Building the Business Case for Sustainability

- Investor Discussion
• Quick review of the ROSI™ framework
• ROSI™ in action (case studies)
• ROSI™ and investors
• Breakout groups and report out on how ROSI™ can be most useful to investors
What we hear from companies

Most companies are not monetizing the Return on Sustainability

• Sustainability strategy development and execution sit in different units within the business
• Multiple strategies for being sustainable are being implemented at the same time
• Some benefits are intangible and difficult to measure
• Investors and board members are typically not asking
• Organizational inertia

‘We have assumed the financial case is there to support what we do, but have not done the analysis to prove it’
Our Research Begins with This Premise

Return on Sustainability Investment (ROSI™) Framework

Implements:
- Customer Loyalty
- Employee Relations
- Innovation
- Media Coverage
- Operational Efficiency
- Risk Management
- Sales & Marketing
- Supplier Relations
- Stakeholder Engagement

Drives:
- Greater Profitability
- Higher Corporate Valuation
- Lower Cost of Capital

Delivers:
- Short- and Long-Term Value Creation for Shareholders and Society

When a company embeds sustainability in its strategy and practice, it...
How We Approach Monetization

A standard 5-step process to identify and translate qualitative business benefits into financial value

1. Identify
   Organize and consider available information on important sustainability challenges and how the business is addressing associated risks and/or opportunities associated with those challenges

2. Assess Impact
   Determine areas of the business that may be impacted by the challenge and actions taken to mitigate risks and/or pursue opportunities

3. Decompose
   Define the types of economic benefits that could be expected from taking action on the challenges

4. Quantify
   Estimate the magnitude of those benefits and when they could be realized

5. Monetize
   Translate the benefits into economic value, stress test then forecast ROI

Benefits of the ROSI™ Framework

Like Other Robust ROI Processes, ROSI™:

• Can support decision-making on individual initiatives or among alternative courses of action

• Is useful from screening to investment grade analyses

• Is relevant for monetizing the costs and benefits of BAU, ongoing projects and/or potential new initiatives

• Is flexible in addressing common forecasting challenges (e.g., those related to: data availability; data quality/credibility; uncertainty; attribution; allocation of benefits; etc.)
DRIVING SUSTAINABLE DECISIONS

APPLIED EXAMPLES
The Situation: Facing the loss of exclusivity and the resulting loss of revenues in several key markets, a global pharmaceutical company’s research team identified ways to increase the overall efficiency and reduce costs in the manufacture of one of its key medications. Through a series of innovations, the company developed a modified enzymatic process that reduced manufacturing cost through a number of optimizations including several that reduced environmental impact (collectively termed Green Chemistry improvements). According to a LCA conducted in association with the new process, 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?
Example Case – Revised Manufacturing Process

When companies include ESG risks and opportunities in their strategy and decision-making processes, they...

**Embed**
When companies include ESG risks and opportunities in their strategy and decision-making processes, they...

**Operational Efficiency**
- Risk Management
- Stakeholder Engagement
- Talent Management
- Supplier Relations
- Media Coverage
- Customer Loyalty
- Sales & Marketing
- Innovation

**Improve**

**Drive**
- Revenue Growth
  - Greater Profitability
  - Higher Corporate Valuation

**Deliver**
Quantifiable Business Value & Positive Societal Impact
Key Question: For relevant parts of the business, what type of economic benefits could be expected?

