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['Smart' Technology Could Change the Future of City Finances.]

For one thing, the technology may save enough money so that city projects will be able to pay for themselves

Cities and transit systems across the U.S. have borrowed hundreds of millions of dollars in recent years to finance investments in systems that produce streams of data on traffic, trains, ports, streetlights and more.

But future city projects with new technologies that generate real-time data may change how cities finance such projects.

Citigroup Inc., C 0.60% which advises cities on municipal fundraising and provides a bevy of other banking services to governments, has been working with a handful of cities and experts to study the outcomes of "smart" investments, in part to gauge how they change a municipality's financial picture. Such studies may help inform continuing debates about how cities can harness new technology while also managing the costs and privacy concerns that often accompany it.

Proponents say that if the benefits from new technologies prove substantial and become sufficiently predictable, this could produce cost savings for city services, create new financial flexibility in budgets and lead to lower financing costs. It could cut cities' need for long-term borrowing, for instance, boost their creditworthiness, and open new paths for generating revenue. So-called smart cities, for example, might be able to turn to cash generated or saved by these kinds of projects to pay for them without new borrowing, according to some financial advisers.

"With better data, smart cities will actually budget things completely differently, from bus usage and road maintenance to parking revenue and emergency-responder needs," says Jay Collins, vice chairman of the banking, capital markets and advisory group at Citigroup. "The smarter cities get, the more investment they will attract, the more they will drive legacy costs down, and the easier they will be to finance."

For example, a city that collects real-time data about transit can reroute buses at less-busy times to minimize wear-and-tear expenses, freeing up cash. The data could also be a lure to tech companies that want to form partnerships with the city on private forms of transit.

Cash for U.S. cities isn't scarce at the moment. Investors have poured money into municipal-bond funds, even for riskier bonds, as they seek higher-yielding investments.

But many cities are facing some long-term financial headaches from technology that will require creative thinking, says Scott Corwin, a managing director at Deloitte LLP who leads a practice on the future of mobility in cities.

For instance, cities may see reduced revenue from cars if more people use ride-sharing or if they drive more fuel-efficient vehicles that generate smaller gas-tax receipts.

Mr. Corwin, along with urban planners and banks like Citigroup, is studying how cities can replace lost tax receipts in that area by again leaning on data and technology. For example, a city that is able to track the use of shared-scooter services can charge the companies for use of city bike lanes.

“Cities have limited investment capital to keep pace, so there’s a greater emphasis on how you self-fund,” Mr. Corwin says.

To get to that point, however, cities will have to consider a number of nonfinancial variables.

Most notably, data collection raises privacy concerns. In one recent instance, a government-sponsored “smart” project in Toronto has faced local resistance over questions about how personal data will be used.

Eva Blum-Dumontet, a researcher for Privacy International, a privacy-rights advocacy group, says that unlike with websites that ask permission to track your browsing, many people may not even realize they live in a city using smart technologies—or understand how it might benefit them.

“The question that cities and companies helping them really need to be asking themselves is, ‘How do we engage the citizens?’ ” says Ms. Blum-Dumontet. “The protection of people in public spaces is still very much unexplored.”

Cities will “need to make sure they have addressed both citizen-data-privacy concerns, and ultimately have citizen support for their data usage model,” says Citigroup’s Mr. Collins.

Mechanisms for that could include linking tax cuts to the budgetary success of a “smart” investment, or giving micro credits to citizens for discounted or free city services.

Beyond privacy, cities may also face challenges administering new technologies, something financial analysts would have to consider, says Thomas Doe, president of Municipal Market Analytics Inc., which provides research for municipal-bond investments.

That includes making sure cities can hire people able to manage and analyze all of the data being collected. Cities may end up relying on outside vendors, which could cause disputes over who owns the data generated, or lead vendors to ask for deregulation in exchange for their help.

“There are a lot of old brick-and-mortar factors inhibiting the efficiencies of a smart city,” says Mr. Doe.

The Wall Street Journal

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June 10, 2019 10:03 p.m. ET

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