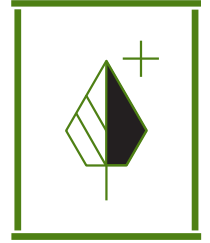




**Mainstreaming the Value of Nature**  
*Dow's response to external drivers and  
where we go from here*

**Thomas Polzin**  
**Sustainability Program Manager**  
**Dec 9, 2016**

# Agenda



Ecological Drivers

Dow's Response

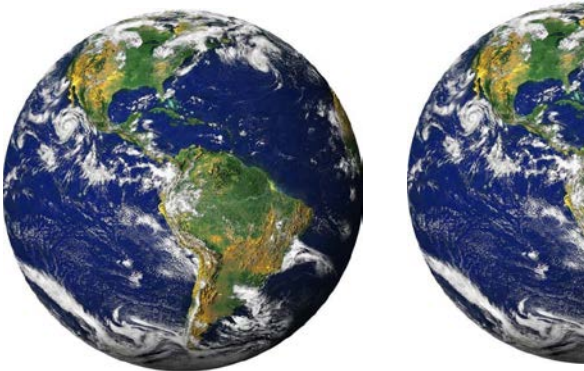
Walk Through Nature Goal

Top Down Process

Drivers Beyond the Fence

# Macro trends

Global natural resource use =

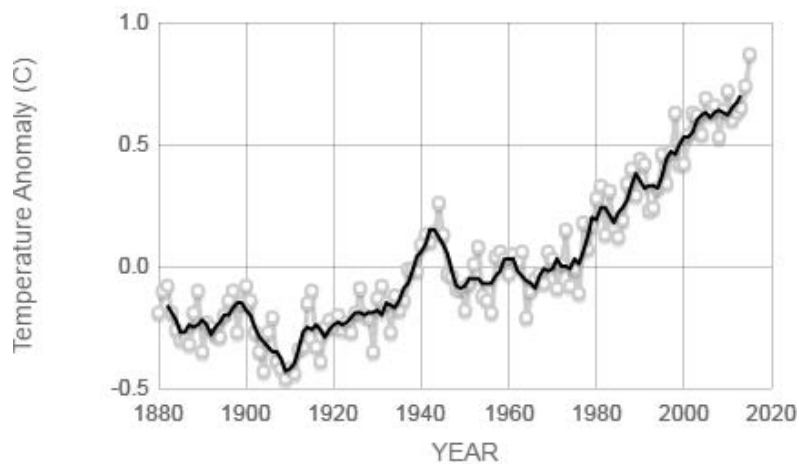


Source

**1/3 farmable land lost  
in the last 40 years**

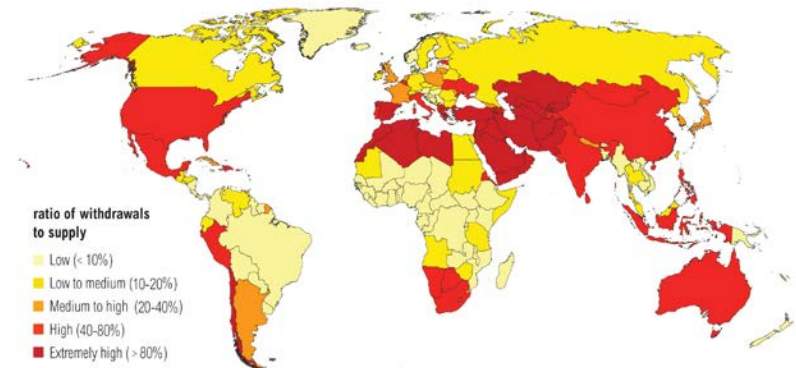


**Increasing global temperature**



Source: [climate.nasa.gov](https://climate.nasa.gov)

**Water stress by Country: 2040**



NOTE: Projections are based on a business-as-usual scenario using SSP2 and RCP8.5.

For more: [ow.ly/RiWop](https://www.wri.org/)

 WORLD RESOURCES INSTITUTE

# Why we're doing this: linking business and nature



# Our journey with nature



## Seadrift Constructed Wetland

- NPV of cost savings = \$280MM



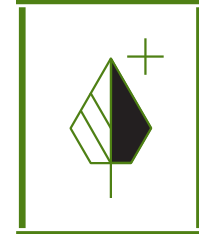
## Nature is valuable

- Collaboration with TNC
- Revising business decision-making processes
- New tools
- Publications



## 2025 Valuing Nature Goal

# Dow's Valuing Nature 2025 Goal



Dow applies a business decision process that values nature, which will deliver business value and natural capital value through projects that are better for the Company and ecosystems.

