



Financing Green / Grey Coastal Infrastructure Industry Perspective

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Mission

- **Provide sense of corporate acceptance** of green or nature-based solutions to address business challenges
- **Present the drivers and benefits** that motivate corporate investment in green Infrastructure (GI)
- **Provide an overview of corporate planning processes** and their timing which effect individual and partnership investment

Industry History with GI



- Industry has been exploring green infrastructure > 30 Years
- Principally opportunistic operational applications
- Interest significantly Increasing in last 10 years
- 2013 –Joint white paper reviews key conclusions and recommendations



<https://www.nature.org/about-us/the-case-for-green-infrastructure.pdf>

2013 – Joint White Paper on GI

Conclusions on GI

- Essential element in portfolio of solutions
- Often provide financial advantages
- Offers overlooked opportunities
- Leverages existing natural resources
- Resist environmental shocks

Recommendations to Industry

- Employ more comprehensive footprint analysis to compare green with grey alternatives
- Assess co-benefits of green
- Pilot technology and engage with external experts and partners
- Develop internal skill sets – build a “fit for purpose “ capability

<https://www.nature.org/about-us/the-case-for-green-infrastructure.pdf>

Corporate Engagement - Case Studies



- 2015 BSR – Business Briefing
- Business investing in nature-based solutions



- Operational challenges
- Supply Chain security
- Real estate management
- Wide range of companies examples – international and cross sector participation



So many examples needed an annex
Tipping point from practice leaders to
active followers



WBCSD: *Natural Infrastructure for Business*



Business Drivers

- Access to Resources
- Regulatory requirements
- Changing climate
- Severe weather
- Stakeholder interests

- In a business context “only” saving nature for nature’s sake does not work
 - BUT Valuation Of ES and Nat Cap influential
- Green Infrastructure solve pressing business challenges effectively adds co-benefits
- **Business case for Natural Infrastructure**
 - Cost competitive investment
 - Performance can appreciate over time
 - Cheaper to maintain
 - Climate adaptive
- Benefits typically flow beyond business and impact communities in which they operate

<http://www.naturalinfrastructureforbusiness.org/>

Business is interested in Green Infrastructure !

- Business is interested
- Has experience using Green infrastructure
- Willing to proceed alone or in partnerships
- **Some examples follow**



Louisiana's Sinking Coast Is a \$100 Billion Nightmare for Big Oil

The state can't pay, so someone has to. And the water keeps rising.

August 17, 2016 – www.Bloomberg.com/news

- Subsidence, sea level rise and lack of sediment input creating risk
- Facilities (e.g. pipelines) exposed to collisions and extreme weather
- Risk of equipment damage and spills
- Access to resources lost as they sink

