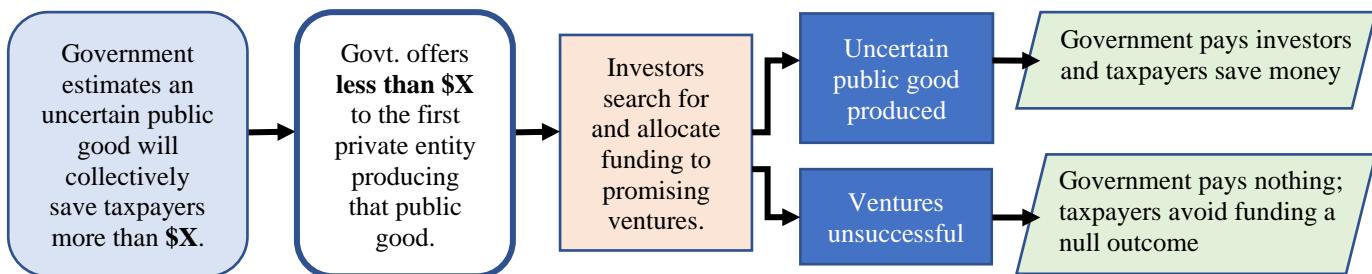

FROM: Nathan Witkin, Outside Innovation Institute
 RE: Open Impact Bonds: A Policy for Pricing the Creation of Public Innovations

Executive Summary

Innovative public goods, such as scalable carbon capture technology, are underfunded by governments because their feasibility is uncertain, and they are underfunded by the private sector because their benefits are difficult to monetize. Governments could fund these uncertain public goods by estimating what taxpayers would save through their creation and then offering less than this amount to the first private sector entity delivering the good. These “Open Impact Bonds” would only be paid if the technology is delivered within a set time. For example, a government could offer \$10B for carbon capture technology that would save its taxpayers \$100B, thereby potentially producing \$90B in value. Then, private investors would bear the risk, fund promising R&D, and earn a substantial sum (but only if successful).



Limitations and Potential in the Economic Theory of Public Finance

Government finance is powerful because it requires buy-in from all citizens. But mandatory buy-in brings pressure on public spending to deliver results and avoid waste. In contrast, private finance involves choice of buy-in, allowing for the uncertainty needed for innovation. The core idea behind Open Impact Bonds involves requiring public buy-in to support a fund that only pays out if private investment in innovation delivers predefined public benefits.

	Defined/Certain Results	Innovative/Uncertain Results
Choice of buy-in	Government bonds	Private-sector spending/investment
Required buy-in	Typical government spending	Open Impact Bonds

Combining required buy-in and open/uncertain results is necessary for public innovations. Instead of politicians attempting to identify the best approach to a problem, these public officials will only need to identify what constituents would collectively pay for the solution. Thereafter, private actors can undertake various efforts to raise investment capital and search for solutions to potentially earn the substantial amount taxpayers would collectively pay.

Limitations of Private Sector Finance: Underinvestment in Developing Carbon Capture

Funding to develop potential technologies can come from private investors when the outcome potentially generates revenue. Public goods, such as national defense, cannot generate revenue because they benefit all individuals in a society regardless of whether each specifically contributes payment. Potential public goods, such as carbon capture technologies, pose the additional challenges of requiring novel thinking and risking a null, fruitless outcome.

Though the private sector effectively manages risk and identifies promising innovations, its limitations in producing potential public goods are illustrated by the underinvestment in carbon capture. Because climate change leads to billions of dollars in annual property damage, technology efficiently removing carbon from the atmosphere would create immense economic value.¹ However, the private sector is largely ignoring R&D for technological solutions to climate change, investing only \$100 million in each of the major players in the carbon capture industry over their approximately 10 years of operation.²

Open Impact Bonds: Funding R&D of Technology that Mitigates Climate Change

The concept of the Open Impact Bond involves a legislature deciding on the public cost of a problem, offering less than that price in an open pay-for-success financing process, and then allowing venture capitalists to seek out and fund potential solutions. In the U.S., this could happen at the state level, among a partnership of states, or at the federal level.

Because it is underfunded in the private sector, the technological solution to climate change illustrates the potential for an Open Impact Bond.³ To learn more, visit www.outsideinnovation.org/theory-of-impact-bonds or email info@outsideinnovation.org.

¹ Nordhaus, W. D. (2010). Economic aspects of global warming in a post-Copenhagen environment. *Proceedings of the National Academy of Sciences of the United States*, 107(26) 11721-11726; Interagency Working Group on Social Cost of Greenhouse Gases, United States Government. (2016). *Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis – Under Executive Order 12866*, https://www.epa.gov/sites/production/files/2016-12/documents/sc_co2_tsd_august_2016.pdf; Freedman, A. (2019). Climate change could cost the U.S. up to 10.5 percent of its GDP by 2100, study finds. *Washington Post*, <https://www.washingtonpost.com/weather/2019/08/19/climate-change-could-cost-us-up-percent-its-gdp-by-study-finds/>.

² Estimate from investments to Climeworks and Carbon Engineering on *crunchbase.com*.

³ Witkin, N. (2019). A Theory of Impact Bonds as an Alternative to Pigouvian Tax and Public Provision: Application for Climate Change. *The Journal of Applied Business and Economics*, 21(5), 139-153.