A Better World,
Through Better Business

NYU STERN

Center for
Sustainable Business

Building the Business Case for Sustainability

ROSI 101 Workshop

Today's Workshop…

OBJECTIVE

Show how ROSI can help build a more complete business case for investing in sustainability by capturing all benefits

AGENDA

1. ROSI Fundamentals
2. ROSI In Action: Applied Examples
3. ROSI Implementation Considerations

TAKEAWAYS

Practical experience in applying ROSI, especially learning more about how to make intangible benefits more tangible

Warm Up…

Why Are Most Companies Not Monetizing Returns On Sustainability Investments?

- Sustainability strategy development and execution reside in different units within the business
- Multiple strategies for being sustainable are being implemented at the same time
- Investors and board members are typically not asking
- Often these benefits are intangible and difficult to measure

Presume the financial case is there, but haven't done the analysis to prove

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ROSI FUNDAMENTALS

Our Research Begins With This Premise

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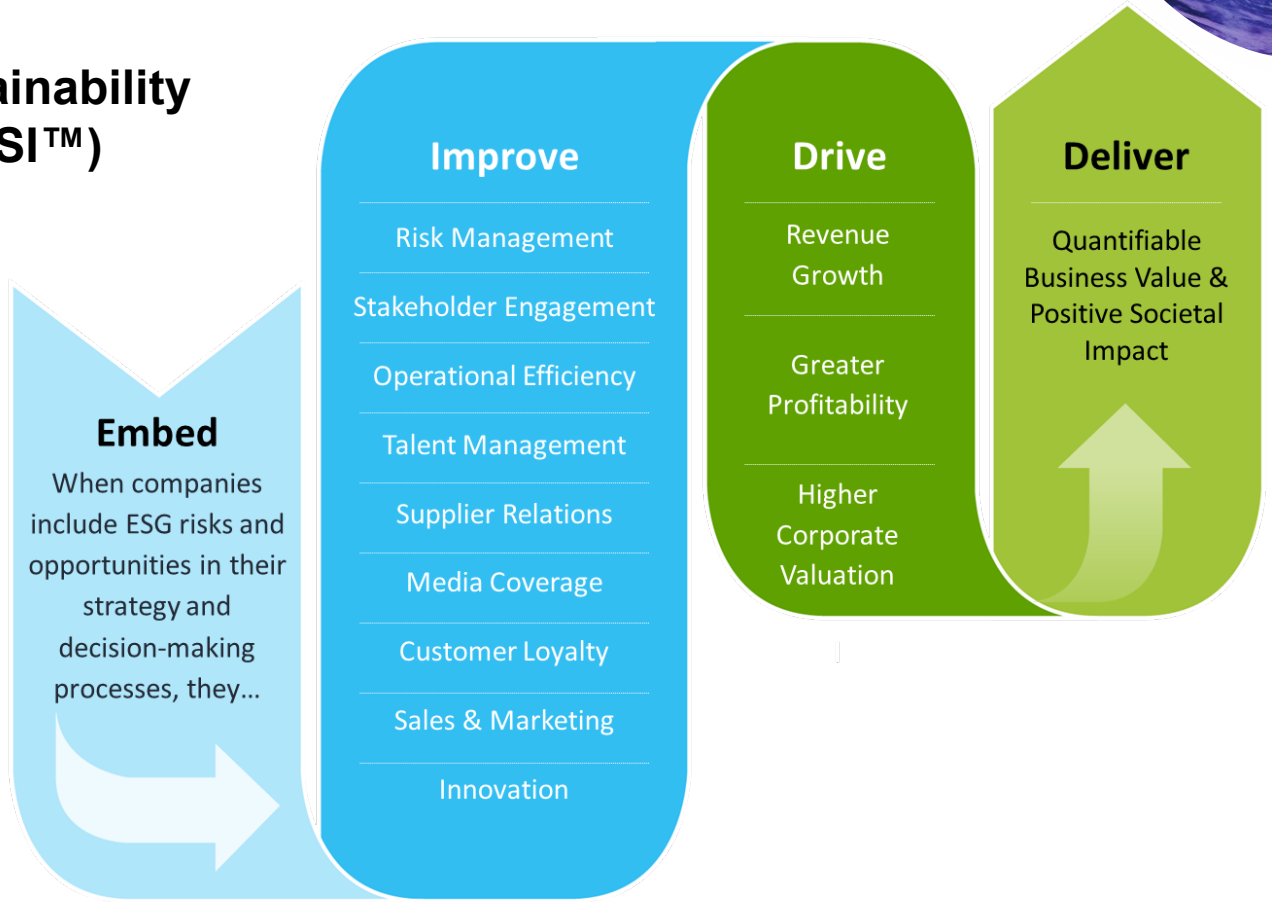
Return on Sustainability Investment (ROSI™) Framework



