

Transforming Environmental Liabilities into Assets: A Brazil-Based Case Study

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Background/Objectives. Despite abundant interest in sustainable remediation, its use and application is hampered by contextual barriers. Historically, the transfer of technologies from developed countries has been instrumental in addressing contaminant issues in international regions; however, the uniqueness of each country and the singularities of each contaminated site often can drive a project to failure. Practitioners have difficulty adopting practices described in a patchwork of guides and whitepapers from North America, Europe and Australia, which are not well adapted to the international context. This is especially the case when social aspects of remediation are considered, given that contaminants disproportionately impact society in developing regions. A Brazil-based case-study, involving dismantling, remediation, and redevelopment of an industrial site, will be used to present a methodology that can be adapted to any cultural and regulatory reality.

Approach/Activities. The approach used in this case-study was iterative and organic: social, environmental and economic aspirations were developed collaboratively with internal stakeholders, followed by definition of specific goals, key performance indicators (KPIs), metrics and best management practices (BMPs). Sustainable aspirations defined the long-term desired sustainable outcome for the project, and established a framework that project team members embraced while making decisions and taking actions. Goals and metrics connected the aspirations to the project reality, and established an observable and measurable result. BMPs targeted activities and approaches that reduced the environmental footprint of decontamination, demolition, site characterization and remediation activities. A systematic protocol based on the ASTM Standard Guide for Greener Cleanups was adapted to identify, prioritize, select, implement, and report on the use of BMPs. KPIs were developed to measure sustainable performance, assess the effectiveness of implementation of BMPs and inform strategy and decision making. Current project initiatives include the customization of existing procedures and tools, including development of dashboards for reporting on sustainability performance.

Results/Lessons Learned. Sustainable aspirations, goals, KPIs and metrics serve as the project framework for decision making and guided the implementation of BMPs to maximize sustainable benefits and reduce environmental footprint. Key deliverables include a roadmap, which served as an effective communication tool and linked strategic initiatives with the business plan. The business plan defines strategies for asset repurposing where investment is minimized, while creating sustainable and financially attractive real estate for property leasing and sale. As part of the business plan analysis, 12 alternatives for site reuse and 8 commercial models to leverage the remediation technologies to be implemented were identified. Standard operating procedures are being developed in the local language to compile detailed instructions on implementation of sustainable metrics in cleanup efforts. A symbiotic relationship has been established between the different project teams, allowing the development of adaptive capabilities and creating opportunities for improved project performance and maximization of synergies. Relevant project achievements to date include the collection and reuse of 350 cubic

meters of rainwater for decontamination of former manufacturing units, installation of passive rainwater collection and purification systems and re-use of decontaminated concrete obtained from demolition in remedial activities.