## **Example Target Metrics and KPIs:**

Business-driven project  
alternatives that will enhance  
nature and deliver  
\$1 billion in NPV by 2025

All R&D, capital and real estate  
projects screened through NFV

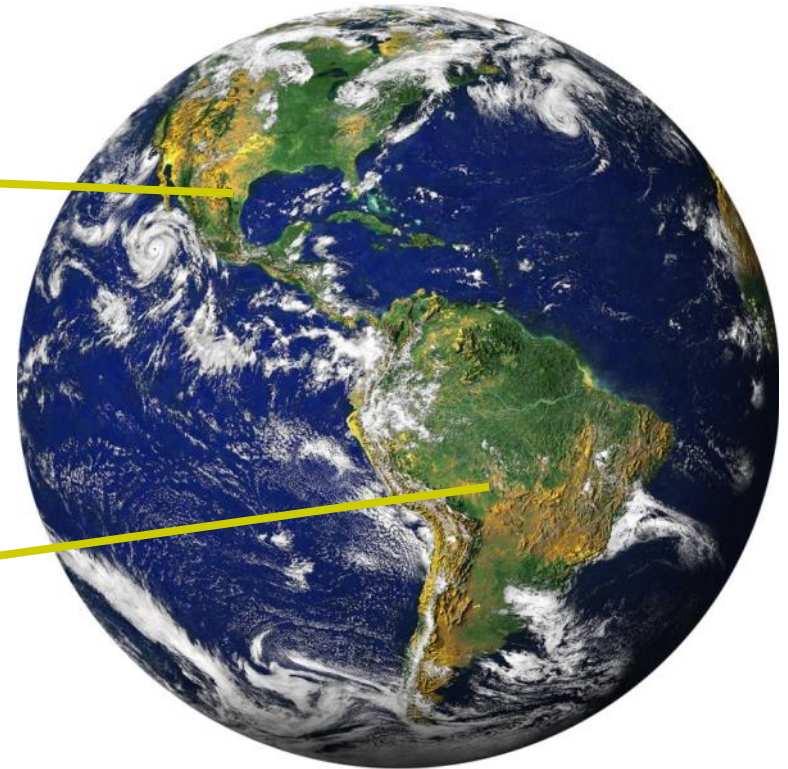


# Two Big Pilot Projects

## 1. Freeport, Texas



## 2. Santa Vitória, Brazil



# Dow's Pilot Test – Freeport Water Analysis

## Floodplain Restoration-Reservoir Reallocation



(Sentra Woods 2009)

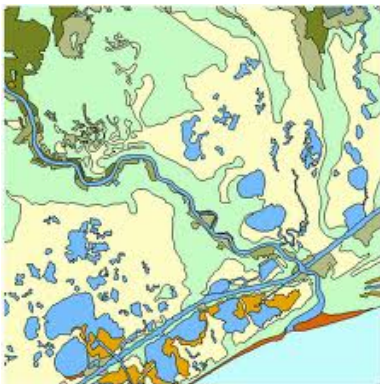
(Dlanor Smada 2012)

## Municipal Rebate Program



(Dan Hwoang Nguyen 2007)

## Land Cover Management



## Coastal Marsh Water Treatment



(Docent Joyce 2013)

## Irrigation Efficiency Program



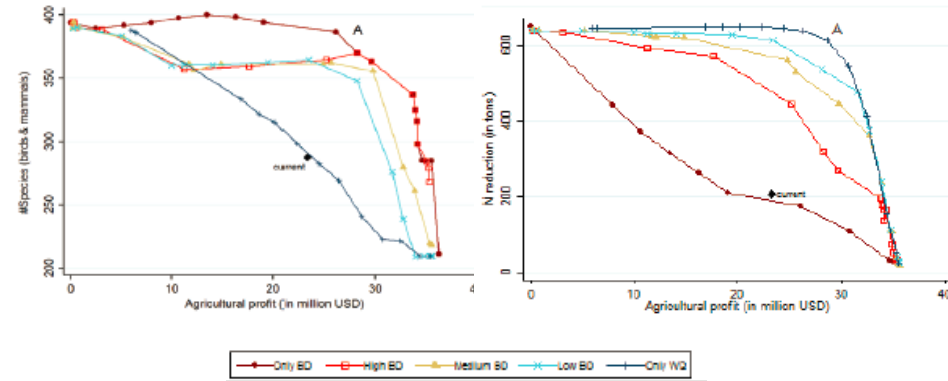
(CIMMT 2010)