ROSI: How We Approach Monetization

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5-Step Process
To Identify & Translate Qualitative Business Benefits Into Financial Value

1. Identify	2. Assess Impact	3. Decompose	4. Quantify	5. Monetize
Organize and consider available information on important sustainability challenges and how the business is addressing associated risks and/or opportunities associated with those challenges	*Determine areas of the business that may be impacted by the challenge and actions that could be taken to mitigate risks and/or pursue opportunities*	*Define the types of economic benefits that could be expected if risks were mitigated or the company capitalized on identified opportunities*	*Estimate the magnitude of those benefits and when they could be realized*	*Translate the benefits into economic value, stress test then forecast ROI*

Reference: Atz, et al. 2019. *Review of Business: Interdisciplinary Journal on Risk and Society*, *39*(2), 1–31.

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APPLIED EXAMPLES

Applied Example – Innovations In Green Chemistry

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The Situation: Facing the loss of exclusivity and the resulting loss of revenues in several key markets, a global pharmaceutical company's research team developed a modified enzymatic process that reduced manufacturing cost and environmental impact (collectively termed *Green Chemistry* improvements). According to a Life Cycle Analysis, the reductions in impact included:

- 82% less energy use;
- 80% less chemical ingredients;
- 81% less water use;
- 77% less waste generation; and
- 75% reduction in greenhouse gas emissions.

Key Question: What was the monetary value (benefits) associated with these reductions? Could these results help justify the acceleration of other optimization decisions?

Applied Example – Green Chemistry (cont.)

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1. Identify → 2. Assess Impact → 3. Decompose → 4. Quantify → 5. Monetize

- less energy use
- less chemical ingredients
- less water use
- less waste generation
- reduction in GHG emissions

Applied Example – Green Chemistry (cont.)