- Risk Management
- Stakeholder Engagement (Operational Efficiency)
- Talent Management
- Supplier Relations
- Media Coverage
- Customer Loyalty
- Sales & Marketing
- Innovation

- Decreases in Resource Consumption
- Decreases in Waste Generation
- Decreases in Emissions
- Additional Process Capacity
- Recovery and Reuse of End-of-life Products
- Recycling of Manufacturing Waste
- Other (depending on sustainability initiative)
### Example Case – Revised Manufacturing Process

<table>
<thead>
<tr>
<th>Reduced Water Consumption</th>
<th>Methodology or Example</th>
<th>Unit</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity of water purchased - before</td>
<td>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</td>
<td>m³</td>
<td>2,700,000</td>
</tr>
<tr>
<td>Quantity of water purchased - after</td>
<td>Drawing data from available sources (i.e., water utility bills), include the quantity of water purchased and used for this process after sustainable approach was implemented</td>
<td>m³</td>
<td>510,000</td>
</tr>
<tr>
<td>Units produced - before</td>
<td>Annual production volume before sustainable approach was implemented</td>
<td>tonne</td>
<td>100</td>
</tr>
<tr>
<td>Units produced - after</td>
<td>Annual production volume after sustainable approach was implemented</td>
<td>tonne</td>
<td>100</td>
</tr>
<tr>
<td>Water cost***</td>
<td>Drawing data from available sources (i.e., water utility bills), include the total cost of water</td>
<td>USD / m³</td>
<td>$ 0.35</td>
</tr>
<tr>
<td>Water cost – before</td>
<td>Calculated</td>
<td>USD</td>
<td>$ 945,000</td>
</tr>
<tr>
<td>Water cost - after</td>
<td>Calculated</td>
<td>USD</td>
<td>$ 178,500</td>
</tr>
<tr>
<td>Cost saved from water</td>
<td>Subtract the cost of water after from the cost of water before the sustainable approach was implemented</td>
<td>USD</td>
<td>$ 766,500</td>
</tr>
</tbody>
</table>

Note: The Stern CSB used the cost of water, provided by a heavy manufacturing company, based in the United States, participating in another research study. Data shown are resource inputs for 100 tonnes of production.
### Example Case – Revised Manufacturing Process

<table>
<thead>
<tr>
<th>Reduced Exposure To Carbon Emission Fees</th>
<th>Methodology Or Example</th>
<th>Unit</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon emissions - before</td>
<td></td>
<td>tonne</td>
<td>73,000</td>
</tr>
<tr>
<td>Carbon emissions - after</td>
<td></td>
<td>tonne</td>
<td>18,000</td>
</tr>
<tr>
<td>Regulatory limit on emissions</td>
<td></td>
<td>tonne</td>
<td>25,000</td>
</tr>
<tr>
<td>Emissions reduced to regulatory limit</td>
<td></td>
<td>tonne</td>
<td>48,000</td>
</tr>
<tr>
<td>Carbon price per tonne***</td>
<td></td>
<td>USD / tonne</td>
<td>$ 5.00</td>
</tr>
<tr>
<td><strong>Total Benefit</strong></td>
<td>Multiply carbon price by volume of carbon emissions reduced to reach the regulatory limit</td>
<td>USD</td>
<td>$ 240,000</td>
</tr>
</tbody>
</table>

Note: The Stern CSB used an actual carbon fee derived from a legislative proposal in one of the company's manufacturing geographies. GHG emission reductions are based on the life cycle carbon emission reduction estimates developed by a 3rd party, life cycle assessment consultancy. Data shown are greenhouse gas emissions resulting from 100Mtonnes of production.
<table>
<thead>
<tr>
<th>Total Net Benefits For Operational Efficiencies</th>
<th>Unit</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0: Decreases In Resource Consumption</td>
<td>USD/100 MT</td>
<td>$943,000</td>
</tr>
<tr>
<td>2.0: Decrease In Waste Generation / Disposal</td>
<td></td>
<td>$363,650</td>
</tr>
<tr>
<td>3.0: Recycling Of Manufacturing Waste</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>4.0: Decrease In Emissions</td>
<td></td>
<td>$240,000</td>
</tr>
<tr>
<td>5.0: Recovery And Reuse / Recycling Of End-of-life Product</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>6.0: Additional Process Capacity For New Production</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>7.0: Other Relevant Benefits</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td><strong>Benefits From Other Categories</strong></td>
<td><strong>USD/100 MT</strong></td>
<td><strong>??????</strong></td>
</tr>
<tr>
<td><strong>Total Benefits</strong></td>
<td><strong>USD/100 MT</strong></td>
<td><strong>$1,546,650</strong></td>
</tr>
</tbody>
</table>
Canadian electricity generator, with annual revenues of $1 billion has a generation fleet that is a mix of coal, natural gas, and renewable (wind and solar) assets. Facing a Canadian mandate to go coal-free by 2030, the organization is considering a more aggressive position to decarbonization, and is evaluating the business case for an early exit from coal-generated electricity.