# Dow's Pilot Test- Santa Vitória, Brazil

## Balancing Profits and Nature

Strategically locate natural vegetation

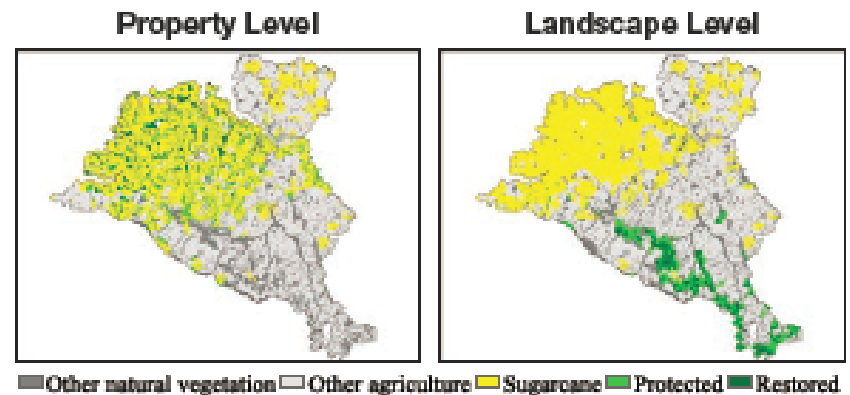
- Same agricultural profit
- 100 additional species
- Less total nitrogen, phosphorus and sediments reaching the waterways



## Improving the Forest Code

Shift from property level compliance to landscape level compliance

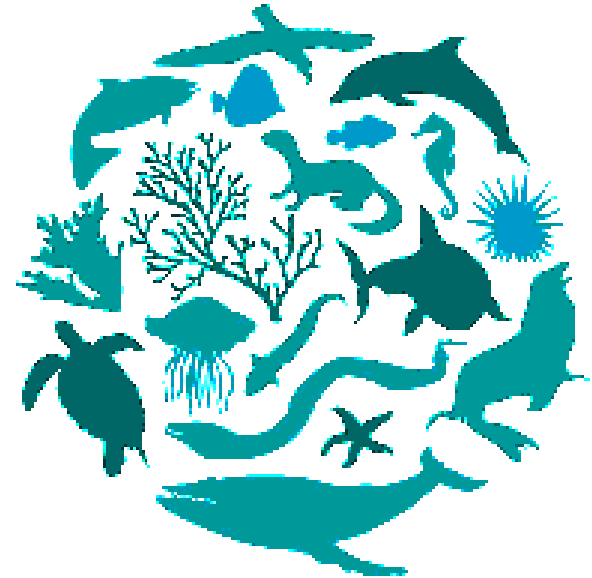
- Most profitable lands devoted to agriculture
- Natural habitats aggregated into larger, connected patches
- Increased economic and conservation benefits