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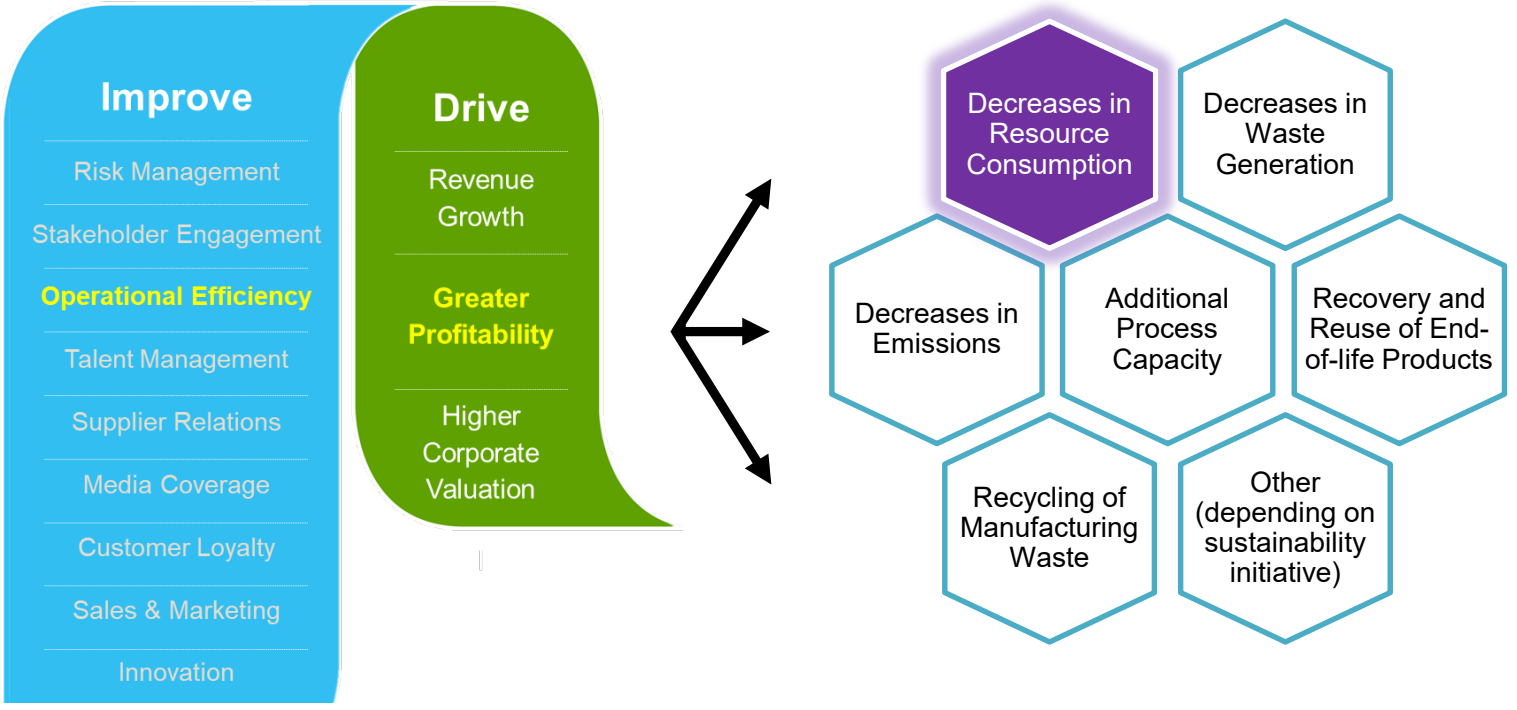
1. Identify → **2. Assess Impact** → **3. Decompose** → 4. Quantify → 5. Monetize



Applied Example – Green Chemistry (cont.)

1. Identify → 2. Assess Impact → 3. Decompose → **4. Quantify** → **5. Monetize**

Decreases in Resource Consumption

Reduced Water Consumption	Methodology or Example	Unit	Data
Quantity of water purchased - before	Drawing data from available sources (i.e., water utility bills), include the quantity of water purchased and used for this process before sustainable approach was implemented	m^3/100 Tonne Production	2,700,000
Quantity of water purchased - after	Drawing data from available sources after sustainable approach was implemented	m^3/100 Tonne Production	510,000
Water cost	Drawing data from available sources (i.e., water utility bills), include the total cost of water	USD/m^3	$ 0.35
Water cost – before	Calculated	USD 100 Tonne Production	$ 945,000
Water cost - after		USD 100 Tonne Production	$ 178,500
Economic benefit from reduced water consumption	**[Water Cost Today] – [Water Cost After Green Chem Project]**	**USD 100 Tonne Production**	**$ 766,500**

Applied Example – Investments In Water Stewardship

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The Situation: The Andean market represents an important growth opportunity for the BEVCO company. The organization operates 30 beverage/bottling plants within six important watersheds throughout the region where:

- agricultural and poor land management practices (resulting in (forest loss, nutrients loading, etc.) represent an expanding threat to water supplies in the region; and
- siltation (from soil erosion) is overwhelming water infrastructure systems, causing curtailments, concerning local governments and threatening future development

Key Question: What was the monetary impacts if these concerns are not mitigated? Could actions beyond 'business as usual' help justify such mitigation measures?

Applied Example - Water Stewardship (cont.)

