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Sustainable Business

Investing in Water Management in the Auto Industry: Proposed Benefits & Monetization Methods

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ROSI™ Framework

Return on Sustainability Investment (ROSI™) Framework



By embedding ESG risk and opportunities within core business strategy, the return on sustainable investment can be quantified, delivering the possibility of both financial value and positive societal impact.

Overview of Auto Industry Framework

NYU Stern CSB is developing a ROSI™ framework for the auto industry with publicly available monetization tools to help the industry understand where and how sustainability can unlock financial value.

Based on research, experience, and engagement with industry leaders, we have identified the following sustainability strategies* used by the industry to include in the framework:

- Mitigate & Adapt to Climate Change
- Waste Management
- Water Management
- Chemical Management
- Support Electrification Ecosystem
- Circularity
- Cyber Security
- Sustainable Sourcing
- Driver Safety
- Supplier and Employee Well-Being

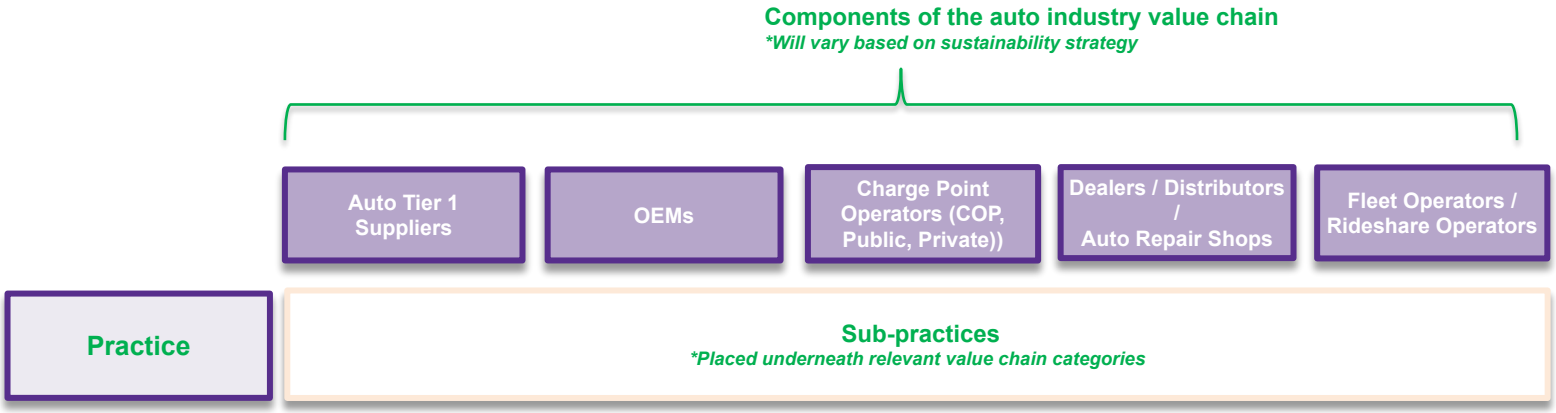
Identified Sustainability Practices and Sub-Practices

Framework Layout

Through our research, we identified key sustainability practices and sub-practices that auto industry value chains are using to achieve their sustainability goals.

- **Each practice is broken into sub-practices, which are mapped to the relevant components of the value chain (and excluded where not applicable).**
- **Benefits are mapped to sub practices, with some benefits appearing across multiple practices.**
- **Specific compliance or enforcement policies are not listed in this framework, except for the new Cross Border Adjustment Mechanism regulations.**

The diagram below illustrates the framework applied for each strategy in the following slides



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Investing in Water Management

Investing in Water Management

	Auto Tier 1 Suppliers	OEMs	Charge Point Operators	Dealers / Distributors / Auto Repair Operations	Fleet Operators / Rideshare Operators
Improve Water Efficiency	Invest in water efficiency solutions, including new technologies and processes (such as dry paint shops, cooling system optimization, more efficient spraying operations that require less cleaning, rainwater harvesting and stormwater management)				
	Establish internal price on water				
	Invest in circular water initiatives to reduce and reuse water				
Conserve Upstream Resources (Replenishment and Restoration)	Partner with suppliers in deploying technology to assess and mitigate water scarcity				
	Partner with ngos on watershed replenishment and restoration programs and projects				
Improve Wastewater Management	Invest in wastewater recycling/circularity/reduction processes and efforts				
	Invest in improving wastewater quality (including advanced water treatment systems)				

Comment: Many of these practices could be implemented by all value chain participants. It is most relevant for OEMs and suppliers.

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Monetization Approach

Investing in Water Management

Overview of Sustainability Strategy and Relevant Value Drivers

Sustainability Strategy Definition

Water Management

Auto industry companies are investing in water management strategies by improving water efficiency, conservation of water resources, and improved wastewater management. Key approaches include establishing new technologies or processes for water efficiency, setting an internal cost of water, investment in circular water initiatives, partnering with suppliers to support water management practices, and with NGOs and stakeholders to promote water conservation and replenishment, in addition to investing in wastewater reduction efforts, and improving waste water quality.

