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Center for Sustainable Business

Investing in Driver Safety in the Auto Industry: Proposed Benefits & Monetization Methods



November 2025

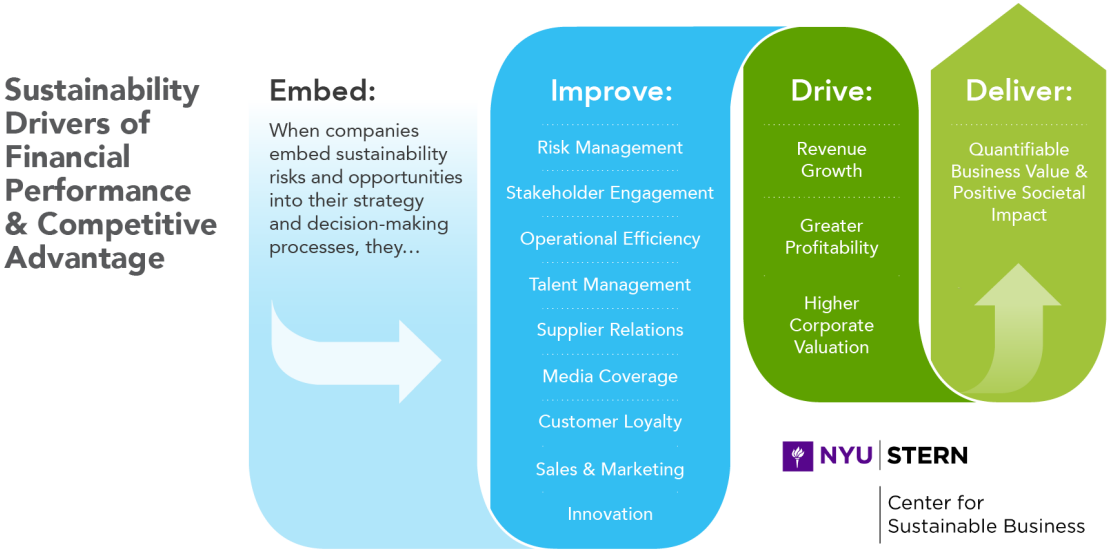
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ROSI™ Framework

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

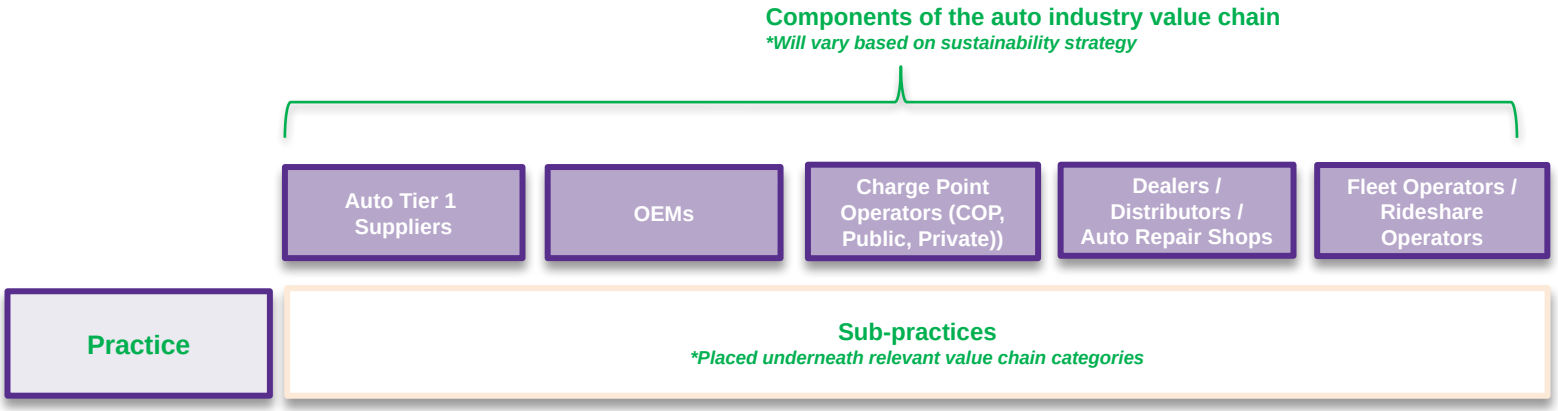
Identified Sustainability Practices and Sub-Practices

