GM: Identifying Potential Tools to Measure Supply Chain Sustainability Efforts

15.915 Laboratory for Sustainable Business
Professors: Matthew Amengual, John Sterman, and Jason Jay

May 15, 2014

Team:
Bita Diomande
Takao Miki
Satoko Yoshida
Rocio Fonseca
Contents

1 Introduction ........................................................................................................................................... 3
  1.1 Scope............................................................................................................................................... 3
  1.2 Deliverables..................................................................................................................................... 3
  1.3 Methodology................................................................................................................................... 3

2 Background information .................................................................................................................... 4
  2.1 Automobile Industry Analysis and Challenges ............................................................................. 4
    2.1.1 General Context................................................................................................................................. 4
  Automobile Industry impacts and contributions ................................................................................. 5
    2.1.2 GM Sustainability Strategy ............................................................................................................... 6

3 Analysis and Results .......................................................................................................................... 7
  3.1 Comparing Sustainability Strategies for Automobile Brands: BMW, Toyota, Volkswagen and Hyundai 7
  3.1.1 Comparing Sustainability Strategies for Automobile Brands: BMW, Toyota, Volkswagen and Hyundai 7
  3.1.2 Supply Chain Sustainability Management Strategies........................................................................ 12
  3.2 Identifying Potential Tools for Supplier Sustainability Management ............................................. 16
    3.2.1 Analysis of Tools for Initial Phase ..................................................................................................... 17
  1) Initiative Evaluation Map................................................................................................................... 17
  2) KPI monitoring ......................................................................................................................................... 18
  3) Supplier scorecard ................................................................................................................................. 18
  4) Common supply chain platform ......................................................................................................... 20

4 Recommendations .............................................................................................................................. 21

5 Exhibits ................................................................................................................................................ 23
  5.1 Exhibit 1: Main Social and Environmental Impacts Generated by Automobile Industry ...... 23
  5.2 Exhibit 2: GPSC Sustainability Related Initiatives ........................................................................... 24
  5.3 Exhibit 3: Competitors' Supply Chain Management Tools and Objectives ............................... 25
  5.4 Exhibit 4: Scorecard Examples ....................................................................................................... 25
  5.5 Exhibit 5: Interview Transcripts ..................................................................................................... 27

6 References ............................................................................................................................................. 38
1 Introduction

The Sustainability Department at GM is in the process of developing a supply chain sustainability strategy with its key suppliers. GM aims to reduce $1 billion in material and logistics costs by 2016 in addition to reducing its carbon footprint through these initiatives. The company is considering using a sustainability scorecard as a tool to measure impact. The company has identified the sustainability scorecard as one potential tool and asked the MIT Sloan S-Lab team to assess its efficacy and appropriateness for GM’s sustainability efforts.

The purpose of our project was to determine if the scorecard can be used to drive value for both GM and its key suppliers through increased growth, reduced cost, and minimized risk. We conducted research on best practices in the automotive industry and through our analysis determined key tools including a scorecard evaluation that can be incorporated in the existing GM Strategic Supplier Engagement (SSE) management platform to evaluate supplier sustainability initiatives.

1.1 Scope

Our research and analysis focuses on three key areas:

1. Current sustainability efforts at GM and concerns they have about supply chain sustainability.
2. Industry trends in sustainability and tools that competitors use to track sustainability efforts and the value they receive from tracking those efforts; and
3. Recommendations and development of scorecard or supporting resources for not adopting the scorecard.

1.2 Deliverables

The main deliverables of the project are:

1. Automobile industry benchmarking related to sustainability as a whole.
2. Automobile Industry benchmarking related to green supply chains.
3. Tools to evaluate and measure supply chain sustainability efforts
4. Recommendations for implementation

1.3 Methodology

Our project work focused on two main work streams:

- **Issue identification**: We conducted a series of interviews with executives at GM and at key supplier companies to develop an understanding of current sustainability efforts. Specifically we interviewed the following individuals (See Exhibit 5 for transcripts):
Takata (Member of GM Supplier Council):
Vice President, Sales Department
GM Account Manager

Bridgestone (Member of GM Supplier Council):
Sr. Director - O.E. Account Management
Representative Environmental Affairs

GM:
Supply Chain Operations Shanghai GM Wuling (SGMW)
Sustainability Department
Global Purchasing and Supply Chain Department

We developed an interview questionnaire to be used internally with GM and an adapted version to be used for suppliers. We combined the results from the interviews with our preliminary research on GM’s sustainability initiatives to further elaborate the company’s key issues and develop our recommendations.