The following slides focus on the benefits and relevant value drivers derived from the *Water Management* strategy

Relevant Value Drivers	**Benefits that…**
Risk Management (RM)	Encourage risk mitigation and resilience within the value chain
Operational Efficiency (OE)	Optimize corporate and supply chain efficiencies to lower cost and increase profits
Supplier Relations (SR)	Improve upon the relationships between the company and its suppliers
Stakeholder Engagement (SE)	Improve goodwill among the broader stakeholder community (i.e. investors, NGOs)

Investing in Water Management

Overview of Sustainability Strategy and Relevant Value Drivers (continued)

The following slides focus on the benefits and relevant value drivers derived from the *Water Management* strategy

Value Drivers not Captured in this Strategy	**Benefits that…**
Talent Management (TM)	Attract and retain high-quality internal talent
Sales and Marketing (SM)	Increase volume of sales through brand and marketing policies
Customer Loyalty (CL)	Attract an increasing community of conscious buyers & consumers, while reducing retention costs
Media Coverage (MC)	Increase a company's media presence with the development of traditional and social media content
Innovation (IN)	Create new revenue streams using sustainable business models

Investing in Improved Water Efficiency

Overview of Benefits and Monetization Methods

Practice	Sub-Practice*	Proposed Benefits	Value Drivers	Suggested Monetization Methods
Improve Water Efficiency	Invest in water efficiency solutions, including new technologies and processes ——— Establish internal price on water	New water efficient processes and technologies (including those to monitor, meter, and train on best practices) lead to lower **operating costs** (such as water, wastewater, labor, materials, etc)	OE	Calculate the differential in impacted operational costs (materials, energy, water and/or labor) per unit produced for pre and post practice implementation of changes in water technology or processes. Multiply the differentials by number of units produced and deduct any implementation costs to quantify the benefit
		Reduced water use leads to avoided **regulatory costs** - reduced risk of fines for exceeding limitations on water access, production delays due to drought water restrictions, etc	RM	Estimate the probability of a fine or regulatory sanction and the average costs (fines, legal expenses, administrative costs related to get back into compliance). If applicable, calculate the potential production loss resulting from the regulatory sanction. Estimate the reduction in probability of an event due to the implemented practice and multiply by the average cost to quantify the benefit
		Reduced water use reduces impact of **supply disruptions** and production delays related to water availability and scarcity	RM	Estimate the probability of a disruption due to water scarcity.and related costs. Assess if the reduction in probability after implementing new practices. Estimate the reduction in probability of an event related to the implemented practice and multiply by the average cost to quantify the benefit
		Accounting for the price of water raises **awareness** and incentivizes reduced water use (leading to reduced operational costs associated with less water usage)	OE	Assign an internal price for water per unit by incorporating water risk factors. Incorporate this “shadow” cost into decision making by determining the water use per units produced. Calculate the reduction in water use from the new product design or other changes, and multiplying by the internal price to quantify the benefit

*Each Sub-Practice has the potential to drive all benefits.

OE	RM	SR
SM	SE	MC
CL	TM	IN

Value Drivers based on color coding illustrated on previous slides

Investing in Improved Water Efficiency (continued)

Overview of Benefits and Monetization Methods

Practice	Sub-Practice	Proposed Benefits	Value Drivers	Suggested Monetization Methods
Improve Water Efficiency	Invest in circular water initiatives to reduce and reuse water	Recycling or reusing water **lowers costs** related to procurement, wastewater discharge, and energy costs	OE	Calculate the per unit use cost of water, wastewater treatment cost, energy cost per unit of production before and after the implementation of the practice. Multiply the differential in costs by the number of units produced to quantify the benefit
		Recycling or reusing water **avoids production downtime** during drought restrictions	RM	Calculate the probability and average costs associated with production loss resulting from imposed water restrictions. Estimate the reduction in probability of an event related to the implemented practice. Multiply the reduction in probability by the average cost to quantify the benefit
		Reduced use of primary water avoids costs related to **regulatory fines**	RM	Assess the probability and average costs of receiving a fine and/or experiencing a regulatory sanction based on historical experience or proxy. If applicable, include potential production losses. Estimate the change in probability as a result of implementing the practice and multiply the change by the average cost to quantify the benefit