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 Driver Safety

Investing in Driver Safety

	Auto Tier 1 Suppliers	OEMs	Charge Point Operators	Dealers / Distributors / Auto Repair Operations	Fleet Operators / Rideshare Operators
Add Vehicle Safety Features and Services	Add advanced driver assistance systems (such as AEBs, lane departure, blind spot detection, traffic sign recognition, ESC, TPMS) and improve sensor fusion (by combining radar, lidar, cameras, and ultrasonic sensors for more accurate detection of obstacles and road conditions) to reduce collisions				
	Add features to reduce collision injuries such as advanced airbag systems, seatbelt enhancements, car frames to absorb impact, use of advanced steels, aluminum, and composites for stronger occupant protection				
	Add automatic crash notification (ACN) / eCall systems to reduce the severity of outcomes and support rapid rescue after an accident (examples include GM's Onstar, Volvo On-Call, Audi's Car-to-X)			Add automatic crash notification (ACN) / eCall systems to reduce the severity of outcomes and support rapid rescue after an accident. - examples include GM's Onstar, Volvo On-Call, Audi's Car-to-X,	
	Provide use and maintenance services (pre-owned certifications CPO, regular maintenance with safety checks, customer training on new features, pre-delivery checks with safety system)			Provide use and maintenance services (pre-owned certifications CPO, regular maintenance with safety checks, customer training on new features, pre-delivery checks with safety system)	
	Analyze crash data from NHTSA, IIHS, Euro NCAP crash databases for common injury causes, insurance claim & telematics data to spot recurring accident patterns, & field monitoring & warranty reports to identify failure trends in current vehicles				

Investing in Driver Safety (continued)

	Auto Tier 1 Suppliers	OEMs	Charge Point Operators	Dealers / Distributors / Auto Repair Operations	Fleet Operators / Rideshare Operators
Improve Quality Control and Vehicle Regulatory Compliance to Reduce Recalls	Improve quality control standards to ensure functional safety such as align with ISO 26262 (Functional Safety)				
	Improve quality control standards to ensure cyber security such as ISO/SAE 21434 to identify risks from both software bugs and malicious attacks			Improve quality control standards to ensure cyber security such as ISO/SAE 21434 to identify risks from both software bugs and malicious attacks	
	Implement independent internal or third-party supplier audits				
	Certify that a vehicle model meets the regulatory requirements in each market: *FMVSS* (U.S.) – National Highway Traffic Safety Administration (NHTSA); *UNECE Regulations* (Europe and many global markets); *GB Standards* (China); *CMVSS, ADR, AIS*, etc. (Canada, Australia, India)				
	Implement processes during production to identify safety concerns such as Failure Mode and Effects Analysis (FMEA) and use of predictive analytics to identify abnormal trends (e.g., torque deviations, high defect rates)				

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Monetization Approach

Investing in Driver Safety

Overview of Sustainability Strategy and Relevant Value Drivers

Sustainability Strategy Definition

Driver Safety

Auto industry companies are investing in driver safety by adding vehicle safety features and services and reducing recalls . Key approaches include increasing technologies for monitoring and detection, as well as car safety features, enhanced services to improve communications, emergency services, and health and safety, and use and maintenance, as well increased quality control standards and enforcement, and improved identification and process to address safety concerns.

The following slides focus on the benefits and relevant value drivers derived from the *Driver Safety* strategy

Relevant Value Drivers	**Benefits that…**
Operational Efficiency (OE)	Optimize corporate and supply chain efficiencies to lower cost and increase profits
Risk Management (RM)	Encourage risk mitigation and resilience within the value chain
Customer Loyalty (CL)	Attract an increasing community of conscious buyers & consumers, while reducing retention costs
Sales and Marketing (SM)	Increase volume of sales through brand and marketing policies

Investing in Driver Safety

Overview of Sustainability Strategy and Relevant Value Drivers (continued)

The following slides focus on the benefits and relevant value drivers derived from the *Driver Safety* strategy

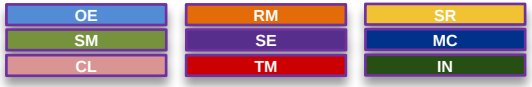
Value Drivers not Captured in this Strategy	**Benefits that…**
Stakeholder Engagement (SE)	Improve goodwill among the broader stakeholder community (i.e. investors, NGOs)
Talent Management (TM)	Attract and retain high-quality internal talent
Supplier Relations (SR)	Improve upon the relationships between the company and its suppliers
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 Vehicle Safety Features and Services

