

Working Together to Value Nature

2016 Summary Report

A COLLABORATION OF THE NATURE CONSERVANCY & THE DOW CHEMICAL COMPANY





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Our Commitment

The Nature Conservancy and The Dow Chemical Company set out in 2011 to demonstrate that integrating the value of nature into business decisions can lead to better business and conservation outcomes. Six years later, the Collaboration – at the forefront of innovative nature-based solutions – has produced extensive research and developed new tools to demonstrate how a company like Dow can include nature in its business operations. Our joint commitment to this new way of doing business is quickly becoming ingrained in the Dow corporate culture.



A New Way Forward for Business & Nature

Back in 2011, we embarked on an important endeavor to lay the groundwork for how companies assess and invest in nature and reduce their environmental impact. Our goal was ambitious, but was reflective of Dow's commitment to lead on sustainability and The Nature Conservancy's motivation to accelerate the private sector's uptake of valuing nature.

We have come a long way over the past six years. While nature's services had been previously recognized, measuring how much nature is worth to a company had not been easily determined. Together, through our Collaboration, we set out to answer the following question: *how can we make the consideration of nature in business decisions simpler and more routine?*

This strategic consideration helped to shape the development of Dow's 2025 Valuing Nature Goal. Launched in 2015, the Goal is a milestone in the private sector, marking one of the first commitment of its kind by a major corporation to consider nature in nearly all of its business decisions. Following the launch of the Goal, the Collaboration began to focus its efforts on implementation of the goal across Dow.

To start, we learned that there was a large gap in the amount of information available on nature's services and the potential economic benefit to companies in accounting for it. To learn more, we researched the economic benefits or trade-offs associated with nature-based solutions and changes in nature, such as reforestation to address ambient air pollution and using coastal defenses to protect business assets from storms. The Collaboration's research – conducted at various Dow site locations around the globe – gave us insights into how nature could benefit business and how business accounting for nature could produce important conservation gains in the long term.

We quickly learned that while research could provide the baseline for our approach, we would need tools to assist Dow staff and business colleagues all around the world with implementation. This was the impetus behind the development and launch of the Ecosystem Services Identification & Inventory Tool – otherwise known as ESII. Launched in early 2016, the ESII Tool was designed to help decision makers with varying levels of knowledge of ecosystem services from corporations, governments and organizations to easily rapidly assess the value of nature to account for its services in strategic planning. Available for download as an iPad app, the ESII Tool is a game changer for helping to understand the intersection of nature and business.

An important priority of ours has been to share what we have learned along the way. From published journal articles to media coverage and events around the world, we are always looking for new ways to reach the audiences that could benefit from the groundwork we have laid.

Building on our initial findings, research and tool development, we are excited to announce that we will be working together over the next three years for a second phase of the Collaboration. Moving forward, we will undertake new projects in different site locations and continue to work to implement Dow's 2025 Valuing Nature Goal. As always, we will continue to share our progress along the way. Changing business practices and culture takes time and we are excited to see how the next phase of our collaboration's journey unfolds.

We welcome any questions or feedback you may have and look forward to working with you on our collective sustainability efforts.

Sincerely,

Neil Hawkins
Corporate Vice President, EH&S,
and Chief Sustainability Officer
The Dow Chemical Company

Glenn Prickett
Chief External Affairs Officer
The Nature Conservancy



Sustainability & The Dow Chemical Company's 2025 Valuing Nature Goal

Demonstrating Nature's Importance to Business

Our Collaboration has always been motivated by showing that integrating the value of nature into business decisions can lead to Businesses around the world often impact the environment, while simultaneously depending on it. The private sector controls or owns vast amounts of natural resources, both directly and indirectly, through their operations, supply chains and products. Businesses rely on and affect nature's critical provisioning services (e.g., freshwater, fiber, food, timber) and regulatory services (e.g., climate regulation, flood control, water purification, waste treatment). Businesses even benefit from and influence cultural services provided by nature (e.g., aesthetics, sense of place).

Too often, nature's services are not recognized until they are depleted or gone. With the risk of depletion increasing, the private sector is becoming more interested in understanding how to limit its environmental impact and also in identifying ways nature can be beneficial to the bottom line. Being aware of nature's assets and investing in natural capital can help businesses save money, reduce risks, and build value for shareholders, stakeholders, and customers. However, measuring how much nature is worth to a company, community or the world isn't easy — and often, the tremendous importance and economic value of nature's benefits are appreciated only upon their loss.

That is the challenge the Collaboration set out to address six years ago. Through our research and tool development, we have helped build the business case for nature's value. Using scientific analysis, we are not only able to help Dow consider the value of nature across the company's research and development, capital and real estate projects, but the Collaboration has also laid the groundwork for other companies to do so as well.

Understanding the Value of Nature

In 2005, the Millennium Ecosystem Assessment was published, reporting on analyses of 1,360 experts showing that the world's ecosystems and the associated services they provide have been degraded over the past century globally — with detrimental impacts on our economy. This report helped Dow recognize that the degradation of ecosystems was a critical issue for its business. The company realized that this trend of the loss of ecosystems and the services they provide needed to be reversed if Dow and other companies are to sustain their operations over the long term. Companies not only need to reduce their negative impacts on ecosystems, but also make smart investments in conserving and restoring ecosystems that are critical to operations, while potentially reducing costs and producing value for shareholders and stakeholders.

At the same time, The Nature Conservancy was contributing to the growing body of ecosystem service science that sought to understand how people benefit from nature, including through the establishment of the Natural Capital Project in 2005, a partnership with World Wildlife Fund, Stanford, and University of Minnesota. The connections between nature and communities and the economy provided an opportunity to show the relevance of nature beyond the conservation community, and the Conservancy was beginning to use these data to influence policies that can benefit nature and people— and saw the potential of companies using them as well.





Early Collaboration Efforts: Building the Foundation for Dow's 2025 Valuing Nature Goal

When the Collaboration first started, individual corporate case studies of individual decisions or projects related to ecosystem services were available, but no company had considered them across their business. Moreover, while ecosystem science studies were available, they were rarely applied to business decisions. To help narrow this gap in knowledge and information, the Collaboration began its work by identifying 'living laboratories' at Dow site locations to develop, test, and implement scientific and economic methods to improve business decisions by integrating information on the value of nature. The sites were chosen using several criteria, including ecosystem services critical to Dow operations and sites where advancing the methods for integrating ecosystem services at the landscape level or that could be replicated at other Dow sites existed.

The first pilot was located at Dow's Texas Operations in Freeport – the largest single company chemical complex in North America and Dow's largest integrated manufacturing site. While Dow's Texas Operations manufactures more than 40% of Dow products sold in the United States and 20% globally, it is also located on the Gulf of Mexico at a

nexus of freshwater, saltmarsh and forest ecosystems. This pilot looked at the opportunity to advance the application of conservation science in three significant impact areas that both Dow and the community depend on: air quality; coastal protection and freshwater supply.

Santa Vitória, Brazil was the Collaboration's second pilot at the site of a cooperating joint venture company, Santa Vitória Acucar e Alcool Ltda. (SVVA) where producing sugar cane, a key production input, occurs in a 50km radius of the manufacturing facility. Located in the center of agricultural production in Brazil, on the border between two environmentally significant areas – the Atlantic Forest and the Cerrado – this pilot demonstrated that better economic and ecosystem benefits can be achieved when a landscape level approach is applied as compared to a parcel-by- parcel approach.¹

This report's section '*Phase One Outcomes*' takes a closer look at the highlights from the research of the first two pilots to help establish the evidence base for how nature benefits companies, including: demonstrating the important role of forests in improving air quality;

the hidden potential of marshes to reduce risk from coastal flooding; enhanced valuation of freshwater resources and non-traditional solutions to water scarcity; and the advantage of landscape level planning to agriculture development and conservation outcomes.

Starting to outline the potential benefits of nature to business was just the beginning. The information gleaned from the first two pilots provided an opportunity for the Collaboration to identify a way to take this knowledge and turn it into action at Dow. The Collaboration's early research helped to shape the development of Dow's next generation approach to sustainability released in 2015 – including the company's 2025 Goal on Valuing Nature.

Dow's 2025 Valuing Nature Goal is a milestone in the business sector – marking one of the first commitments of its kind by a major corporation to consider nature in nearly all of its business decisions. The Goal aims to address both the direct and indirect impacts of business on nature and aims to deliver the tools, structure and business environment by which to do so. This fundamentally changes the way Dow does business.

Dow's 2025 Valuing Nature Goal is comprised of two parts:

1. By 2020, all capital, real estate, new business development and new product development projects at Dow will be screened using Nature's Future Value assessments, a tool we developed with The Nature Conservancy to measure the value of ecosystem services.
2. By 2025, Dow will deliver \$1 billion in value through projects that are both good for business and better for nature.

Just as the Collaboration helped to inform the Valuing Nature Goal concept, the team has also helped to test implementation of the Goal – answering the question: what will it take for a company like Dow implement this strategy.



Later Collaboration Efforts: Testing Implementation of Dow’s 2025 Valuing Nature Goal

Our rigorous scientific testing during the early years of the Collaboration gave us a strong platform to adapt our research and tools for assessing nature-based solutions at Dow and test implementation of our original goal and hypothesis.

This work included:

- Developing three tools to help with Dow’s implementation of the 2025 Valuing Nature Goal: i) a **screening tool**, included in the company’s Global Project Management process, to assess Dow’s projects as they intersect with nature; ii) the **ESII (Ecosystem Services Identification and Inventory) Tool** to help business managers and engineers at Dow measure the value of nature; and iii) a **decision tool** to compare alternatives within the context of a project, using project engineering data and ESII Tool data.
- **Launching of Pilot #3:** i) undertaking further research at selected Dow sites to test implementation of the Valuing Nature Goal; and ii) building a cadre of champions across Dow, including an implementation team comprised of senior executive leaders, to help Dow staff identify and analyze projects for the 2025 Valuing Nature Goal.

To move forward, the Collaboration team identified a three-step process to evaluate projects and their interaction with nature:

1. Using the screening tool, examine thousands of projects at Dow to understand the impacts and dependencies on nature;
2. Analyze ways to improve how projects benefit from nature and use nature-based solutions, and reduce projects impacts on nature – using existing methods and tools, including the ESII Tool and
3. As part of the third pilot, look at new ways to advance promising new projects and technological solutions (Table 1 & 2).

Table 1: Types of Research Projects for Pilot #3

| |
|---|
| <p>Nature-based solutions (also referred to as green or natural infrastructure): Natural solutions that use or mimic natural processes that can be beneficial for nature, communities and businesses alike.</p> |
| <p>Process Improvement: Nature’s services are often critical to business operations (e.g., freshwater is used in the production of many manufactured goods), but often the lost business value from not having these services is undervalued. Process improvements can help reduce impacts to natural resources and/or a business’s dependency on these resources thereby reducing risk to the business.</p> |
| <p>Decisions to Enhance or Maintain Nature on a Dow Site: Companies often need to make decisions about the real estate they own or use, which often include natural areas, and this can have implications that extend beyond the business’ operations. This type of research examined different scenarios where nature was preserved or enhanced and compared the benefits of incorporating nature into decisions about how to manage Dow sites.</p> |
| <p>Product Innovations or Commercial Opportunities: In some cases, using nature may prove to be more economical than traditional business product formulations. Additionally, some products may be formulated in a way to make help solve customer and conservation problems.</p> |

Table 2: Pilot #3 Sites and Research Overview

| Dow Site Location | Year | Research Type |
|------------------------|------|--|
| Midland, Michigan | 2015 | Enhancing Ecosystem Services & Reducing Business Costs: Greenbelt Restoration* |
| Midland, Michigan | 2015 | Building the Business Case for a New Nature-Based Technology* |
| Terneuzen, Netherlands | 2015 | Constructing a Wetland for Water Recycling* |
| Bristol, Pennsylvania | 2015 | Considering Nature’s Value in Real Estate Management* |
| Freeport, Texas | 2016 | Considering Nature-Based Technology for Pumping Infrastructure to Meet EPA Regulations |
| Tarragona, Spain | 2016 | Dow’s Tarragona, Spain DEMOWARE Industrial Water Reuse Project |
| Freeport, Texas | 2016 | Water-Shed Level Solutions as a Part of a Comprehensive Water Sustainability Strategy |
| Dow AgroSciences | 2016 | Product Innovation to Address Nitrogen Pollution |

*Summary in 2015 Annual Report

2016: In Focus



In 2016, the objectives of the Collaboration included the following:

| 2016 Objectives | Status |
|--|----------|
| 1. Complete third pilot testing of Dow’s 2025 Nature Goal process and tools, and develop summary materials for dissemination within Dow and externally. | Complete |
| 2. Launch the ESII Tool publicly, and collect feedback from select companies and organizations, while continuing to also conduct further ESII Tool testing at Dow. | Complete |
| 3. Identify opportunities to leverage results from the three pilots at Dow and beyond. | Complete |
| 4. Collect, summarize and share lessons learned from the six-year Collaboration through a variety of media. | Complete |
| 5. Continue to advocate jointly on policies that support ecosystem – related strategies and nature-infrastructure investments. | Complete |

The following sections provide a summary of the results of the Collaboration in 2016.

Launch of ESII Tool

In early 2016, the Collaboration officially launched the ESII Tool - developed to enable users everywhere to identify and measure the value and benefits of nature. After more than three years of development and testing, and partnering with EcoMetrix Solutions Group, the ESII Tool was made public and available for download as an iPad application and through a web interface.

As mentioned throughout this report, the ESII Tool has become an essential support tool in the implementation of Dow's 2025 Nature Goal and was developed to fill a critical gap in measuring nature's value. Previously, measuring how much nature's benefits was not easy, with many existing tools either too elementary or very complex. The ESII Tool fills this gap and can be used by decision-makers, business managers, engineers and ecologists alike to quantify the benefits of nature to society and business.

The ESII Tool can be used in early stages of decisions and can be applied in site planning, alternative project design analysis, impact assessments, cost-benefit studies, and even support existing financial and economic models by providing data to input into these models.

Users collect information (such as tree height, ground cover, and the movement of water) about a particular piece of land by answering questions generated by the ESII Field App, an iPad application, and then the tool runs various ecological models on the web-based ESII Project Workspace.

The ESII Tool is available for free to the public on iTunes; more information can be found at www.esiitool.com

Continuation of Pilot #3 Research

The development and implementation of the Valuing Nature Goal decision process and tools continued in 2016, with the launch of four research projects (Table 2). The following section describes the research and outputs of our efforts this past year.

- Freeport, Texas: Lake Jackson Pump House
- Tarragona, Spain: Water Re-Use
- Freeport, Texas: Watershed Level Sustainability Efforts
- Dow AgroSciences: Nitrogen Stabilizers*

*Note: Analysis still underway and outputs will be covered in 2017 reporting.

Considering Nature-based Technology for Pumping Infrastructure to Meet EPA Regulations

Site Location: Freeport, Texas; Project: Lake Jackson Pump House

The Collaboration team had the opportunity to assess both sustainable landscaping options and nature-based technologies at Dow's Freeport site in Texas. The site's pumping infrastructure was outdated and needed to be modified to comply with U.S. Environmental Protection Agency (EPA) regulations, but updates to the infrastructure would likely impact the existing surrounding woodland areas on the four-acre site. The project was screened into the valuing nature process based on its potential impact to natural areas and to use nature-based technology.

Using the tools developed by the Collaboration, the team of Conservancy and Dow leads assessed whether sustainable landscape designs would reduce costs and make up for any ecosystem services lost on the impacted woodlands. Additionally, the team had the opportunity to look at whether Geo Textiles – a type of permeable fabric – could also improve performance of the canal infrastructure by providing erosion control that also allowed for water to filter into the soil (as compared to concrete that controls erosion but blocks water from filtering into the soil).

Outcome: The ESII Tool showed that the sustainable landscaping design had lower upfront costs and operating and maintenance costs over a ten-year period as compared to a business-as-usual design with traditional landscaping and concrete to reinforce the sides of the canal. The team noted that using native planting and restoring 500 feet of creekside woodland habitat could increase the overall ecosystem service outputs of the site. While the Geo Textiles option also showed opportunities for cost savings, the Dow site could not implement this option as the results occurred in a late stage of the project assessment.

Dow's Tarragona, Spain DEMOWARE Industrial Water Reuse Project

Site Location: Tarragona, Spain; **Project:** Water Re-Use

Dow's site in Tarragona, Spain is located in a region that experiences seasonal water stress. The site's main source of freshwater – the Ebro River – supports a multitude of industrial, agricultural, touristic and municipal water uses. It is also recognized as an important site for migratory birds.