Investing in Conservation of Water Resources

Overview of Benefits and Monetization Methods

Practice	Sub-Practice	Proposed Benefits	Value Drivers	Suggested Monetization Methods
Conserve Upstream Water Resources (Replenishment and Restoration)	Partner with suppliers in deploying technology to assess and mitigate water scarcity	Improves **supplier relations** through collaboration on water scarcity assessment and mitigation	SR	Identify the benefits of working with suppliers, such as better contract and water permitting terms, and reduced wastewater treatment expenses to quantify the benefit
		Collaborations **reduce R&D costs** for instance, water treatment systems developed through partnerships often have lower upfront costs and lead to new technologies and processes driving lower costs and efficiencies	SE, SR	Calculate the level of R&D investment to achieve the improvement. Multiply this amount by the cost percentage paid by the supplier to quantify the benefit
		Avoided costs related to **water supply shortage and disruption** through combined supplier efforts on water scarcity assessment and mitigation	RM	Identify the number and costs of historical supply disruptions due to water contamination due to upstream water issues. Assess the probability of a disruption etc. impacting the organization's operations and associated average costs. Assess the reduction in probability associated with the partnership program and multiply by the average costs of the disruption (loss of productivity, emergency back up costs etc.) to quantify the benefit

Investing in Conservation of Water Resources (continued)

Overview of Benefits and Monetization Methods

Practice	Sub-Practice	Proposed Benefits	Value Drivers	Suggested Monetization Methods
Conserve Water Resources (Replenishment and Restoration)	Partner with NGOs on watershed replenishment and restoration programs and projects	Conservation efforts can prevent policymakers and their constituents from engaging in **efforts to oppose / disrupt company operations** leading to costs associated with permitting delays and appeals, land use disputes, environmental impact assessments , etc	RM	Assess the probability and costs (which could include production delays, lost sales impact, incremental legal expenses, management time, and costs associated with legal action against the company) related to water use disputes based on historical information or proxies. Estimate the reduced probability of a scandal after implementing the practice and multiply by the costs to quantify the benefit
		Reduced risk of future water usage **regulations and restrictions**	RM	Estimate the probability of new regulations and/or water restrictions leading to a disruption in water use and related costs. Estimate the reduction in probability after implementing new practices/partnerships and multiply by the average cost to quantify the benefit
		Conservations projects to conserve important sources of water and watershed implemented with or by community-and/or NGO-based partners can lead to **reduced costs** associated with permitting delays and appeals, land use disputes, environmental impact assessments , etc	OE	Assess the impact of improved community relations on administration costs (for instance, permitting cost and timeliness, reduced land use litigation expenses, compliance costs, etc to quantify the benefit

Investing in Wastewater Management

Overview of Benefits and Monetization Methods

Practice	Sub-Practice	Proposed Benefits	Value Drivers	Suggested Monetization Methods
Improve Wastewater Management	Invest in wastewater reduction processes and efforts	Wastewater reduction efforts avoid costs related to **water supply shortages and disruptions**	RM	Identify the number and average cost of historical supply disruptions due to water contamination issues. Estimate the reduction in number of events related to practice implementation and multiply by the average cost to quantify the benefit ALTERNATIVE APPROACH: Assess the probability and average cost of a disruption (loss of productivity, emergency back up costs etc.) due to wastewater issues. Estimate the reduced probability of a disruption after implementing new practice and multiply by the average cost to quantify the benefit
		Avoided costs related to **regulatory fines** due to reduced wastewater	RM	Estimate the probability of receiving a fine and/or experiencing a regulatory sanction. Calculate the related costs (fines, legal and administrative costs) to get back into compliance. If applicable, calculate also the potential production loss resulting from the regulatory sanction. Multiply the reduced probability by the average cost to quantify the benefit.
	Invest in improving wastewater quality (including advanced water treatment systems)	Improved water operations and wastewater quality (such as regular monitoring, wastewater quality audits to identify potential sources of contamination, and corrective action) leads to **operating efficiencies and avoided costs**	OE	Calculate the percentage of waste water that is recycled, and multiply by the average unit price of waste water disposal cost (less the per unit cost to recycle) to quantify the benefit. ALTERNATIVE APPROACH: Estimate the probability and average costs related to wastewater quality issues, such as contamination remediation and corrective actions, increased wastewater quality testing, etc. Estimate the reduction in probability related to the practice implementation and multiply by the average cost to quantify the benefit

Investing in Wastewater Management (continued)

Overview of Benefits and Monetization Methods

Practice	Sub-Practice	Proposed Benefits	Value Drivers	Suggested Monetization Methods
Improve Wastewater Management	Invest in improving wastewater quality (including advanced water treatment systems)	Avoided costs related to r**egulatory fines** due to improved wastewater quality	RM	Estimate the probability of receiving a fine and/or experiencing a regulatory sanction. Calculate the increased costs resulting from paying a fine and the administrative costs related to get back into compliance. If applicable, calculate also the potential production loss resulting from the regulatory sanction.
		Improve wastewater quality supports avoided costs related to water **supply shortage and disruption**	RM	Identify the number and average annual costs of historical supply disruptions due to wastewater contamination. Estimate the reduction in likelihood of an event related to practice implementation and multiply by costs to quantify the benefit *ALTERNATIVE APPROACH:* Assess the probability and the average costs (loss of productivity, emergency back up costs etc.) of a disruption in operations related to wastewater issues. Estimate the reduction in probability due to wastewater quality improvements and multiply by the average cost to quantify the benefit


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