Key Question:
• What is the monetary value (benefits) that could be accrued if the company makes a more aggressive push into renewable energy?
• Could these results help justify an accelerated pace of decarbonization?
Example Case – Early Decarbonization

Potential Areas of High Impact & Opportunity

Embed
When companies include ESG risks and opportunities in their strategy and decision-making processes, they…

Improve
- Risk Management
- Stakeholder Engagement
- Operational Efficiency
- Talent Management
- Supplier Relations
- Media Coverage
- Customer Loyalty
- Sales & Marketing
- Innovation

Drive
- Revenue Growth
- Greater Profitability
- Higher Corporate Valuation
- Quantifiable Business Value & Positive Societal Impact

Deliver

When companies include ESG risks and opportunities in their strategy and decision-making processes, they…

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Drive
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Deliver
<table>
<thead>
<tr>
<th>Mediating factor</th>
<th>Expected benefit</th>
<th>Benefit description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talent Management</td>
<td>Improved retention / decreased turnover of employees</td>
<td>Avoided hiring and training costs of new employees as a result of higher retention of existing employees</td>
</tr>
<tr>
<td></td>
<td>Increased productivity</td>
<td>Avoided labor costs as existing employees work harder</td>
</tr>
<tr>
<td>Risk Management</td>
<td>Lower cost of debt</td>
<td>Cost avoided through better debt terms from lenders who view the company as less risky</td>
</tr>
<tr>
<td></td>
<td>Lower cost of equity</td>
<td>Cost avoided through better equity terms from stockholders who view the company as less risky</td>
</tr>
<tr>
<td>Sales and Marketing</td>
<td>Increased market competitiveness and winning bids for new project investments</td>
<td>New revenues from higher win rate of competitive bids as a result of being viewed as a more sustainable supplier</td>
</tr>
<tr>
<td>Stakeholder Engagement</td>
<td>Fewer stakeholder interventions</td>
<td>Avoided costs resulting from fewer stakeholder interventions during new and renewal permitting</td>
</tr>
<tr>
<td></td>
<td>Accelerated permitting</td>
<td>Earlier accrual of revenues from new facilities as a result of faster permitting</td>
</tr>
</tbody>
</table>
**Example Case – Early Decarbonization**

<table>
<thead>
<tr>
<th>Improved Employee Retention</th>
<th>Improved Employee Productivity</th>
<th>Reduced Debt Cost</th>
<th>Reduced Equity Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current voluntary turnover rate&lt;sup&gt;1&lt;/sup&gt;</td>
<td># Full-time equivalents&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Current debt value&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Current equity value&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Current turnover cost&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Avg. annual salary&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Expected reduction in cost-of-debt from accelerated decarbonization&lt;sup&gt;4&lt;/sup&gt;</td>
<td>Expected reduction in cost-of-equity from accelerated decarbonization&lt;sup&gt;4&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>Expected decrease in turnover from accelerated decarbonization&lt;sup&gt;2&lt;/sup&gt;</strong></td>
<td><strong>Expected increase in employee productivity from accelerated decarbonization&lt;sup&gt;3&lt;/sup&gt;</strong></td>
<td>Proportion of generation fleet impacted by coal phase-out&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Proportion of generation fleet impacted by coal phase-out&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Proportion of generation fleet impacted by coal phase-out&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Proportion of generation fleet impacted by coal phase-out&lt;sup&gt;1&lt;/sup&gt;</td>
<td>[(Avg. time remaining until debt maturity&lt;sup&gt;1&lt;/sup&gt;) / (Expected term of debt&lt;sup&gt;1&lt;/sup&gt;)]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Proportion of non-union labor force&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Proportion of non-union labor force&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Note: To be more conservative, the company’s executive leadership team suggested we devalue the estimate for each benefit by a factor of 25%, before determining the final estimate for the expected benefits from accelerated decarbonization.
## Example Case – Early Decarbonization