- **Benchmarking other automobile manufacturers**: We conducted secondary research to analyze supply chain sustainability challenges in the automobile industry. We also conducted research on the Automotive Industry Action Group (AIAG), the leading authority on standards in the automobile industry, to identify trends in supply chain sustainability in the industry.

2  Background information

2.1  Automobile Industry Analysis and Challenges

2.1.1  General Context

The automotive industry is a major industrial and economic force worldwide. It makes 60 million cars and trucks a year, and is responsible for driving almost half the world's consumption of oil. The industry employs 4 million people directly.

Compared to other sectors of an economy, the automobile industry is one with one of the largest impacts on the environment. The car is a very complex product not only because of the thousands of components used in the production process and the many people involved, but especially because of the threats it creates for the environment at each stage of its life cycle.
Using the system dynamic model\(^1\) adapted for sustainability by John Sterman, we analyzed where the automobile industry affects sustainability and where the automobile companies that we are analyzing are doing efforts to contribute to a sustainable system.

**Automobile Industry impacts and contributions**

\[
\text{Developing new technologies to minimize dust and use other kind of wastes}
\]

\[
\text{Helping international organizations to improve the social and environmental standards for the automobile industry.}
\]

\[
\text{Non-renewables consumption (metals, fossil fuel)}
\]

Source: John Sterman MIT Sloan Adapted by S-Lab for Automobile Industry

To evaluate the sustainability initiatives that automobile companies are doing and how these efforts can create a real impact, it is necessary to understand the main environmental threats associated with the entire automobile industry. Exhibit 1 shows the main social and environmental impacts generated by this industry.

The Automotive Industry Action Group (AIAG) is an umbrella organization that encompasses stakeholders ranging from OEMs and suppliers in the automotive supply chain. AIAG recently rolled out a Supplier Sustainability Self-Assessment, a tool to measure process

\(^1\) “System dynamics is a perspective and set of conceptual tools that enable us to understand the structure and dynamics of complex systems. System dynamics is also a rigorous modeling method that enables us to build formal computer simulations of complex systems and use them to design more effective policies and organizations” John Sterman, “Business Dynamics: Systems Thinking and Modeling for a Complex World”
improvement. GM and other car manufacturers have adopted this tool and rolled it out to suppliers on a voluntary basis.

2.1.2 GM Sustainability Strategy

GM views sustainability as a value driver and has incorporated sustainable practices in line with their business objectives.

The sustainability initiatives GM focuses on include:

- Developing technology for alternative energy to reduce fossil fuel dependency
- Improving fuel efficiency
- Reducing CO2 emissions
- Improving quality of life for communities
- Operational efficiency in plants: reducing environmental impact
- Developing technology for more sustainable vehicles
- Reducing GHG emissions

In an effort to integrate sustainability in its business operations, the company participates in a number of initiatives including: Greening the Supply Chain (China, India, and Australia), CDP Supply Chain Initiative, Supplier Diversity, EPA Suppliers Partnership, and the Green Logistics Project & EPA Smartway Partnership.

Since the inception of its sustainability program, the company has gained recognition for its efforts including the 2013 EPA ENERGY STAR Partner of the Year Award, No. 1 automotive user of solar power in the US by the Solar Energy Industries Association, leader in landfill-free and recycling, and second in US clean energy patents.
GM is currently in the process of developing a sustainability strategy to roll out to its supply chain to improve efficiency and reduce environmental impact. A number of suppliers on the GM Supplier Council, including Bridgestone and Takata, are working with the Sustainability Department to develop this strategy. In discussions with GM executives within the Global Purchasing and Supply Chain Departments and suppliers, we gained an understanding of current challenges. The main challenge has been how to help suppliers organize and quantity their sustainability activities. We believe that developing a comprehensive and simple tool will allow suppliers to be more engaged in the process.

3 Analysis and Results

3.1.1 Comparing Sustainability Strategies for Automobile Brands: BMW, Toyota, Volkswagen and Hyundai

**BMW**

According to BMW’s sustainability strategy, the company has four key elements: Growth, Shaping the future, Access to technology and customers and Profitability.