Overview of Benefits and Monetization Methods

Practice	Sub-Practice*	Proposed Benefits	Value Drivers	Suggested Monetization Methods
Add Vehicle Safety Features and Services	Add advanced driver assistance systems and improve sensor fusion Add features to reduce collision injuries Add automatic crash notification (ANC) / recall systems Analyze crash data to spot recurring accident patterns Provide other services to improve communications, emergency services	Improved **customer loyalty** leading to new sales due to new features for safety	CL	Calculate the customer loyalty rate (% of new cars sold in trade-ins to total trade-ins) and estimate the improvement due to added safety features and/or services. Multiply by improvement in rate by total trade ins to calculate incremental number of car sold. Multiply the incremental number of cars sold by an average sales price and an average margin % to quantify the benefit
		Increased **market share** due to first mover advantage from new technologies for safety features	SM	Calculate the current market share (%) before implementing the safety features or services. Calculate incremental volume gained from the safety features (either increase in vehicles reflected as percentage of market share or estimated incremental market share). Multiply incremental cars sold by the average selling price to calculate incremental revenue. Multiply incremental sales by average profit margin and subtract any additional cost of implementing the safety features and services to quantify the benefit
		Increased **revenues** due to ability to charge a premium for additional technologies for safety features	SM	Calculate the differential in average price per vehicle with and without innovative safety features, and multiply the the incremental number of cars sold associated with new features and services to quantify the benefit

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



Value drivers based on color coding illustrated on previous slides

Investing in Vehicle Safety Features and Services (continued)

Overview of Benefits and Monetization Methods

Practice	Sub-Practice*	Proposed Benefits	Value Drivers		Suggested Monetization Methods
Add Vehicle Safety Features and Services	Add advanced driver assistance systems and improve sensor fusion Add features to reduce collision injuries Add automatic crash notification (ACN) / ecall systems Analyze crash data to spot recurring accident patterns Provide other services to improve communications, emergency services	Mitigates **regulatory risk** and related costs (fines,legal fees etc)	RM	OE	Assess the probability and average cost (fines, administrative costs, cost of production delays, legal/PR expenses) of a regulatory violation based on historical data or relevant proxies. Estimate the reduction in probability of a violation due to implementing new safety features and/or services. Multiply the probability reduction by the average costs to quantify the benefit
		Mitigates **reputation risk** and related costs (revenue loss from safety-focused scandals, PR expenses etc)	RM	OE	Assess the costs related to reputational scandals using historical information or comparable proxies. Cost assessment may include potential sales impact, and legal or management time costs associated with legal action against the company (use historical data from past lawsuits, and/or publicly available data on settlement costs. If no historical data exists, determine a range of potential costs via the legal and communications teams). Estimate the reduced probability of a scandal after improving safety features and/or services and multiply by the costs to quantify the benefit

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

Investing in Improving Quality Control and Regulatory Compliance

Overview of Benefits and Monetization Methods

Practice	Sub-Practice*	Proposed Benefits	Value Drivers	Suggested Monetization Methods
Quality Control and Regulatory Compliance	Improve quality control standards to ensure functional safety Improve quality control standards to ensure cyber security Implement supplier audits Certify that a vehicle model meets the regulatory requirements in each market Implement processes during production to identify safety concerns	Reduced risk of **recalls** and related costs due to reduced **defects** from improved quality control standards	RM, OE	Estimate the reduced number of recalls and multiply by the average cost of repair per vehicle times the average number of vehicles per recall plus the average legal and image repair costs (PR, advertising, etc.), net of costs incurred to improve quality, use premium parts (COGS), and additional spend on quality training to quantify the benefit
		Improved **customer loyalty** due to improved part reliability leading to increased sales	CL	Calculate the customer loyalty rate (% of new cars sold in trade-ins to total trade-ins) and estimate the improvement due to actions leading to reduced recalls. Multiply the improvement in rate by total trade ins to calculate incremental number of car sold. Multiply the incremental number of cars sold by an average sales price and an average margin % to quantify the benefit
		Mitigates **regulatory risk** and related costs (fines,legal fees etc)	RM, OE	Assess the probability and average cost (fines, administrative costs, cost of production delays, legal/PR expenses) of a regulatory violation based on historical data or relevant proxies. Estimate the reduction in probability of a violation due to actions leading to reduced recalls. Multiply the probability reduction by the average costs to quantify the benefit

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

Investing in Quality Control and Regulatory Compliance (continued)

Overview of Benefits and Monetization Methods

Practice	Sub-Practice*	Proposed Benefits	Value Drivers		Suggested Monetization Methods
Quality Control and Regulatory Compliance	Improve quality control standards to ensure functional safety Improve quality control standards to ensure cyber security Implement supplier audits Certify that a vehicle model meets the regulatory requirements in each market Implement processes during production to identify safety concerns	Mitigates **reputation risk** and related costs (revenue loss from safety-focused scandals, PR expenses etc)	RM	OE	Assess the costs related to reputational scandals using historical information or comparable proxies. Cost assessment may include potential sales impact, and legal or management time costs associated with legal action against the company (use historical data from past lawsuits, and/or publicly available data on settlement costs. If no historical data exists, determine a range of potential costs via the legal and communications teams). Estimate the reduced probability of a scandal after implement actions leading to reduced recalls and multiply by the costs to quantify the benefit

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



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