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1. Identify → 2. Assess Impact → 3. Decompose → 4. Quantify → 5. Monetize

- poor resource management
- new/expanding business risks
- increasing stakeholder concerns

Applied Example – Water Stewardship (cont.)

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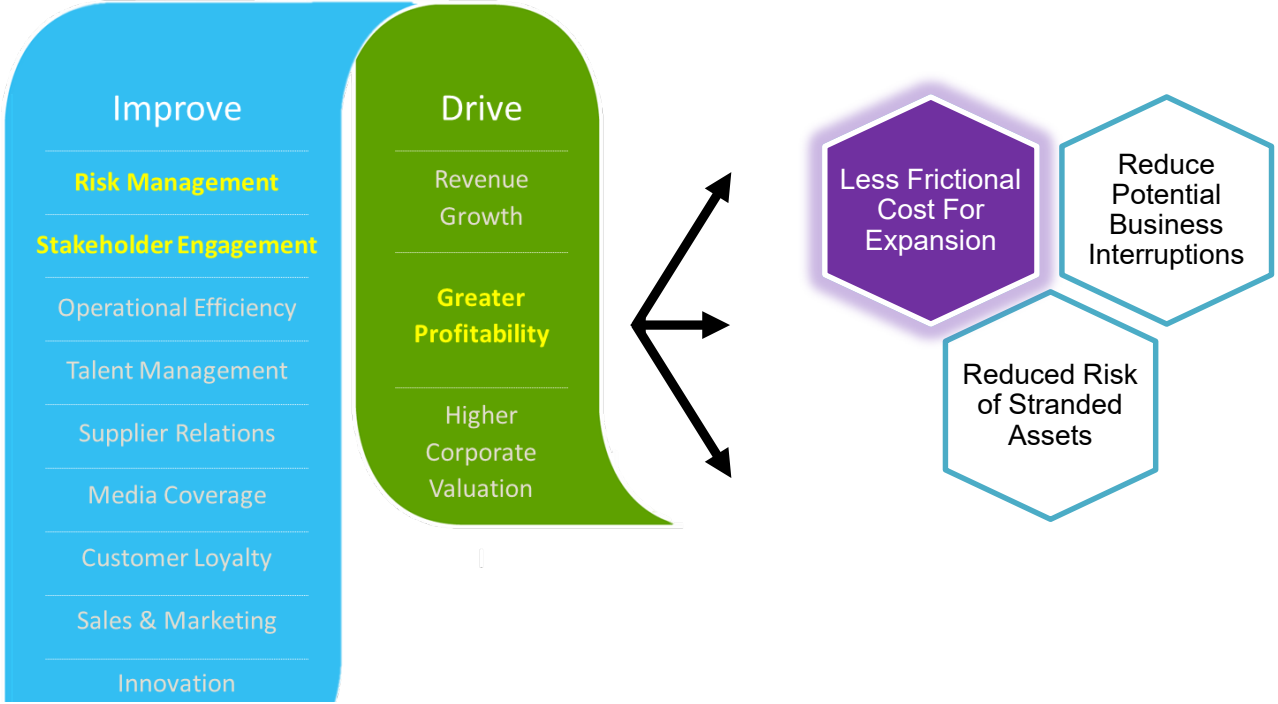
1. Identify → **2. Assess Impact** → **3. Decompose** → 4. Quantify → 5. Monetize



Applied Example – Water Stewardship (cont.)