1. **Growth:** The company invests heavily in the service and parts industry to target current customers. The growth market has focused on targeted regional expansion, particularly in Asia and other emerging markets.

2. **Shaping the Future:** BMW seeks to develop contemporary solutions to individual mobility and climate change. They view this as an opportunity for growth to develop new concepts.

3. **Access to technology and customers:** BMW seeks to combine customer needs with developing technologies that reduce fuel consumption and carbon dioxide emissions.

4. **Profitability:** BMW focuses on achieving profitability with all of its investments. The company evaluates all costs structures to increase efficiency.

BMW has 8 sustainability targets: electromobility, mobility patterns, renewable energy, resource consumption (water, energy, waste, solvents), diversity, leadership, preparing for the future and CO₂ emission.

BMW has been ranked by Dow Jones as the leader in sustainability for the automobile for the past 8 years. Sustainability has been established as a strategic corporate objective in the BMW Group Balanced Scorecard since 2009. This means that every project must be measurable in terms of sustainability as a corporate objective, ensuring that, in addition to economic factors, environmental and social aspects are also accounted for in the decision-making process. The core sustainability strategies are embedded in BMW’s overall corporate strategy. Specifically the company invests heavily in innovative technology with the aim of lowering fuel consumption and CO₂ emissions and providing better mobility for its customers. The company views these sustainability strategies as key to responding to customer needs.
and improving BMW’s profitability. In order to maintain profitability, BMW reduces costs by re-evaluating its cost structures, developing strong collaborations with suppliers and partners in the industry to achieve economies of scale, and reduces its own fuel emission consumption at global manufacturing plants. The company benefits from having its own corporate financial structure, which allows it to finance its sustainability R&D portfolio.

**Toyota**

Toyota’s corporate strategy focuses on three key elements: Making ever-better cars, Enriching lives of communities, and Stable base of business.

1. **Making ever-better cars**: The base concept for Toyota is to be competitive and unique in the automobile industry. To achieve this goal, Toyota focuses on simultaneously cutting basic costs and substantially improving product appeal.

2. **Enriching lives of communities**: Toyota is trying to execute diversified experimental initiatives to enhance benefits for towns and societies.


In accordance with these three pillars, Toyota is now trying to implement initiatives to make their business activities more sustainable.

Toyota executes a variety of sustainability activities under its corporate strategy “Always better cars,” which includes quality improvements, environmental initiatives, and traffic safety. For its environmental initiatives, Toyota popularized the Hybrid Vehicle (HV), and is developing the next generation of hybrid cars, such as the Plug-in Hybrid Vehicle (PHV), the Electric Vehicle (EV), and the Fuel Cell Vehicle (FCV). While these new cars enable customers to reduce CO2 emissions, gasoline consumption, and total cost of maintenance, Toyota also provides its customers with the option to choose the most suitable application to fit their needs. In regards to traffic safety, Toyota is developing a support technology to reduce car accidents; Pre-collision system, Vehicle-infrastructur Cooperative System, and Safe-driving Program are part of this initiative.

Toyota is working to solve global challenges, including energy and resource shortages, global warming, loss of biodiversity, food and water shortages, poverty, discrimination, unemployment, and aging population. Toyota is tackling these challenges under the “Enriching Lives of Communities” strategy. Toyota supports new car sharing and networking systems in the world. Providing big data, Toyota is also contributing to society in the transportation information field. To support suppliers, Toyota provides education opportunities. In response to changing social demands, Toyota has undertaken initiatives beyond the automobile industry, and is covering its raw material sourcing challenges, such as addressing the supply of conflict minerals from Congo.
Volkswagen

VW’s “Strategy 2018” focuses on positioning the VW Group as a global economic and environmental leader among automobile manufactures. They set four goals that are intended to make them the best automaker in the world by 2018:

1. VW intends to deploy intelligent innovations and technologies to become a world leader in **customer satisfaction** and quality.
2. The goal is to increase **unit sales** to more than 10 million vehicles a year; in particular, VW intends to capture an above-average share of growth in the major growth markets.
3. VW’s aim is a sustainable return on sales before tax at least 8% so as to ensure that the Group’s solid financial position and ability to act are guaranteed even in difficult market periods.
4. VW aims to become the top employer across all brands, in all companies and regions.