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Annual Benefit (CAD 1,000s)</th>
<th>10-year Cumulative Benefit (CAD 1,000s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased productivity</td>
<td>439.2</td>
<td>4,391.8</td>
</tr>
<tr>
<td>Improved employee retention</td>
<td>42.1</td>
<td>420.5</td>
</tr>
<tr>
<td>Reduction in cost of debt</td>
<td>276.7</td>
<td>2,767.0</td>
</tr>
<tr>
<td>Reduction in cost of equity</td>
<td>2,376.3</td>
<td>23,762.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,134.3</strong></td>
<td><strong>31,342.0</strong></td>
</tr>
</tbody>
</table>
Example Case – Early Decarbonization

Traditional Financial Theory on changes in cost of debt and equity

Lower cost of debt and equity leads to a lower WACC and higher stock price
Return on Sustainability Investment in Automotive Manufacturing
## Strategies Identified

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Key Drivers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce Resource Consumption</td>
<td>Operating Performance (includes</td>
</tr>
<tr>
<td>Improve Waste Management</td>
<td>Operating Efficiency, Improved Sales</td>
</tr>
<tr>
<td>Reduce Carbon Emissions</td>
<td>and Marketing, and Better Media</td>
</tr>
<tr>
<td>Reduce VOC Emissions</td>
<td></td>
</tr>
<tr>
<td>Recycle And Recover From End-Of-Life Products</td>
<td></td>
</tr>
<tr>
<td>Minimize Downtime In Regions Prone To Natural Disasters, Water Scarcity,</td>
<td>Risk Reduction</td>
</tr>
<tr>
<td>Avoid Use Of Conflict Minerals</td>
<td></td>
</tr>
<tr>
<td>Improve Safety</td>
<td></td>
</tr>
<tr>
<td>Improve Governance Around Sustainability</td>
<td></td>
</tr>
<tr>
<td>Use Renewable Energy</td>
<td></td>
</tr>
<tr>
<td>Incorporate more sustainable materials or design into the product</td>
<td>Innovation</td>
</tr>
<tr>
<td>Increase Fuel Efficient Product Presence</td>
<td></td>
</tr>
<tr>
<td>Innovate to Provide Long-Term Improved Sustainability Technology</td>
<td></td>
</tr>
<tr>
<td>Increase Sustainable Product Presence</td>
<td></td>
</tr>
<tr>
<td>Engage Consumers With Sustainability Through Innovative Services</td>
<td></td>
</tr>
<tr>
<td>Engage Employees In Quality Of Worklife</td>
<td>Stakeholder Engagement (Includes</td>
</tr>
<tr>
<td>Engage Suppliers On Specific Sustainability Matters (Improve Ecosystem)</td>
<td>Better Supplier and Employee</td>
</tr>
<tr>
<td>Improve Talent Acquisition, Employee Retention, And Productivity</td>
<td>Relations and Customer Loyalty</td>
</tr>
</tbody>
</table>

Financial Benefits of Sustainability (Illustrative Subset)

**Sustainable Strategies**
- Reduce resource consumption
- Improve waste management
- Improve employee relations
- Innovate to provide long-term improved sustainable technologies

**Sustainable Practices**
- Implementing new water filtration system
- Recycling paint and solvents
- Implementing ergonomic changes to production line
- Producing more electric vehicles