1. Identify → 2. Assess Impact → 3. Decompose → **4. Quantify** → **5. Monetize**

Less Frictional Cost For Expansion

Activate Water Stewardship Efforts

Leading To Improved Government Relations & Less Frictional Costs For Expansion Approvals

Get To 'Operation' Faster (more return on capital)

Shortens Cycle by (Days):	30
Relevance (# of Facilities) Across Operations Over 3 yr Period:	10
Days of Production Gained:	**300**
Avg EBITDA/Day (For All Production)	$103,000
Typical % of Production Represented By Expansion:	15%
EBITDA/Day For Incremental % of Production Gained:	**$15,450**
Days of Production Gained:	300
Potential Value of Less Cost In Approvals (USD):	**$4,600,000**

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ROSI IMPLEMENTATION CONSIDERATIONS

Getting Over The Hump: Changes In Mindsets & Perspectives

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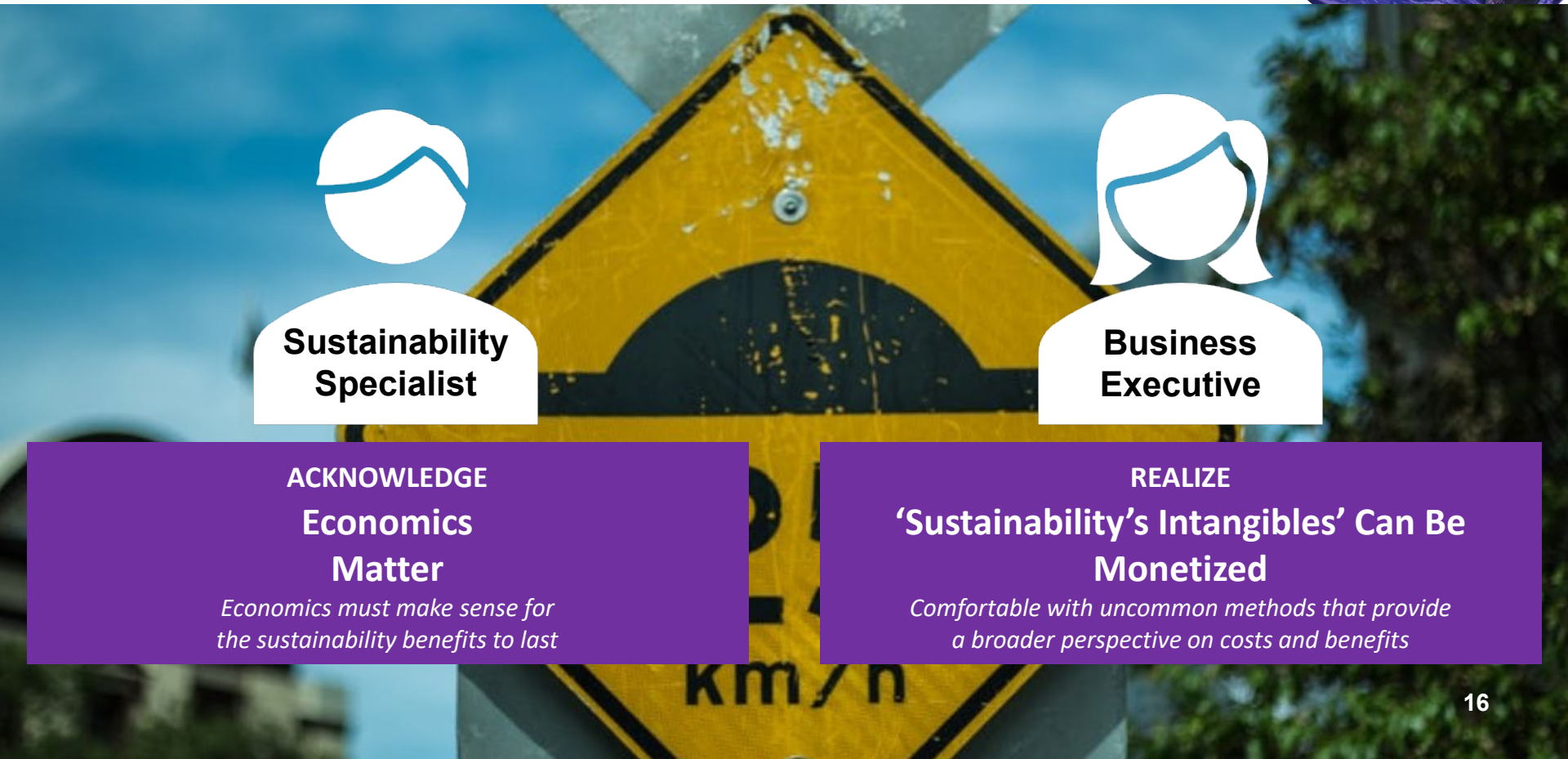