# Recognizing Value



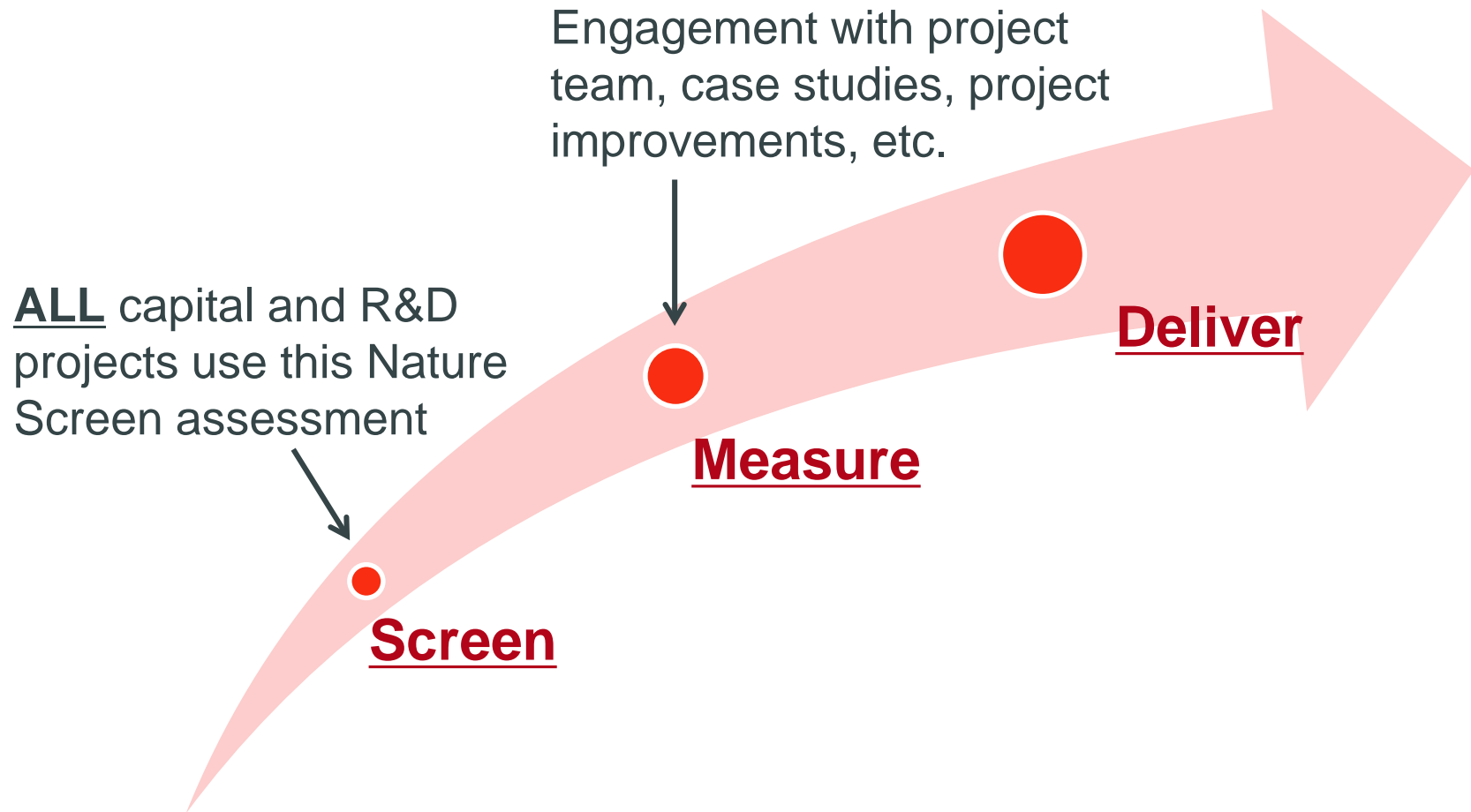
*Community*



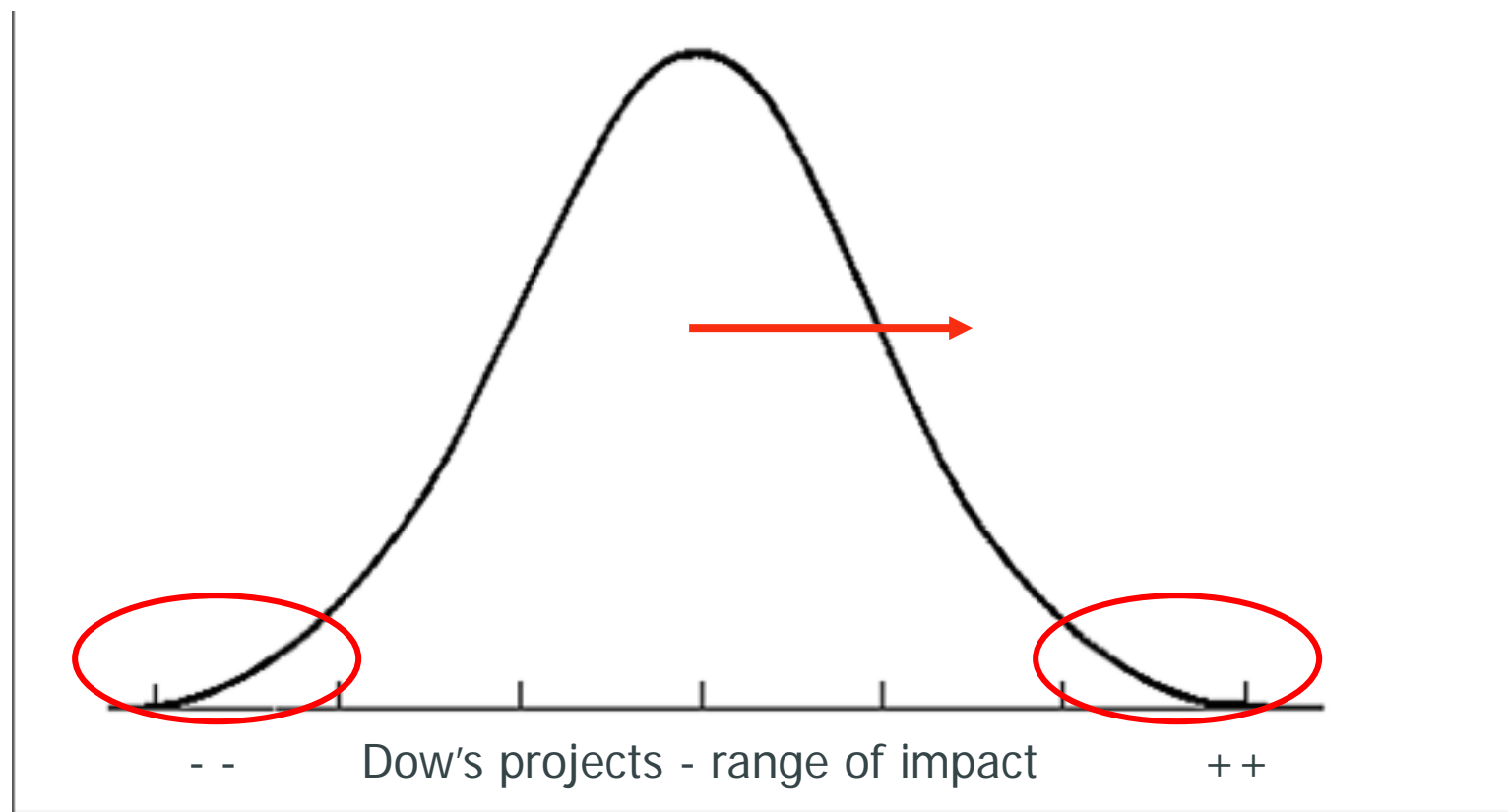
*Biodiversity*

By understanding the macro context in which we operate, and strengthening the connections between people and nature we can create more value to the benefit of both.

## How we're doing this: a business process (NFV) that will help us find the right projects



## ■ To further illustrate the plan for NFV



# How does business derive value from nature?

Risk Mitigation & Resilience	Capex, O&M Expense	Asset	Market Opportunity
Due to new or anticipated <b>regulation or changing legislation</b> , my business may have existing or future liabilities from damages, settlements, remediation, or required investments.	To sustain day-to-day operations, my business pays for rights to or for use of local natural resources like water as a <b>key input</b> .	The day-to-day operation of my business relies on naturally occurring <b>ecosystem services</b> like storm water management that takes place on or adjacent to my property.	Your business <b>develops products or services</b> that more efficiently leverages nature to support human life.
Due to <b>degradation</b> of nature and/or natural resource <b>depletion</b> , my business may experience increased operation expenses or capital expenditures in the future.	To sustain day-to-day operations, my business pays for <b>disposal of waste</b> into a natural area including a landfill or water body.	My business <b>owns land</b> that is not currently being or will no longer be used that is a greenbelt or could be converted to a greenbelt.	Your business targets customers that directly impact nature and/or helps those <b>customers meet their needs in ways that also benefit nature</b> .
My business' management of surrounding natural areas and natural resources has resulted or may result in <b>negative impacts on community</b> relations and brand equity.	Due to the current state of nature on or near my site, my business may <b>pay higher expenses</b> for insurance premiums, damage repairs, maintenance, or preventative infrastructure costs.	My business' management of surrounding natural areas and natural resources has resulted or will result in <b>positive impacts on community</b> relations and brand equity.	Your business has developed a <b>method for process improvement or natural technology</b> that benefits nature that can be captured, scaled, and sold to other companies.
<b>Ecosystem services</b> like stormwater treatment and floodplain areas help mitigate my business' risks/ minimize exposure to natural disasters and storms.	To minimize O&M and/or Capex expenses, I could construct <b>engineered natural technology or natural infrastructure</b> solutions.	My business' greenbelt land area can be developed and contributed toward <b>wetland banking</b> .	Your business is a <b>case study</b> for the internal use of a <b>Dow product or service</b> that benefits nature.