To achieve these goals, VW is focusing in particular on reducing environmental impact and profitability of its vehicle projects.

VW’s CSR and sustainability strategy ensures that, at every stage in the value-added process, VW avoids risks, identifies development opportunities at an early stage and continues to enhance its reputation. VW summarized their sustainability strategy as follows:

- Deploy intelligent innovations and technologies to become a world leader in customer satisfaction and quality,
- Increase unit sales to over 10 million vehicles a year
- Increase its return on sales before tax to at least 8%,
- Be the top employer across all brands, companies and regions,
- Reduce the energy consumption and CO2 emissions by 25% per vehicle, compared with 2010.

VW focuses its sustainability activities on balancing Economy, Society and the Environment. Regarding the Environment dimension, VW covers all environmental initiatives, and aims to make each new vehicle better than its predecessor. To minimize the environmental impacts from its vehicles, VW looks at the whole life cycle of the vehicle. VW use LCA to check and measure their results.

VW values its relationship with stakeholders and suppliers. VW believes it has a responsibility to promote sustainability throughout the entire value-added process. VW uses the supplier scorecard for effective and sustainable supply chain management. It summarizes information on individual suppliers in the fields of Procurement, Technical Development, Quality Assurance and Logistics.
Hyundai

According to Hyundai’s 2014 Sustainability Report, the company has a sustainability approach that is focused on their traditional values as a basis:

1. Sense of unlimited responsibility
2. The realization of possibilities
3. Love for humanity

The Hyundai Vision for 2020 was designed to embrace the changing values and philosophy of what automobiles mean to society. By pursuing this vision, Hyundai has set out to become not just a carmaker but a company that creates new values, a company beloved by customers, and ultimately, a lifetime partner to our customers.

Hyundai has five core values: customer, challenge, collaboration, people and globality, which help them to implement their vision of 2020. The core values will serve as a guide not only for Hyundai’s business management activities but also to strengthen its community of members and to provide a basis for sustainable growth and development.

Results: Sustainability Framework

We compared BMW, Toyota, Volkswagen and Hyundai sustainability initiatives in the framework of main impacts created by the automobile industry. We created a scale (1= low, 2=medium and 3=high) that is correlated with how automobile companies approach their sustainability initiatives. If a company is working on an activity to reduce risk, we rated the activity a 1; if the activity is to improve their operations the number is 2; and if the company is behaving as a game changer and differentiating themselves within the industry, we rated them a 3.

The analysis was made using publicly available information. We focused on activities that are currently implemented and for which the companies have results.

The following table shows the analysis:

<table>
<thead>
<tr>
<th>Industry Impact</th>
<th>Actions to reduce their Impact</th>
<th>BMW</th>
<th>Toyota</th>
<th>VW</th>
<th>Hyundai</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Consumption of non-renewable</td>
<td>Implementing renewable sources of energy to reduce energy consumption in their manufactures</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Improving Efficiency: Minimizing energy consumption per unit production</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Decrease consumption: water,</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Industry Impact</td>
<td>Actions to reduce their Impact</td>
<td>BMW</td>
<td>Toyota</td>
<td>VW</td>
<td>Hyundai</td>
</tr>
<tr>
<td>-----------------</td>
<td>--------------------------------</td>
<td>-----</td>
<td>--------</td>
<td>----</td>
<td>---------</td>
</tr>
<tr>
<td>Energy and solvents per vehicle</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Creating new technologies to replace the use of fossil fuels</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Creating new materials to replace or decrease the use of metals</td>
<td>N/A</td>
<td>3</td>
<td>2</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Recycle rare metals and rare earth elements</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Introduce Bio-plastic for car components</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Industry Impact</td>
<td>Actions to reduce their Impact</td>
<td>BMW</td>
<td>Toyota</td>
<td>VW</td>
<td>Hyundai</td>
</tr>
<tr>
<td>Green House Emissions and CO₂</td>
<td>R&amp;D investments to reduce environmental impact</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Certification of GHG emissions (Publicly Reported)</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Creating or using new technologies to decrease (or not produce) GHG</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Developing or using technologies and new materials to reduce car weight.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Carbon Disclosure Project (CDP)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Air Pollution</td>
<td>Create new technologies to minimize the air pollution (filters to minimize particulate material)</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Comply restrictions on chemical substances (REACH)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Release of Toxic Compounds</td>
<td>Improving process of painting to reduce environmental impacts</td>
<td>N/A</td>
<td>2</td>
<td>2</td>
<td>N/A</td>
</tr>
<tr>
<td>Changing painting material or create new technologies to minimize the toxic liberation during automobile production</td>
<td>N/A</td>
<td>2</td>
<td>2</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Wastes</td>
<td>Reduce waste-to-landfill to zero by sorting waste.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Implementing recycling programs during all product life cycle.</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Land use and Biodiversity</td>
<td>Helping to develop standards related with Mineral sourcing from unstable regions.</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Working with mining companies to reduce the land and biodiversity impact</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Conserve and maintain forest</td>
<td>N/A</td>
<td>1</td>
<td>1</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>Reporting Dow Jones Sustainability Index</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Using the Matrix of Sustainability Strategies, we determined where the companies are located in the “Sustainability Branding” position.

