***CoastalProtect Africa* – Multi-purpose technology for an integrated solution to coastal erosion and sediment management for West Africa**

Integral Consulting Inc. (Integral) is a leading environmental and engineering consultancy company based in Seattle, WA USA, with a global reputation for delivering successful, high value, multi-partner projects. We have formed a consortium of companies and individuals with a high level of integrity, and the technical and scientific expertise capable of executing the projects in our response to this Call for Innovation. Consortium members are from the United States, Senegal, Tunisia, and the Netherlands. Our Senegalese partners have been involved at all stages of our proposal, and through them we have received valuable feedback from Senegalese stakeholders.

No single remedy can sustainably resolve coastal erosion and sediment management issues in W. Africa – only an integrated combination of innovative infrastructure and management techniques can deliver much-needed coastal resiliency in the region. When our proposed projects are combined, their synergy greatly increases benefits for the entire region in terms of erosion mitigation and enhanced coastal resiliency. In responding to this Call for Innovation, we have provided a number of innovative and sustainable solutions and, for initial implementation, we focus on one **innovative green infrastructure** project, *CoastalProtect Africa*, as a keystone for our integrated solution.

In our *CoastalProtect Africa* project, we provide **a new and disruptive method of extracting wave energy to reduce erosion at the coast**, **while simultaneously providing much-needed desalinated water and electricity to nearby coastal communities.** *CoastalProtect Africa's* multi-purpose technology will have a clear and measurable reduction in coastal erosion, and is implementable within a 2-3 year timeframe. Highly scalable to other coasts in WACA countries of interest and beyond, *CoastalProtect Africa* will deliver much needed socio-economic and environmental co-benefits. The technology is proven and has undergone extensive testing over several years.

We have selected a site for possible implementation of our *CoastalProtect Africa* project, south of the proposed Port du Futur, Dakar Région, Senegal. We propose installation of a 26-module system that will mitigate coastal erosion down drift of the port development, while supplying 4000 m^3 water per day (enough for 48,000 homes) at an estimated levelized cost of \$1.25/m^3. Implementation will be in three stages: 1) Feasibility studies and capacity building; 2) Pilot plant deployment; 3) Commercial-scale deployment. Total Project costs are estimated at \$31MM. We envisage Development Funds and Public-Private partnerships (e.g. Green Bonds) as main funding mechanisms. Our partners, Resolute Marine, have already succeeded in raising AfDB funding for a pilot plant, leading to a full-scale development, where the main purpose is desalinated water production in Cape Verde. Further information including detailed cost estimates are provided in our Detailed Proposal.

See: https://www.youtube.com/watch?v=bXElFPHMGHU for a brief overview of how the technology works.

Figure 1. (Left) Pilot *CoastProtect Africa* module testing in United States; (Right) Schematic of installed *CoastProtect Africa* system at Ndyane, Senegal