Coastal Louisiana provides a useful microcosm to explore

- Business drivers
- Project examples

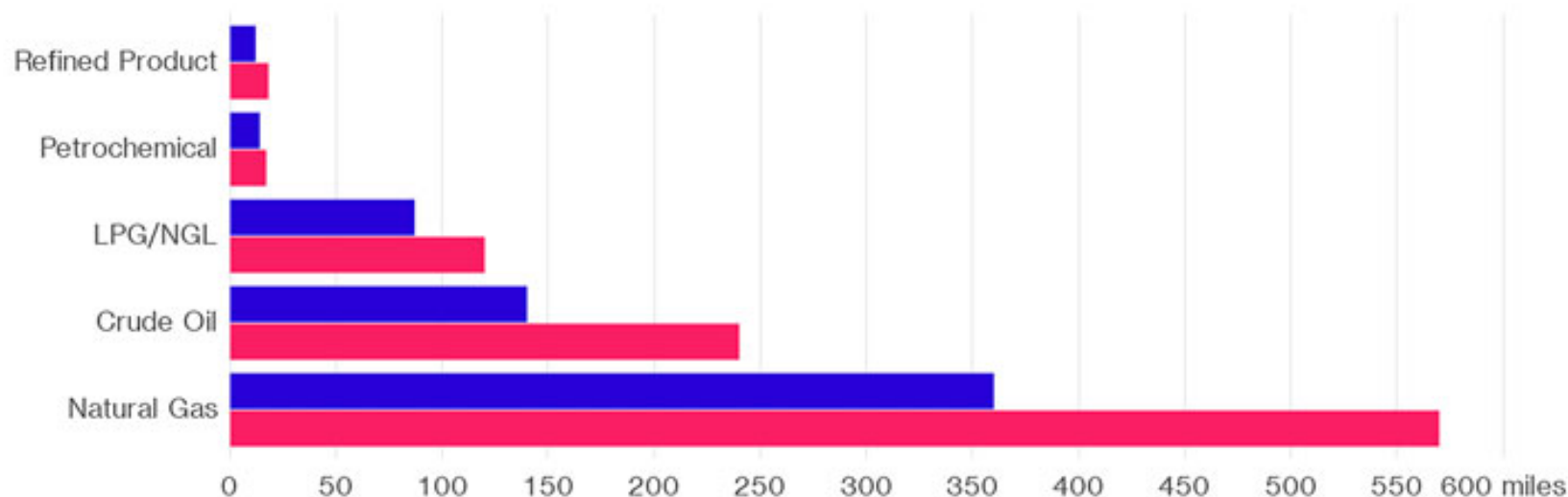


Members of the Louisiana Coastal Protection and Restoration Authority walk over pipeline on the beach at Port Fourchon, site of the Cambrils Headland Beach and Dune Restoration project.
Photograph: William Witkowski/Reuters

Louisiana Pipelines at Risk From Coastal Erosion

More than 600 miles of pipeline in the state could be exposed to open water in the next 25 years.

■ 25-year estimate ■ 50-year estimate



Source: Louisiana State University and Rand Corporation study, based on infrastructure inventory and valuation data from the LSU Center for Energy Studies.

Bloomberg 

August 17, 2016 – www.Bloomberg.com/news

Shell Pipeline - Erosion Control Pilot

- **Pipeline risk** from exposure to marine traffic, tidal currents and extreme weather
- Shell Pipeline Company partnered with TNC, CH2M, LDNR and USACE
- **Hybrid solution** - living Shoreline & oyster reefs
- **Gabions** filled /covered with sediment and vegetation
- **Coir Logs** filled with rocks, coconut and oyster shells for Oyster reefs building
- **Pilot results used to consider expanded effort**



Living shoreline technologies to improve coastal resiliency

http://www.naturalinfrastructureforbusiness.org/wp-content/uploads/2015/11/Shell_NI4BizCaseStudy_CoastalPipeline.pdf

Conoco Phillips And Ducks Unlimited Partnership

- **Loss of Coastal Marsh habitat for ducks** also **threatens O&G Infrastructure** and **Lafourche parish hurricane levy**
- Installing **vegetated terraces** in shallow open waters **cost-effective** restoration and **protection**
- Terraces **decrease wind and wave energy**
- Goal is to **demonstrate this technology** so it can be incorporate in Louisiana State Coastal Master plan

Bayou L'Ours – Lafourche Parrish , LA



Americas Wetland Foundation

GIWW Restoration Project

Investment Partners

- **Conservation** - AWF, NFWF, DU
- **Business** – CITGO, Shell, ConocoPhillips, Chevron, Community Coffee
- **Government** – USACE, State of LA, Gulf Inter-coastal Canal Association
- **Private Land owners** – Delta Farms