The position of the different companies in the matrix were based on the following:

1. **Sustainability Branding**: P&G, BMW and Toyota were located in this quadrant because they are recognized (by NGO’s, governments and other companies and organizations) as leaders in terms of sustainability efforts. These companies are industry leaders that go beyond compliance, cost reduction and efficiency; they are looking for differentiation of their products and services.

2. **Beyond Compliance Leadership**: Volkswagen integrates sustainability within their business strategy and go beyond risk management; however, their approach is to meet sustainability standards without going beyond what is expected within the industry.

3. **Sustainability Cost Leadership**: Wal-Mart is a recognized cost leader and their efforts in sustainability are highly correlated with providing lower costs products.

4. **Eco-efficiency**: Almost all Hyundai efforts are related to eco-efficiency (alternative fuel, weight reduction, recycling programs) and meet current regulations. We did not find activities that go beyond compliance and cost reduction.

### 3.1.2 Supply Chain Sustainability Management Strategies

AIAG has developed a set of guiding principles to improve sustainability performance in the supply chain for automotive companies. These guidelines are expected to standardize sustainability management in the industry and offer guidance to companies in developing sustainability activities. Auto manufacturers that subscribe to the AIAG guidelines include:
Daimler, Fiat, Chrysler, Ford, Volvo, Toyota, Honda, and GM. The fundamental principles focus on:

- **Business Ethics**: Operating with integrity and in accordance with local and international laws
- **Environmental Standards**: Reduce environmental impact through
  - Reducing energy and water consumption
  - Reducing greenhouse gas emissions
  - Increasing use of renewable energies
  - Enhancing appropriate waste management
  - Training of employees
- **Working Conditions and Human Rights**: Ensuring zero tolerance for child and forced labor. Following local laws as it pertains to wages and benefits, working hours, health and safety, and discrimination.

In an effort to understand overall best practices for supply chain sustainability management, we conducted research on large companies outside of the automotive industry that are widely recognized for sustainability efforts in their supply chain. We identified Walmart and Procter & Gamble as leaders in sustainability management based their experience and recognition. We then used this analysis to compare best practices within the automobile industry.

**Wal-Mart**

Walmart launched its sustainability program in 2005 with a focus on renewable energy, waste reduction, and social and environmentally conscious products. Most notably, Walmart uses the Sustainability Index to integrate sustainability practices into its core business operations which have resulted in reducing consumption of non-renewable resources, investing in technology to reduce energy consumption, reducing GHG, investing in R&D to develop R&D to reduce air pollution, reducing waste-to-landfill to zero, and integrating sustainability practices within its supply chain. As the largest retailer in the United States, with over 100,000 suppliers globally, the program has resulted in bringing sustainability to thousands of companies. Using a system developed by The Sustainability Consortium (TSC, Walmart developed a voluntary 15 question scorecard to all of its suppliers. The scorecard focuses on the following categories:

**Energy and climate-reducing energy costs and greenhouse gas emissions:**

- Requests total annual GHG emissions
- Asks if supplier participates in the Carbon Disclosure Project

**Material efficiency - reducing waste and enhancing quality**

- Asks for total amount of solid waste generated from facilities linked to Walmart
- Requests total water consumption

**Natural resources - producing high quality, responsibly sourced raw materials**
• Inquires about publicly available purchasing guideline as it pertains to environmental and social concerns in sourcing
• Asks about 3rd Party Certification for products sold to Walmart

PeopLe and community- ensuring responsible and ethical production
• Inquires about transparency in supply chain and knowledge of location of facilities
• Asks about process for managing social compliance at the manufacturing level

High performing suppliers are awarded recognition from Walmart. Since the launch of the scorecard, Walmart has expanded the tool to include category specific questions to encompass the major product it sells.

