



Innovation & Optimization

How can O&M remain resilient through difficult market conditions?

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TRADITIONAL CHALLENGES WITH O&M...

The North American infrastructure stock is aging and in urgent need of better operation and maintenance (O&M) practices.

- The Canadian Infrastructure Report Card states that the country's infrastructure is "at risk", with about 40 % of roads and bridges in less than good condition.
- The US infrastructure scored a D+ in the last Infrastructure Report Card.

Despite recent and considerable investments stemming from both the public and private sectors, the projected fund allocation for optimal construction and O&M over an asset life cycle is limited (soaring inflation, labour shortage, fund availability, etc.), particularly when it comes to the maintenance, rehabilitation, and replacement of existing assets.



...IN AN INCREASINGLY CHALLENGING ENVIRONMENT



The traditional challenges with O&M are accentuated by recent disruptions to the status quo. Emerging challenges include:

- Increasing complexity of building and infrastructure assets: Sophistication of individual components of assets, coupled with larger volumes of data produced and made available for asset owners and O&M practitioners, who are left with traditional tools and standard practices (if any). Digitization and process flow optimization tools are available, but what about the processes? More on that later.
- Increasingly strict policies and public awareness and demands regarding environmental and social performance: Pressing climate concerns, emergence of environmental performance quantification, and strong emergence Environmental, Social, and Governance (ESG) investing have become difficult to ignore. What challenges are posed to PPP stakeholders? More on that later.

These challenges also provide opportunities for asset owners and O&M practitioners. We provide our brief insight on each of those topics based on our experience and Project Advisory expertise.

DIGITIZATION AND PROCESS FLOW

Emerging technologies in the construction space provide various opportunities for asset owners and O&M practitioners to leverage for proactive and more effective operations. Those include:

- Smart and connected devices (Internet of Things, IoT) for proactive, data-driven operation and maintenance;
 - problem detection with minimal diagnosis time;
 - feedback systems to reduce equipment idling time;
 - real-time structural and operation health monitoring;
 - reduced labour cost for inspection and diagnosis.
- Emerging inspection and visualization technologies, such as augmented reality (AR); and
- Advanced modelling, improving design and operation of equipment over the asset life cycle, leading to capital expenditure and operation expenditure reductions.

DIGITIZATION AND PROCESS FLOW *(continued)*

Unlocking the opportunities offered by those emerging technologies and tools lies in the implementation of tailored and effective processes (as shown in the adjacent illustration).

- Establishment of an asset's digital twins, through Building Information Modelling (BIM), allowing for integrated, multi-disciplinary workflow optimization and communication.
- Leveraging scheduling capabilities and tools, fed by asset-specific data, to optimize O&M on large asset portfolios.



O&M practitioners often rely on multiple sources of data and information with poor to little integration. This creates various data pools, for which potential for proactive and effective O&M is limited.

The implementation of tailored data flow structures and processes allow for value creation, linking the physical asset to its digital counterpart.

SUSTAINABLE PRACTICES IN O&M

Buildings account for roughly 39% of global CO₂ emissions, of which more than two thirds are associated with operational emissions (known as operating carbon). Thus, adopting sustainable O&M practices for building and infrastructure assets is key in mitigating greenhouse gas (GHG) emissions. Key aspects to achieve a reduction in GHG emissions in construction include:

- Durable design to extend the functional life span of an asset while minimizing the need and extent of maintenance;
- Proactive maintenance, which reduces the extent and cost (financial and environmental) of repairs and reactive maintenance. This aspect ties to the integration of O&M data and digital twins described earlier; and
- Smart and connected equipment, which allows for more efficient energy use.

Planning for and operating physical assets within an ESG framework involves various challenges.

- Social impact – Qualifying and quantifying the social impacts of a PPP project has its challenges. Particularities of these challenges include: ensuring beneficial short- and long-term social benefits in communities, equitable access to infrastructure and services, heritage preservation, and consultations with First Nations. Funding programs include the Social Infrastructure stream of the Investing in Canada Plan.
- Governance and compliance – Governance challenges include aligning on a vision (short- and long-term), choosing a delivery method, ensuring good regulatory design, integration of a consultation process, guarding affordability and value for money, generating and leveraging useful data, and ensuring resiliency.

SUSTAINABLE PRACTICES IN O&M *(continued)*

As outlined above, adopting an ESG framework in PPP projects is not straightforward. The following outlines a number of high-level limitations associated to assessing the viability of an ESG framework.

- Restrictive (and often prescriptive) specifications and regulation, which limit the adoption of innovative and potentially more efficient materials and methods.
- Challenging quantification of environmental impact over an asset life cycle, as well as benchmarking for reduction GHG emissions.
- Benchmarking social benefits, and ensuring long-term resilience (durability, disaster-management planning, cross-generational persistence and relevance).

The challenges and responsibilities in the adoption of an ESG framework in PPP projects differ across the various stakeholders.

- Developers are responsible for designing and structuring projects respecting performance standards. Developers would need to demonstrate the ESG-viability of a project through issuing reports and disclosures.
- Institutions, such as Governments, have the duty and the responsibility to impose the proper standards and regulations to reach their sustainability goals.
- Investors are responsible for allocating capital toward sustainable projects. This capital can be tied to specific environmental metrics, as described in the next section.



Investing and operating assets within an ESG framework is challenging and involves the active integration of various disciplines across governing entities at various levels, engineering and design agencies, the Public, and the private entities involved.

FINANCING SUSTAINABLE PPP

Financial Institutions will play a key role in channeling more capital toward sustainable projects. Since the Paris Agreement in 2015, financial institutions have issued a diversified range of ESG-related financing options, including green loans, green bonds, sustainability-linked-loans, and sustainability-linked-bonds, which provide advantages to each of the stakeholders involved in the financing and the realization of the project.

- Green bonds are an asset class finalized to channel capital toward green projects. Green bonds provide tax advantages to investors while helping companies and institutions enrich their sustainability profiles. In March 2022, the Government of Canada successfully priced \$ 5 bn in green bonds with 7.5 years of maturity to channel capital toward green infrastructure projects. Green bonds represent the ESG-related financing options, with an estimated volume of around \$ 1,000 bn globally in 2022.
- Sustainability-Linked-Bonds, on the other hand, allow asset owners and operators to channel capital toward a variety of projects if specific Sustainability Performance Targets (SPTs) are met.

Limitations of “green financing” include:

- Challenging quantification of environmental impact of the project financed (as described earlier); and
- Insufficient increase in the coupon rate to incentivize compliance to the SPTs.

ABOUT US

Accuracy is a wholly independent international consulting firm providing advice to company management and shareholders for their strategic or critical decisions, notably in transactions, disputes and crises.

Accuracy's strength is to connect strategy, facts and figures. Accuracy's teams are international and multicultural, combining various skills to provide bespoke services to our clients. We recruit consultants from the best.

Accuracy is present in 13 countries in Europe, North America, Asia, Middle East and Africa and leads engagements all over the world.

Since 2004, Accuracy has been advising parties involved in capital projects on the challenges they face in both contentious and non-contentious situations. Our Project Advisory and Disputes practice brings a unique mix of expertise and a passion for making projects successful. Our clients come to us throughout the life-cycle of their projects - from conceptual stages to the settlement of disputes. Our view is that the success of a project hinges on making timely decisions and interventions. The delivery of major projects is crucial to the success of many businesses, but these projects can be challenging to get right.



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