# Competing Decision-Making Criteria

## Risk & Resilience

- Risk exposure
- Strategy alignment
- Short-term impacts

## Capex and O&M Expense

- Capital Budget
- Contractor expertise
- Safety
- Time
- Engineering

## Assets

- Volume
- Supply Chain
- Safety
- Time
- Engineering

## Market Opportunity

- Market demand and growth
- Up front cost
- Time
- Product stewardship

# Value will come from 4 types of projects

## Risk and Resilience

## CAPEX and O&M expense

## Assets

## Market Opportunity

### Engineered Natural Technologies

- Green or natural infrastructure that provides the same services as grey infrastructure
- Constructed Wetland

### Process Improvements

- Resource efficiency improvements that reduce impact on nature
- Water recycling projects

### Property

- Putting land (greenbelt or surplus) into conservation
- Land donation or sales

### Innovation

- New products that will enhance nature
- Ag Product with traits that help plants resist drought

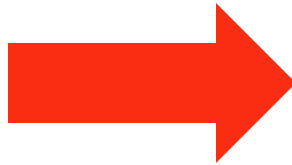
Projects provide value in terms of avoided cost, increased revenue, reduced risk, and new markets

# NPV: Shifting Value Perception

valuing nature is about expanding the toolbox for decision makers, and utilizing the full power of nature as an asset and problem solver for business.

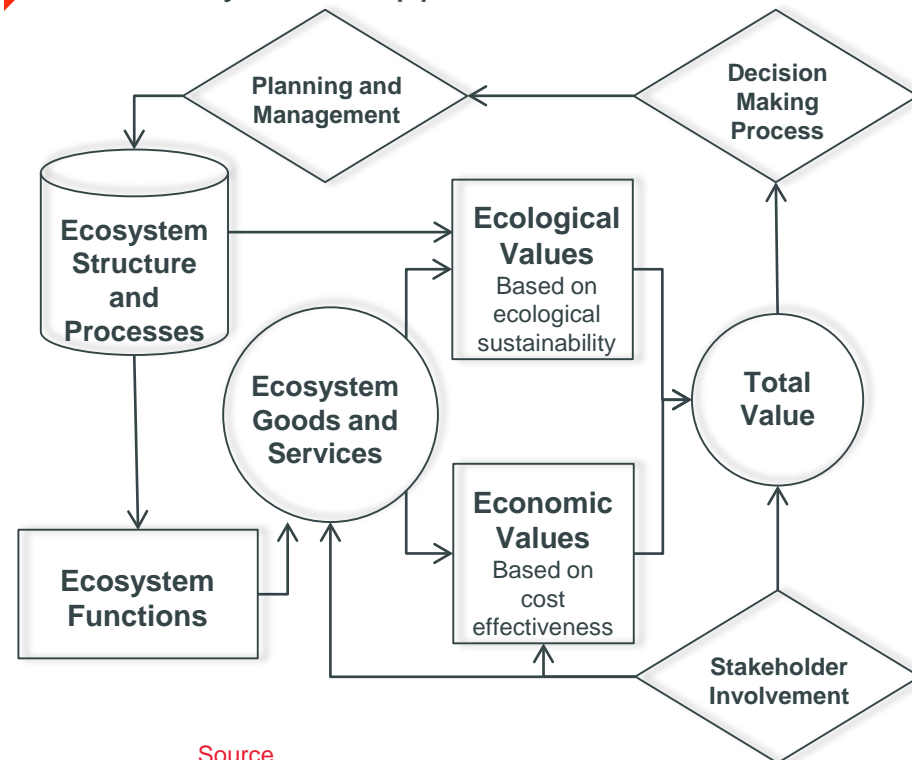
## Status Quo

- Short Term (Budget Impact)
- Strict Accounting Boundaries
- Nature as a Resource
- Linear Approach



## Nature Goal

- Long Term (Net Present Value)
- Holistic Cost Consideration
- Nature as a Service
- Systems Approach



## Additional/Subsidiary Benefits



# External Drivers: Regulatory/ Policy

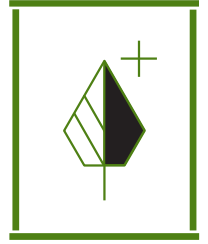
*Business needs incentives and flexible mechanisms to truly integrate nature in business decision making*

- Grassroots actions
- City-level sustainability champions (e.g., NYC)
- Industry community engagement
- Competitor collaborations

**Local Action, Local Results**

## **Regulatory Driven Markets/ Innovative Policy Alternatives**

- Wetland mitigation banking
- Public-private stakeholder engagement to save threatened species
- Wildlife tax assessments in natural land management
- International leadership
- Green vs grey infrastructure



***A business that learns from and is inspired by nature is one that is more resilient, adaptive, and innovative.***

 **Questions?**



**Thank  
You**

Thomas Polzin  
[tpolzin@dow.com](mailto:tpolzin@dow.com)  
989-633-1800