Procter & Gamble

P&G outlines the core focus areas in two pillars- “Environment” and “Social.” The company leverages its size and scale to address sustainability initiatives in those fields. The company prioritizes the following:

Environment
- Conservation of Resources
- Renewable Resources
- Worth from Waste

Social
- Comfort of Home
- Health and Hygiene

The company views suppliers as critical partners in improving the environmental sustainability of P&G. The company displays its scorecard on its website to encourage sharing of innovative ideas among partners. The scorecard is the result of several years of close collaboration with its Supplier Sustainability Board, which includes more than 20 leading external business partners from its global supply chain as well as experts from the company. The scorecard is built on accepted worldwide measurement standards and sound science, including protocols from the World Resources Institute (WRI), the World Business Council for Sustainable Development (WBCSD) and the Carbon Disclosure Project (CDP). The scorecard, launched in 2010 and used by 600 suppliers, was developed to track and encourage improvement on key sustainability measures along the supply chain. The scorecard’s primary use is to measure and reward improvement over time in each key environmental sustainability activities. Potential uses are as follows:
- Annual Supplier/Agency Partner sustainability Performance Ratings (Corporate)
- Business Award Decisions (Spend Category)
- Improvement Tracking
- Material Production Impact Studies for Product Design
- Total Supply Chain Impact Modeling
We compared Walmart and P&G’s supplier sustainability strategies to the automobile industry and found the following results:

<table>
<thead>
<tr>
<th>Process</th>
<th>Description</th>
<th>Automobile Industry</th>
<th>Retail</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>BMW</td>
<td>Toyota</td>
</tr>
<tr>
<td>Certification</td>
<td>ISO 14.001</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>ISO 9.001</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>OSHAS 18.001</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Third-party Certification</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Training</td>
<td>Company work together with suppliers giving training activities.</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Monitoring Tools</td>
<td>Check List</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>KPI Settings</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Scorecard</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Integration to SSE (or other evaluation for suppliers system already existent)</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Monitoring Process</td>
<td>Self Assessment Audit</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Third Part</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Purchasing company (in this case, the same GM, Toyota, etc)</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Awards</td>
<td>Do companies award their suppliers that are improving their social and environmental behavior?</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Do companies promote the R&amp;D in suppliers through awards?</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

In our analysis of supply chain sustainability management amongst key automobile companies and leading retail companies with credibility for greening their supply chain, we identified four main best practices:

- Observing guidelines in line with standards similar to those established by AIAG
- Providing training for supply chain partners to improve sustainability initiatives
- Developing monitoring tools either in the form of checklists or scorecards
- Rewarding suppliers with awards and recognition for their sustainability activities
In our review of GM competitors who use supplier evaluation tools we found the following:

- VW uses a “Supplier Scorecard” to pull together supplier information, such as procurement, technical development, quality assurance, and logistics. They use this information to analyze suppliers and develop sustainability strategies with suppliers.
- Toyota uses a “Procurement Guideline” to manage and collaborate with suppliers. Using the guideline, Toyota collects data, and assesses each vehicle’s environmental impact, such as composition of the regulated substances and recyclability. Furthermore, Toyota uses this data to develop new technology with suppliers.
- Nissan uses internal “CSR Scorecard” to drive sustainability initiatives. Using the scorecard, Nissan sets its value chain goal every year and evaluate the results accordingly. The company also collaborates with suppliers to develop new technology share initiatives.
- Ford collects environmental data from suppliers through its “Aligned Business Framework Program.” It promotes regular communication between the OEM and its global suppliers about technology development. It also encourages mutual growth for both Ford and its suppliers with game-changing technologies.