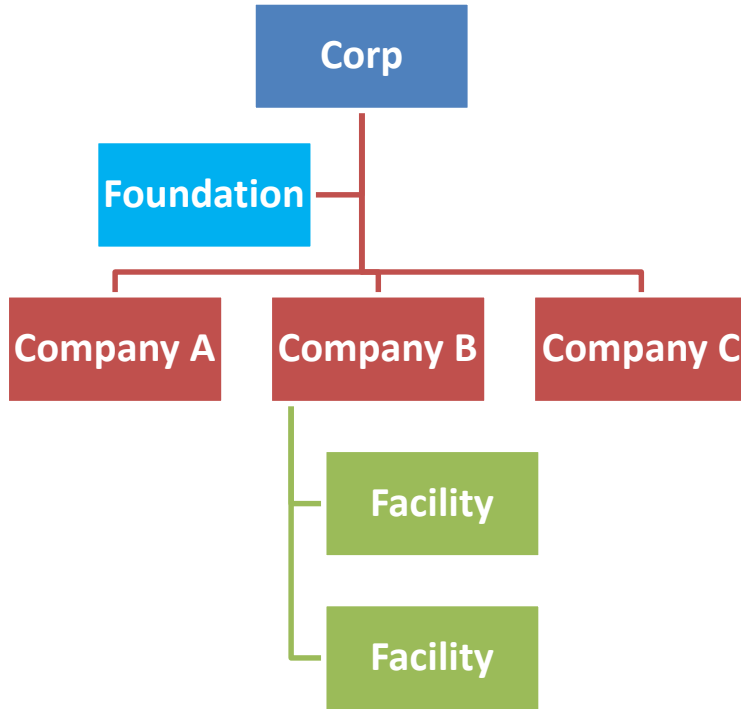
- **Vegetated *EcoShield*™** – recycled plastic matric with infused vegetation used to stabilize 4 miles on Gulf Inter-coastal waterway
- Helps protect energy assets, secure seafood and recreational waterways, provide habitat and provide storm surge protection



How could the private sector not support such an initiative!

- Community of (*Best*)Practice – To Protect coastlines
- Promotes both *Green* and *Gray* approaches
- Affordable, integrated, resilient solutions
- Protecting communities and ecosystem

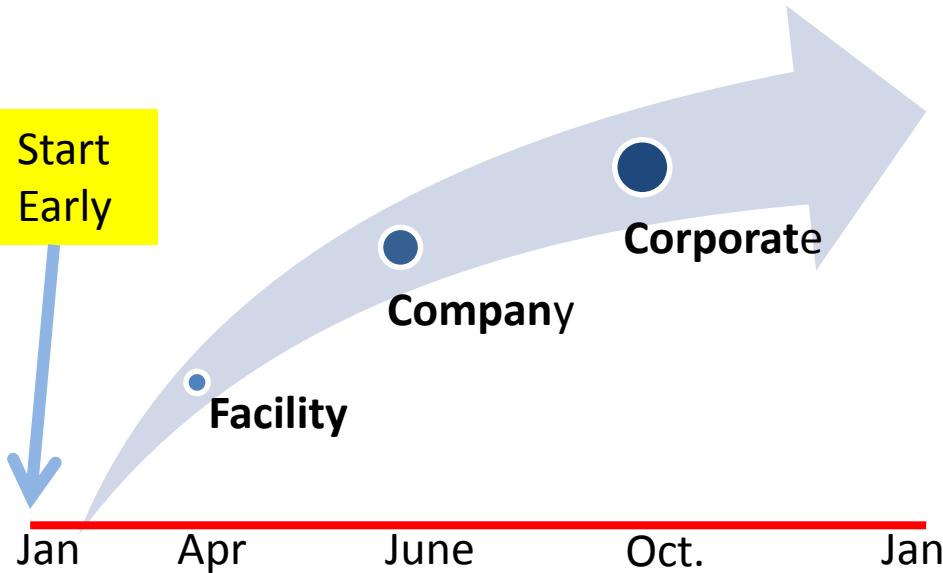
Where Do Funds Come From?



- **Philanthropy**
 - Corporate Foundation (\$\$\$\$'s)
 - Donations at company and facility (\$\$\$\$'s)
- **External Program Funding**
 - Typically funded by business
- **Capital Project Funding**
 - Company – Large scale
 - Facility – Local scale

When Should I Ask For Funds?

Annual Planning



Plan Output

- Revenue targets
- Operating expense budget
- Major project capital budget
- Minor project capital budget

Plan Timing

- Developing Project ideas for next year start first 1st Q preceding year
- Start conversation 18-24 months before you need funds

Final Thoughts

Systems Approach to Geomorphic Engineering

Integrating green and gray solutions in coastal landscape transformation



SAGE Partners



- Why are there no Industry sponsors listed ?
- Could SAGE engage the industry engineering societies to advance awareness of best practices ?

Approaches demonstrated as cost-effective , adaptive , timely and accepted by regulators will be used by industry

Questions or Reactions ?



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