ACKNOWLEDGE

Economics Matter

Economics must make sense for the sustainability benefits to last

REALIZE

'Sustainability's Intangibles' Can Be Monetized

Comfortable with uncommon methods that provide a broader perspective on costs and benefits

Many Business Benefits To Consider

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Drive

Revenue Growth

Greater Profitability

Higher Corporate Valuation

Retain / Gain Market Share	• Improve customer trust, loyalty and satisfaction? • Increase the frequency of return business / repeat customers?	• Produce innovations that create competitive advantage?
Acquire New Revenue	• Enhance the ability to enter new / changing markets? • Improve pricing power?	• Lead to new or expand existing sources of revenue?
Avoid Risk & Costs	• Reduce operational, supply chain, legal, product risk? • Enhance business continuity?	• Reduce / minimize future risks? • Reduce management distraction costs? • Earn free media coverage?
Enhance Efficiency & Effectiveness	• Improve operational or value chain efficiency? • Reduce resource consumption? • Improve business process?	• Enhance product development? • Reduce governmental permit / approval hurdles?
Increase Talent Attraction & Retention	• Reduce the time needed to fill open roles? • Increase retention rates / reduce turnover?	• Enhance employee engagement & productivity?
Greater Capital Productivity	• Reduce cost of capital? • Lower risk premiums?	• Create new options for financing?
Lower Risk Multiples	• Engender greater trust with investors?	• Increase external recognition for quality leadership?
Increase Goodwill	• Enhance brand reputation?	

Other Practical Considerations

What's Worth Considering?
Building Credibility & Confidence

What's Realistic?
Testing Viability Of Sustainability Initiatives/Investments

What Counts?
Determining The Contributions These Efforts Could Make

What's Compelling?
Enhancing Initiative/Investment Attractiveness

What's Worth Considering?

Building Credibility & Confidence…

Data Quality	***How good are your data and assumptions?***	Consider source; relevance; timeliness; comprehensiveness/completeness; context; confidence. ⓘ
Cross-Functional Input	***Do you engage experts for input?***	Internal/external experts need to provide input across the 5-steps. Decision-makers need to know you sought/ secured expert opinions and contributions.
Uncertainty & Discount Factors	***What adjustments should be made to reduce concerns?***	Address uncertainty and organizational risk tolerance by taking a conservative approach to value estimation.

What's Realistic?

Testing Viability Of Sustainability Initiatives/Investments…

Prioritize	***Are you monetizing the most promising benefits first?***	Consider materiality, magnitude and 'monetizability' to identify the most promising benefits. The order in which benefits are monetized accelerates viability analyses.
Calculate Return Requirements	***How much is needed to exceed hurdle rates?***	Knowing the cost of potential initiatives, alternatives can be quickly screened for feasibility/viability (…*how much* is needed and *by when* to *pass the test*).

What Counts?

Determining The Contributions These Efforts Could Make…

Additionality	***Can you count benefits already realized?***	Do these investments create new value? Do they help sustain an existing benefit?
Attribution	***How much does this initiative contribute?***	Determine how you allocate benefits among a multitude initiatives/investments. Cross-functional input is critical.

What's Compelling?

Enhancing Initiative/Investment Attractiveness…

Alignment	***How well aligned with other key initiatives?***	Connect sustainability initiatives with other organizational priorities to add benefits and value.
Aggregation	***Does bundling initiatives result in greater benefits?***	Realize more benefits and greater returns by bundling/ leveraging economies of scale (seek benefit multipliers).