3.2 Identifying Potential Tools for Supplier Sustainability Management

We have identified key steps for GM to roll-out sustainability within its supply chain. These include the key initiatives, objectives, and potential tools needed to accomplish this goal:

<table>
<thead>
<tr>
<th>Key initiatives</th>
<th>Objectives</th>
<th>Tools / Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Develop solution</td>
<td>• Pilot project</td>
<td>• Identify key measures to enhance sustainability</td>
</tr>
<tr>
<td></td>
<td>• Enhance relationship with suppliers</td>
<td>• Estimate economic and sustainability value</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Monitor implementation progresses</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Re-define the relationship with key suppliers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Optimize whole supply chain ecosystem</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Brainstorming / Workout</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Initiative evaluation map</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• KPI monitoring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Supplier evaluation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Common Supply Chain Platform</td>
</tr>
<tr>
<td>2. Standardize solution</td>
<td>• Share best practices</td>
<td>• Knowledge sharing infrastructure</td>
</tr>
<tr>
<td></td>
<td>• Develop a standardized package</td>
<td>• Standardizing initiative</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Summarize global best practices</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Prioritize initiatives</td>
</tr>
<tr>
<td>3. Implement the solution globally</td>
<td>• Plan to implement</td>
<td>• Impact / complexity review</td>
</tr>
<tr>
<td></td>
<td>• Develop Certification / Regulatory strategy</td>
<td>• 3rd party’s certification</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Prioritize regions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Review regional regulation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Study certifications</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Develop communication strategy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Public communication</td>
</tr>
</tbody>
</table>
GM is currently pilot testing a supplier sustainability project in China, which is the company’s most advanced efforts to date. The project is in the first phase of the above mentioned strategy and is in its third year of operation. The company is also in the process of implementing a revised Strategic Supplier Engagement Questionnaire which will be rolled out to the top 400 suppliers. GM has expressed interest including sustainability questions in this questionnaire. The company is also pilot testing a voluntary Self-Assessment Survey by AIGI.

In order to evaluate potential tools for supply chain sustainability management, we divided the strategy into three main phases. For this report, we focused on the initial pilot phase. For this phase, we researched a number of tools including the initiative evaluation map, KPI monitoring, Supplier scorecard, Common Supply Chain Platform, 3rd Party Certification, and Public Disclosure. We determined that the first phase should include a combination of tools including: Initiative evaluation map, KPI monitoring, Supplier Scorecard and Common Supply Chain Platform.

3.2.1 Analysis of Tools for Initial Phase

1) Initiative Evaluation Map

Objective:
Evaluate economic and sustainability enhancement impact for each initiative. See an example below.

![Initiative Evaluation Map Diagram]

Points to be considered:
Economic value should be calculated quantitatively. Probable options to measure economic value include NPV, IRR, ROI, payback time. IRR has no information on the amount of NPV, so we cannot tell the project’s impact from IRR. ROI is defined as potential return divided by investment amount, which ignores the timing of CF and time values. Payback time is defined as the timing when the project’s investment is compensated by total return. It also does not
have any time values. We recommend that GM calculates NPV as it takes into consideration future cash flow and timing which will allow GM to measure the activity’s impact.

Sustainability enhancement impact should be estimated by environmental impacts and social impacts. Environmental impacts should include the controllability of electricity, compressed air, natural gas, water, steam, waste gas, waste water, greenhouse gas, which would be measured by the total reduction rate of each category. Social impacts should include worker’s health condition, environmental safeties, compensation, etc.

2) KPI monitoring

Objective:
To calculate and monitor goals of implemented initiative to determine how much progress has been achieved.

Points to be considered:
Based on the China pilot case’s experience, key initiatives and their KPIs would be:
- Logistics:
  - Trailer cube utilization rate
  - Returnable containers usage rate
  - Supplier localization rate
- Packaging / Consumables:
  - Packaging density
  - Direct-to-Line packaging rate
  - Compacting expendables rate
- Energy source shift
  - Gas FT to Electric convert rate

Each KPIs should be directly tied with economic value and sustainability enhancement value to be consistent with the initiative evaluation map. Frequent (Monthly, maybe) tracking KPIs would show a clear view of the project progress.

3) Supplier scorecard

Objective:
To monitor suppliers’ capability and willingness to work with GM to enhance sustainability.

Points to be considered:
GM is now intensively working implementing a new supplier assessment project called the Strategic Supplier Engagement. Within this framework, GM will be able to measure its key suppliers’ business performance. We can leverage this framework to evaluate suppliers’ capability and capacity for collaborating with GM on sustainability.

Major criteria are Cultural, Environmental, and Social. