



Nature-based Solutions (NbS) as Pollution Prevention (P2) within the Automotive Sector

Partner Workshop Pre-Read

Background

From strategic tree plantings to wetland restoration projects, Nature-based Solutions (NbS) are quickly becoming a key part of many pollution prevention strategies. These solutions are accessible, scalable, and offer many co-benefits, like increased biodiversity and climate resilience. NbS can advance pollution prevention goals on corporate lands while enhancing ecosystem services and contributing to local, regional, and large-scale restoration efforts.

The Wildlife Habitat Council (WHC) adheres to the generally-accepted International Union for Conservation of Nature (IUCN) definition that NbS are “actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits”.¹

In terms of pollution prevention, WHC is aligning with EPA priorities within a hierarchy of environmental management: 1) prevention, 2) recycling, 3) treatment, and 4) disposal or release. For this initiative, pollution **prevention** (P2) is “reducing or eliminating waste at the source by modifying production processes, promoting the use of nontoxic or less toxic substances, implementing conservation techniques, and reusing materials rather than putting them into the waste stream.”²

P2, in a broader context, also means source **reduction**. The Pollution Prevention Act of 1990 and EPA's Pollution Prevention Strategy (1991) further define "source reduction" to mean any practice that:

- “Reduces the amount of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment (including fugitive emissions); prior to recycling, treatment or disposal; and
- Reduces the hazards to public health and the environment associated with the release of such substances, pollutants or contaminants.”

¹ IUCN definition of NbS: <https://www.iucn.org/theme/nature-based-solutions>

² EPA Pollution Prevention Law and Policies: <https://www.epa.gov/p2/pollution-prevention-law-and-policies> - and - Memorandum - May 28, 1992, Subject: EPA Definition of "Pollution Prevention": <https://www.epa.gov/p2/epa-definition-pollution-prevention-memorandum>

Because NbS interventions have many co-benefits, integrating these options can support site-wide, or even community-wide pollution reduction efforts. When implementing NbS options, alignment with larger co-benefits can be achieved even when an option may appear to be outside the scope of pollution reduction. Within the automotive sector, NbS options supporting pollution reduction can be contextualized relative to the operating status, size of land area, community or organizational priority, and contribute to site-wide best practices and activities in pollution prevention.

Further, NbS can be aligned with **Low Carbon Resilience**, which is “an integrated climate action planning and decision-making approach that ‘layers on top’ of existing sustainability visions, plans, and decision frameworks to help organizations embed climate preparedness and sustainability throughout policy, planning, and decision making. It brings into focus the multiple considerations and trade-offs of policies, investments, projects, and decisions made today while acknowledging their legacies for tomorrow.”^{3, 4}

Other alignments can focus across the fence line when NbS policies and practices integrate community stakeholder needs, particularly with broadly impactful programs.

An example of a cost-effective pollution reduction approach that provides broader community benefit is phytoremediation, from the Greek word *phyto* (plant) and the Latin word *remedium* (restoring balance.) It involves planting trees and other plants to extract and remove elemental pollutants to lower their bioavailability and thereby clean up contaminated soil and water while stabilizing soil fertility. The Arbor Day Foundation noted:

“Due to recent advances in plant microbiology, phytoremediation has increasingly become more cost-effective and feasible than traditional remediation approaches for a wide range of polluted sites, while providing communities with the host of co-benefits inherently offered by trees—shade, carbon sequestration, watershed health, and habitat for wildlife.”⁵

Other solutions can include wetland preservation, enhancement, restoration, and creation (e.g., forest and riparian habitat, upland wetlands, emergent wetlands, vernal pools, coastal tidal marshes, mangroves). With these NbS interventions, multiple benefits ensue from

³ Low Carbon Resilience; Action on Climate Team (ACT), Simon Fraser University, Vancouver BC: <https://act-adapt.org/icabcci/>

⁴ For synergies and co-benefits of a Low Carbon Resilience (LCR) approach and interventions see: Shaw, Alison, Deborah Harford, and Kacia Tolsma (2019). *Low Carbon Resilience Interventions: Case Studies at the Building, Neighbourhood, and Community Levels*. Integrated Climate Action for British Columbia Communities Initiative (ICABCCI) is an initiative of the Adaptation to Climate Change Team (ACT) in the Faculty of Environment at Simon Fraser University (Tables pp. 7-8).

⁵ Arbor Day Foundation:

https://www.arborday.org/partnerships/phytoremediation/?gclid=CjwKCAjwlcaRBhBYEiwAK341jXCrp4nZDAPY5VXiR8NQ8nK_MYxNZmTSPy6Ln0Quu7Xol-1Cpm83-hoCy9QQAvD_BwE

implementing appropriate wetland options, including water resource management, disaster risk reduction, pollution prevention and reduction.

WHC and Suppliers Partnership for the Environment (SP) Explore Nature-based Solutions

WHC is being funded under EPA's Source Reduction Assistance (SRA) Grant program to explore the opportunities to implement NbS for pollution reduction across the automotive industry. Through a program of technical assistance, research and analysis, stakeholder engagement and workshops, this effort seeks to develop and advance nature-based solutions as pollution prevention in the industry.⁶

Goals of the initiative include (1) identifying business drivers and challenges that enable or hamper NbS implementation, from corporate needs to policy hurdles and operational mandates; (2) developing a roadmap to implement and/or support NbS; and (3) establishing a case for pilot projects and additional funding. An internal goal to WHC is to help advance the acceptance of NbS as pollution prevention interventions into EPA lexicon and practice.

Partners in the initiative include (1) SP members; (2) WHC corporate members: GM, WM, Stellantis, Toyota; and (3) non-members: Ford, Heritage Group, Lear, SMS, ERA.

WHC and SP Partner Workshop

The goal of the workshop is to highlight the opportunities and challenges of implementing NbS at automotive manufacturing facilities. During the workshop, participants will:

- Learn about NbS as a tool for pollution prevention
- Explore the suite of available and measurable NbS opportunities or interventions
- Discuss different operating restrictions and perspectives, and evaluate different business drivers and benefits.

The workshop consists of two sessions designed to explore these objectives by evaluating NbS interventions based on pollution prevention objectives and the associated co-benefits. By comparing and analysing these opportunities and co-benefits, participants will also be exploring the risks and challenges associated with engaging in NbS as a pollution reduction tactic at operating facilities within the industry.

A table of possible NbS interventions, options, or opportunities for pollution prevention (P2) within the automotive sector is presented for consideration (**Appendix 1**). This table is intended to serve as a quick reference and reflect options that are scalable to varying industrial settings (e.g., offices/leases, manufacturing plants, distribution centers) and










⁶ Environmental Protection Agency, Region 4 Source Reduction Assistance Grant, part of the federal Pollution Prevention Grant Program, titled Nature-Based Solutions for Pollution Prevention in the US Automotive Supply Chain

feasible for implementation. The table will be used as a basis for *Breakout Session One* during the workshop.

Any action in the business world can be subject to risk management assessment. While there are thousands of examples of successes, we also want to be mindful of perceived risks. We invite attendees to participate in *Breakout Session Two* in order to better understand company needs and requirements, and also consider best ways to mitigate any substantial risk.

To learn more about NbS, refer to the list of materials provided in **Appendix 2**.

Appendix 1. Possible NbS Interventions, Options, and Opportunities for Pollution Prevention (P2)

Nature-based Solutions		Pollution Prevention Objective		Co-Benefits								
Intervention	Description	CO ₂	Water or Soil Pollutants	Biodiversity Uplift	Reduced Extreme Temperatures	Improved Equity	Human Health & Well-being	Carbon Sequestration	Water Retention and Absorption	Improved Local Air Quality	Improved Soil Health	Cost Savings
												
Wetland Rehabilitation	Restoring degraded wetland function and vegetation	•	•	•		•		•	•	•	•	
Stream Rehabilitation	Plantings and flow improvements designed to restore ecological function		•	•		•	•		•	•	•	
Blue Carbon	Carbon sequestration via coastal ecosystems like mangroves, sea grass beds, and marshes	•	•	•				•				•
Naturalized Shoreline	Enhance shore vegetation and features (i.e. dunes) to mitigate non-point source pollution		•	•	•		•		•	•		•
Reforestation	Enhancing native forests	•		•	•		•	•	•	•	•	
Vegetative Buffer	Dense vegetation that traps sediment and slows stormwater flow		•	•	•			•	•	•	•	
Urban Forestry	Planting, care, & management of trees in urban settings	•		•	•	•	•	•	•	•		

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Micro Forest	Dense, multi-story plantings replicating mature forest composition in a small area	•		•	•	•	•	•	•	•	•	
Grassland Restoration	Enhancing, creating or converting turf to native grassland	•	•	•			•	•	•	•	•	•
Phyto-remediation	Planting for contaminant clean-up and soil health	•	•	•	•		•	•	•	•	•	•
Greywater System	Wastewater systems		•						•			•
Rain Garden	Vegetated features that capture stormwater flow to allow infiltration		•	•	•	•	•	•	•	•	•	
Bioswale	Vegetated swales that strategically direct stormwater flow		•	•	•	•	•	•	•		•	
Wet detention System	Stormwater control features (ex. Ponds)		•		•				•			
Permeable Pavement	Porous paving systems		•						•			
Living Wall	Walls covered with a layer of vegetation	•			•		•	•		•		•
Blue Roof	Temporary storage and gradual release of storm water from roof features		•		•				•			•
Green Roof	Vegetated roof systems		•	•	•		•	•	•			

Appendix 2. Resources for Further Exploration of Nature-based Solutions

Several background resources may be useful in advancing knowledge about NbS, including:

- WHC Webinar: “*Nature-Based Pollution Prevention – Tactics for Implementation, Reporting, and Partnerships*” (September 2021)¹
- WHC and Cleveland-Cliffs “*Leveraging the Power of Nature: Private Sector Potential for Community First Climate Action.*” This document provides a broad overview of how companies can take action on nature and climate solutions using a community-first approach that encourages private sector NbS investments and interventions, especially where industry has direct impacts on communities.²
- WHC and General Motors “*Biodiversity by Design: Integrating green design into new builds, retrofits, expansions and land management at General Motors facilities*”, which provides ways to integrate green design into new builds, retrofits, expansions, and land management at GM facilities
- *IUCN Global Standard for Nature-based Solutions: A user-friendly framework for the verification, design and scaling up of NbS: first edition.* Gland, Switzerland : IUCN, 2020³
- “*Addressing Climate Change in Cities: Catalogue of Urban Nature-based Solutions*” by the Ecologic Institute and Sendzimir Foundation, Warsaw.⁴

¹ “*Nature-Based Pollution Prevention – Tactics for Implementation, Reporting, and Partnerships*” Webinar recording: <https://www.wildlifehc.org/knowledge-resource/nature-based-pollution-prevention-tactics-for-implementation-reporting-and-partnerships/>

² *Leveraging the Power of Nature*, sponsored by Cleveland-Cliffs: <https://www.wildlifehc.org/knowledge-resource/leveraging-the-power-of-nature/>

³ IUCN NbS Framework. <https://portals.iucn.org/library/node/49070>

⁴ Iwaszuk, Ewa; Galina Rudik; Laurens Duin; Linda Mederake; McKenna Davis; Sandra Naumann; and Iwona Wagner (2019). “*Addressing climate change in cities: Catalogue of urban nature-based solutions.*” Ecologic Institute and the Sendzimir Foundation, Warsaw, Poland. [This project is part of the European Climate Initiative (EUKI), which is a project financing instrument by the German Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety (BMU).] <https://sendzimir.org.pl/en/publications/policy-instruments-to-promote-urban-nature-based-solutions/>