Building the Business Case For Sustainability

SUPPLEMENTAL MATERIALS

For Investments In Water Stewardship

Reputational Enhancement From Improved Community Relations Assoc. w/Water Stewardship
Efforts Leading To Less Costs Assoc w/Expansion Approvals, Get To 'Operation' Faster (more return on capital)

Quantification & Monetization Algorithm		Degree of Certainty?	Source (Click Yes for More Details)				Comments
			Company Data	Competitor Data	Other Research	Assumed	
Shortens Cycle by (Days)/3 yr. period/operation (conservative estimate)	30	M	Yes	Yes	Yes		Based on 10 years of operating history and discussions with multiple engineers in our growth businesses
Relevance (# of Facilities) Across Operations	10	H	Yes				Based on discussions with operational leadership in 3 BUs
Days of Production Gained:	**300**						
Avg. EBITDA Per Day/Plant:	$103,000	H	Yes				High confidence – based on avg of last 3 years financials
Typical % of Production Represented By Expansion:	15%	M	Yes		Yes		From discussions with corporate strategic planning
EBITDA/Day For Incremental % of Production Gained:	**$15,450**						
Days of Production Gained:	300						
Potential Value of Less Cost In Approvals (USD) over 3 Years:	**$4,600,000**						

A Working Case

The Company: Americanauto is a growing automotive manufacturer, with current revenues of approximately $20 Billion. Its primary manufacturing sites are in California, Ohio and South Carolina, and across these three facilities they are producing approximately 1 million vehicles annually, with historic growth rates in production of about 5%.

The Situation: As CEO, you've observed other automotive manufacturers grow significant financial value from effectively managing waste and residuals. In an effort to spur innovation and reduce manufacturing costs in the short and for the long-term, you would like to launch a more robust waste management program that includes: (a) increased recycling of recovered manufacturing scrap, (b) the incorporation of recovered and treated manufacturing scrap into manufacturing, and (c) a proactive program to recover end-of-life product from the consumer

A Working Case

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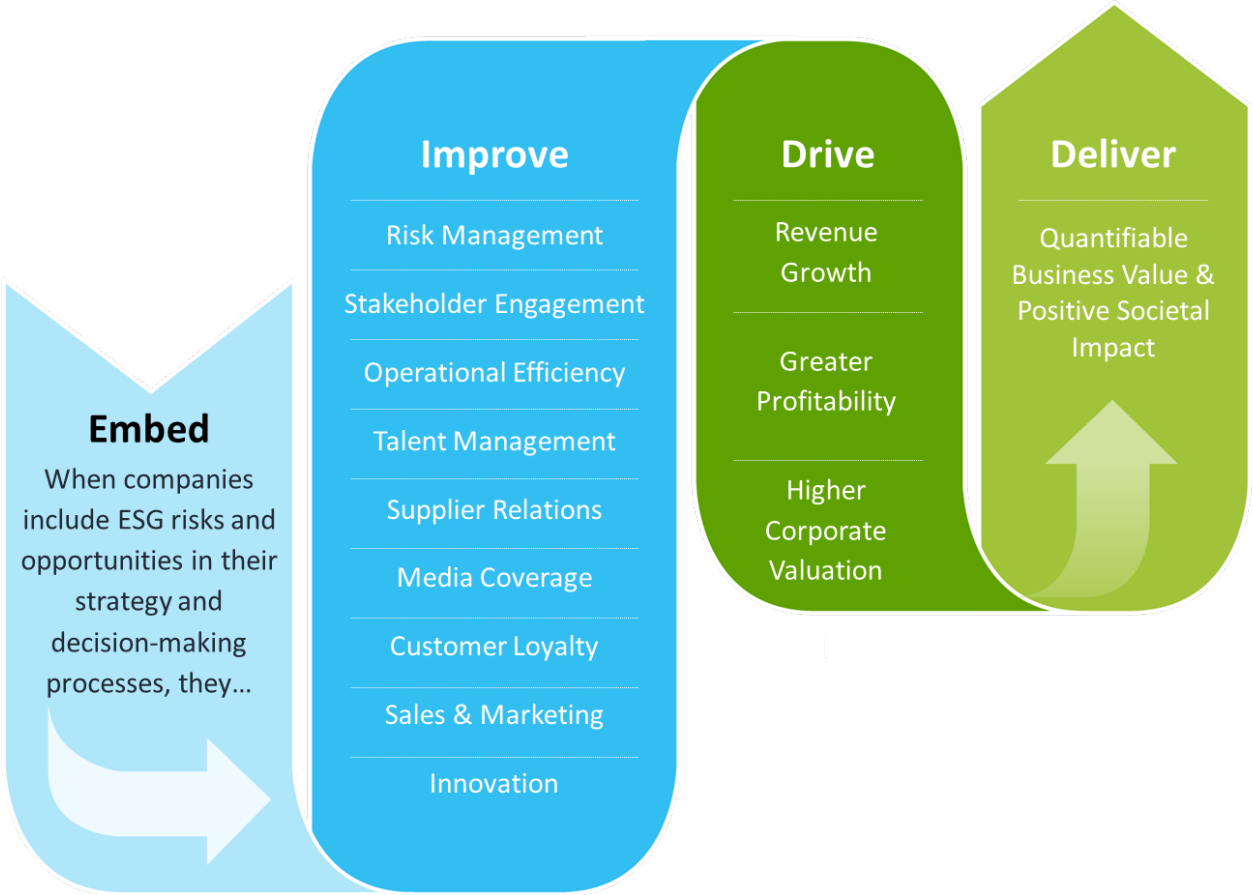
The Exercise: In small groups of 4-5 people, please consider the following questions:

1) What are the categories of benefits that you think Americanauto could accrue through this more robust waste management program?
2) What are the key value indicators you need to track to quantify progress in your waste management program and monetize the impact your waste management program has for the company's bottom line?
3) In addition to the key value indicators, what are the other data points you need to translate your company's waste management performance into money?

ROSI Framework



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ROSI Methodology Worksheet – Automotive Case Example

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Sustainability Action	Benefit Example	Key Value Indicators
Manufacturing waste reuse and recycling + Product take back and reuse / recycling		

ROSI Methodology Worksheet – Automotive Case Example

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Sustainability Action	Benefit Example	Key Value Indicators	Monetization Method
Manufacturing waste reuse and recycling + Product take back and reuse / recycling	Decrease in waste generation - avoided cost of traditional waste disposal	• Annual reduction in waste generation • Cost of traditional waste disposal	Multiply the annual reduction in the quantity of waste generated by the per unit cost of waste disposal
	Decrease in waste generation - avoided cost from reusing recovered materials	• Weight of recovered waste that can be reused • Weighted average cost of material that can be replaced with recovered manufacturing waste	Multiply the quantity of recovered waste material that can be reused in the manufacturing process by the cost of the virgin material that these recovered materials would replace, and subtract from this the total cost of recovering and reusing the waste
	Revenue from recycling waste	• Annual change in the weight of recovered waste that can be recycled • Weighted average price of material that is sold for recycling	Multiply the annual change in the quantity of waste recovered that can be sold for recycling by the weighted average price for material that is sold for recycling
	Recovery and reuse / recycling of end-of-life product	• Annual change in the quantity of end-of-life product that is recovered • Annual change in the quantity of end-of-life product that is recovered and reuse • Annual change in the quantity of end-of-life product that is recovered and recycled • Weighted average cost of virgin materials that can be replaced with recovered product • Weighted average price of recovered material that is sold for recycling • Total cost for implementing end-of-life product recovery and recycling program	1) Calculate the annual change in: a) quantity of end-of-life product recovered; b) quantity of recovered end-of-life product that is reused, and c) quantity of recovered end-of-life product that is recycled 2) Multiply the quantity of waste that is recovered and reused in manufacturing by the weighted average cost of the materials those recovered materials are replacing 3) Multiply the quantity of waste that is recovered and recycled by the weighted average price of the materials that are sold for recycling 4) Sum the products of steps 2 and 3, and subtract from the total benefit the cost of implementing end-of-life product recovery and recycling


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