**Benefits**
- Reduced costs for water, energy
- Reduced costs for wastewater and toxic waste disposal
- Reduced costs for paint, solvents
- Revenue for recycled materials
- Higher productivity, increased worker safety
- New revenue from innovative products
**Waste management** reduces costs, generates additional revenues

### Key Findings

**Examples of Practices**
- Process improvements to recover, reuse and recycle waste (including water)
- Increase the number of land-fill free sites
- Dedicated group to identify reuse opportunities

**Results**
- Cost savings due to lower spend on virgin materials
- Increased net revenues from sales to recyclers
- Reduction in water costs by using recycled water
- Energy savings due to lower use for recycled vs virgin materials
- Reduction in waste disposal costs

**EBIT impact of $235 million**
Incorporating benefits of sustainability strategies into decision-making requires a systems thinking approach

Examples of Practices

• Recovering & recycling materials from end of life (EOL) vehicles - to maximize the benefit reusable material needs to be incorporated in the car design

Results

• 2.5% of treated EOL material was recovered and reused and 10% was sold to recyclers in Europe

• Savings achieved from reduced virgin materials, process savings and lower disposal costs and in incremental revenues generated from sales

Total EBIT savings of $100 million
Key Findings

Current reporting frameworks may not be adequate for measuring financial benefits

- Number of product recalls is standard reporting but not financial impact
- Information on costs is needed to understand the financial impact; not currently aggregated
- Average repair cost per vehicle times average number of cars per recall
- Average legal & PR costs per recall
- Money spent on increased quality control, premium redesigned parts, and additional training

The financial benefit of xx less recalls was more than $550 million.
DISCUSSION
The Challenge for Investors

• Quality and materiality of ESG data
• ESG data is divorced from financial data
• Difficult to monetize risk avoided due to sustainability investments
• Difficult to monetize growth and margin improvement due to sustainability investments
• Valuation models don’t include these topics
• Companies are not tracking ROSI
Aspiration for ROSI: Bridge ESG/Sustainability and Financial Performance

For Corporates:
- Sustainability together with ROSI embedded into corporate business strategy, decision-making and accounting.
- Result: better performing business socially, environmentally, and financially

For Investors:
- Use ROSI in engagement with companies to better assess where relative value exists in ESG strategies and corporate investments. Also use as an overlay in understanding ESG data.
- Result: Improved investor decision-making and valuation
How ROSI Can Help Investors

• Map material sustainability strategies by sector and types of practices that create value
• Help to monetize intangibles
• Provide questions to ask companies for research (before owning stock/stake) and engagement (after owning stock/stake) purposes.
• Incorporate into quantitative analysis.
• Incorporate into DCF or other valuation models when determining intrinsic value. Is it being undervalued or undervalued based on its intrinsic value (e.g. how is it going to perform over the long-term). How does it impact cash flows (e.g. climate risk -- may raise debt levels) or cost of capital?
Methodology and Tool Development

- Piloting with different industry sectors and individual companies.
- Deep dive development of mediating factor methodologies, e.g. risk
- Partnership with Invest Industrial (PE firm) to develop valuation tools
- Practitioner testing and academic review
- Mediating factor monetization guides
- ROSI guides per industry
- Strategic planning guides to ROSI
- Guide to relevant academic literature for assumptions/probabilities
- CFO tools (how to implement new systems within a company).
- Valuation tools
- Industry mapping: map the key value creating activities, as aligned with SASB
Discussion Questions

• What do you see as the hurdles to assessing the return on sustainability investment?

• How can ROSI be improved as a methodology?

• Looking at the mediating factors, which do you see as the most critical around which we should develop additional information and tools?

• In general, what kind of tools and guidance should Stern develop that would be helpful for asset owners and managers (clarify private vs public markets)?

• Any additional ideas on how ROSI can help investors?