At this site, the Collaboration team had an opportunity to assess process improvements already committed to be made by Dow. With support from the European Commission (DEMOWARE Consortium), Dow has undertaken a cross-sector partnership to reclaim and reuse wastewater using its own reverse osmosis technology at a plant built by Veolia and operated by AITASA (Tarragona Industrial Water Company). Reverse osmosis is a form of desalination; it removes salts from water. Dow's stretch goal for its Tarragona site was to shift from 86% river water and 14% reclaimed water to 25% river water and 75% reclaimed water.

The project was screened into the valuing nature process because of its potential to reduce withdrawals from the river. The intention of this screen was to quantify the benefits to both business and nature from using the reverse osmosis technology.

Outcome: The work at Tarragona represented the first time the team used all the tools developed by the Collaboration to value a business process improvement with respect to benefiting nature. We were able to put the plant's financial analysis in terms of water rights and worked with the plant to change the view of water rights from static costs to fungible assets. The team also considered the tradeoffs of both alternatives (fresh water from Ebro River vs a blend of fresh water and recycled water after treatment) to identify the environmental implications. They reached the consensus that with the operational data at hand the Demoware project reduces the overall energy use, has an equivalent demand on resources (from chemicals requirements) and has an equivalent waste water discharge profile. The team recommended considering performing a full life cycle assessment once additional data has been gathered to complement existing knowledge. In order to complete the project, the site needed capital funds and the nature team was able to highlight the benefits and shed some light on this innovative project.



Water-Shed level Solutions as a Part of a Comprehensive Water Sustainability Strategy

Site Location: Freeport, Texas, **Project:** Watershed Level Efforts

Water is a key ingredient of nearly every industrial product. It is used for cleaning, rinsing and cooling in industrial processes and power generation. However, global water consumption has doubled every 20 years, and by 2025, at least two-thirds of the world's population will likely be living in water stressed areas.

To look at ways to reduce water stress, the Collaboration studied water reliability at the Dow Freeport, Texas site, located at the mouth of the Brazos River. Watershed-level studies in the first pilot provided some initial evidence for the pre-feasibility phase water funds project. However, more in-depth feasibility studies are needed to determine what specific solutions or interventions can increase supply, decrease demand, or increase value through transfers. Three challenges for these studies are to identify 1) what solutions can work at scale to increase quantity at the right time; 2) the specific ecological, hydrological, and socioeconomic enabling conditions for each solution; and 3) the link between quantity improvements at the site of implementation and downstream businesses, communities, and ecosystems.

Modeling of future trends in demand growth and climate change predicts an increase in the magnitude and frequency of water shortages.¹ Dow has made important progress in mitigating water risk by reducing demand on site, accessing new supplies (e.g., municipal wastewater recycling), and pursuing a new off-channel reservoir. The business question the Collaboration set to address, and which builds on the phase one Freeport freshwater project, was: *how can Dow work with other stakeholders and nature through a water fund-type strategy that would enhance the sustainability of the watershed and the reliability of Dow's water supplies?*

A diverse set of strategies that fit the economic, social, and ecological conditions in the Brazos River basin is needed to maintain reliable water supplies for downstream users like Dow. These strategies can be grouped into three categories based on their goal:

- 1) increase supply;
- 2) decrease demand; and
- 3) increase the value of the water in use through transfers across time, space, and users (e.g., natural or built reservoirs, water trading).

Outcomes: More in-depth feasibility studies are needed to determine what specific solutions or interventions can increase supply, decrease demand, or increase value through transfers. Information on benefits to communities and the environment is important for engaging appropriate stakeholders during the design phase of a water fund.

Table 3. Watershed multi-stakeholder or nature-based solutions for enhancing sustainability in the Brazos

| Goal | Project | Evidence |
|----------------------------------|---|--|
| Increase Supply | Management of water-hungry invasive plants in the upper basin | Not cost-effective, low water supply ⁱ |
| | Municipal wastewater recycling in constructed wetlands | Not cost-effective, high water-supply ⁱ |
| Decrease Demand | Irrigation efficiency | Cost-effective, low water savings ⁱ |
| | Municipal rebates for landscaping | Cost-effective, low water savings ⁱ |
| Increase Value through Transfers | Floodplain restoration and reservoir reallocation (across time) | Cost-effective, medium water supplies ⁱ |
| | Water trading (across users) | 0-55% reduction in water price, small impact on water shortages and economics losses ⁱⁱ |

Phase One Outcomes

Our Reach

A key tenet of the Collaboration from the start was to share information internally at both Dow and the Conservancy, but also publicly to the private sector, government, and academia. The Collaboration's reach and communications have been an important aspect of this first phase of our efforts. Here's a sampling of some of the work we have done to share our research, tools and lessons learned:

- *Presentation of the Collaboration's research and tools to more than 50 conferences and meetings, including launching the ESII Tool at GreenBiz'16 and presenting the business case for our work including at Harvard, Yale, and University of California, Berkeley.*
- *Media coverage to help inform the public about the Collaboration – articles, interviews and blogs in hundreds of news outlets and publications, including the Washington Post, Time, Bloomberg, CNBC, Sustainable Brands, Environmental Leader and more.*
- *Internal briefings and education events for both Dow and Conservancy staff, training thousands of scientists, engineers and managers across the organizations.*
- *Peer-reviewed journal articles – six published articles on the Collaboration's research – and articles in industry, law and chemical society journals*
- *Showcasing the ESII Tool in the Natural Capital Protocol – the tool is part of a broader suite of materials developed to help businesses understand natural capital.*
- *Inclusion of the Collaboration's work and business cases in several textbooks.*

Demonstrating Nature as a Problem Solver

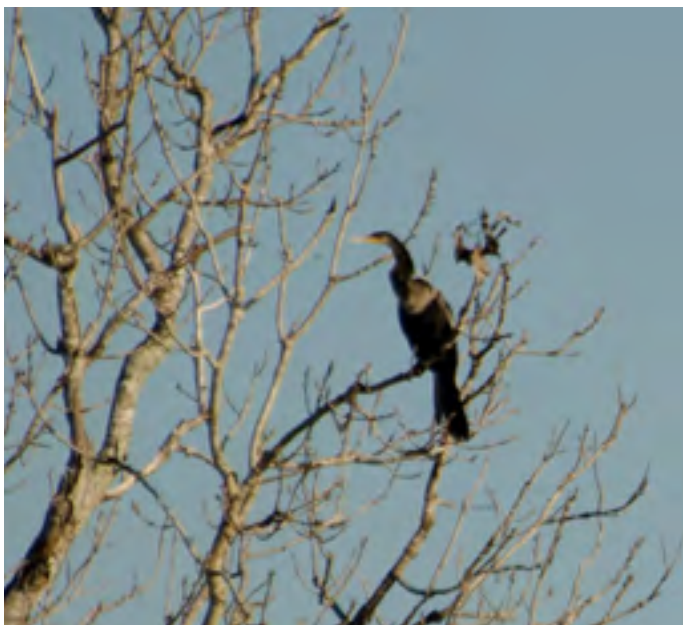
For six years, the Collaboration has worked on the premise that nature and business can work together providing better outcomes for both. While there was consensus among the conservation community that natural solutions could be economically beneficial when compared to their traditional counterparts prior to this Collaboration, there was little research that summarized these types of analyses vis-à-vis business operations.

Through the Collaboration's research, we have shown that innovative ways to use nature can produce results that help businesses and protect and restore nature.

Reforestation as a Business Solution to Improve Air Quality

High concentrations of ground-level ozone are a threat to human health and nature. In the United States, regions that exceed limits set in the Clean Air Act have additional restrictions on the emissions of ozone precursors (volatile organic compounds, VOCs, and NO_x). In the non-attainment zone where Freeport is located, significant investments have been made in technology solutions to reduce emissions and ambient levels of ozone. Trees remove both NO_x and ozone, so reforestation could be a potential solution to reducing ozone levels, but its cost effectiveness had not been researched.

The Collaboration's initial work at the Dow site in Freeport, Texas as part of the first pilot showed for the first time how companies could deploy reforestation as an important cost-competitive natural solution to mitigate high ground ozone levels.^{iv} With these results in hand, the team is working with government agencies and other stakeholders to validate reforestation as a tool for companies to reduce ozone pollution.



Nature's built-in protection against storm damage

The Collaboration's early research at the Freeport site also looked at how nature can be used as an asset protection strategy to protect business infrastructure and operations from storms and rising sea levels. Nature's built-in defenses, such as wetlands, can help protect coastal areas from these hazards by mitigating floods damage.

The Collaboration's study at Freeport showed that using wetlands in conjunction with more conventional infrastructure, such as dikes and levees, could provide better protection of business assets from storms and flooding compared to conventional infrastructure alone. Additionally, the research also showed that wetlands provide an additional benefits to the public and biodiversity.

While wetlands can help protect against sea level rise and small storms, levees are still needed in this location to protect against the damage from large hurricanes. Although the research did not result in Dow's Freeport site reducing the height of its levees, it did show how the levees would perform better with the wetlands in place and it prompted the company to look at other sites and coastal habitats using this replicable method.^v

Mitigating Risks Due to Water Scarcity

Just as communities around the world are faced with increasing risk of water shortages and water price increases, businesses are experiencing the same. With water's scarcity becoming a global concern, the Collaboration directed an element of its research examine the way natural solutions could be cost-effective for increasing water availability in areas more at risk for drought.

In addition to showing that nature can be part of solution, the Collaboration's analysis at Freeport demonstrated how Dow could better translate water risk into economic terms and account for risks from climate change into their site's water management plans.ⁱⁱ

Similarly, as discussed earlier in this report, as part of the work of the Collaboration at Dow's site in Tarragona, Spain, efforts are under way to implement a reverse-osmosis technology to reduce the amount of water needed from a local river. Additionally, the Dow site in Terneuzen, Netherlands, is looking at advanced technologies to allow re-use of various sources of water and incorporating the use of a constructed wetland to help address water risk.



Capturing Nature's Economic and Conservation Value

Across Dow, and at other corporations, there is a regular need to make decisions about how to manage real estate, which often includes natural areas. A standard business decision might be to simply sell land for development; however, natural areas on a site present an opportunity to sell land into conservation, which would generate revenue and maintain ecosystem services.

At Dow's site in Bristol, Pennsylvania, the Collaboration team examined the cost/benefit of selling natural land into conservation versus simply selling land for development. The team used the ESII Tool to account for ecosystem service values from the land, which would not typically have been considered in the original business decision. The results of this study site showed that selling the land into conservation would result in reduced maintenance costs to Dow (over time relative to maintaining ownership of the land), as well as tax advantages. The community would also benefit from the selling of land into conservation through improved air quality, creating an open space for new recreation possibilities. Nature would benefit as the sale into conservation would result in securing protection for a rare woodland habitat, which helps to support ecological functions in the area and important species.

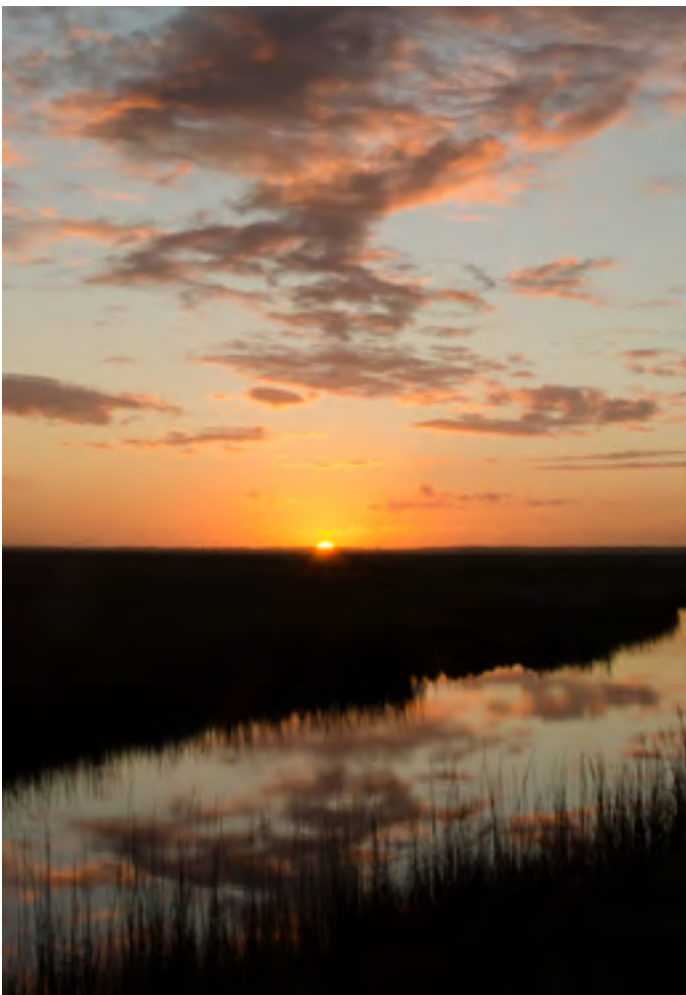
In Santa Vitória, Brazil, the Collaboration had the opportunity to conduct research in the heart of Brazil's agriculture region, where less than 6% of the natural vegetation that remains, and is poorly protected. The focus of the research was to identify ways to expand agriculture production and benefit conservation, while adhering to Brazil's Forest Code – which mandates that a minimum proportion of natural vegetation be set aside or restored on privately owned lands. The results of this study showed that landscape-level approaches to impact mitigation could offer benefits to conservation, such as protecting more species and improving water quality, while also cutting the costs of compliance with the country's Forest Code regulation.^{i, vi}

Lessons Learned

Turning Strategy into Action

Incorporating nature into decisions across a global business of this scale has never been done before. Our goal is that as research and development, capital and real estate projects are scoped out considering nature's value will benefit business, biodiversity, and communities.

While many of the projects to date have been small in scope, we expect that larger impacts will be found in the future. By taking small steps and working on very specific projects, the Collaboration can start to look at larger issues related to nature, i.e. how can nature help protect against droughts, flood risks, resource constraints, etc. Project work will lead to best practices and a surefire way that that conservation innovations will spread across Dow. Adopting best management practices will be an important way to institutionalize the valuing nature process, especially when market or regulatory conditions do not provide incentives.



Beyond Business Operations: Policy Impact & Implications

Some of the results from the site locations showed that there were cases where policy change is needed to enable Dow and other businesses to invest in natural solutions. One such case was the Reforestation study conducted in Freeport, where Dow and the Conservancy met with the Texas Commission on Environmental Quality (TCEQ) to discuss reforestation as a way to improve air quality. Additionally, research in Pilot #3 at the Midland Dow Headquarters location also showed that, in some cases, nature-based solutions is a newer concept, such as our work on permeable pavement, and more research is needed to demonstrate that this innovative option could be a strong long-term solution.

Shifting Culture and Behavior

Historically, business and nature have been considered separate, which requires a certain 'shift in culture' towards more nature-focused solutions and opportunities. At the start of the Collaboration, there were significant planning meetings and discussions for the Dow and Conservancy teams about the key principles of the work and the unprecedented scale of what the partnership was aiming to achieve. As science drove the research and tool development, there was a common ground between both organizations in this evidence-based approach to building the business case for nature.

With the release of the Valuing Nature Goal, and the decision to incorporate a process to value nature in nearly all projects, nature is being mainstreamed within Dow. The Collaboration team has visited eight sites, where they have led workshops on incorporating the value of nature into Dow's projects. With the inclusion of the nature screen in Dow's Global Project Management (GPM) process, there is a clear path to formally and fully incorporating nature into Dow's culture.

New Ventures in Business & Nature

The second phase of the collaboration will build on the research and lessons learned from the first, with the overall goal of supporting Dow's roll out of the 2025 Valuing Nature Goal across the company.

Phase II Objectives

As the Collaboration moves into the second phase, the team is shifting its focus from proving the concept that nature has value to business to defining and implementing projects that are good for business and better for nature. The Collaboration team will continue to conduct workshops at Dow sites around the globe—helping staff at these sites identify and analyze candidate Valuing Nature projects. For projects that pass the screen, Conservancy will bring in local experts to conduct detailed analyses alongside Dow staff.

Upon completion of the analysis, the Dow site will decide whether to implement the projects, and the corresponding Conservancy programs can decide whether to support implementation. Another key objective is that the Collaboration will continue to share learnings publicly through a variety of media.

Ongoing Communications

Our hope is that by continuing to share our research, tools and lessons learned, that other companies will work to demonstrate the importance of integrating nature into business. The Collaboration will provide ongoing public communications – through events and traditional media – as our work progresses during the second phase.



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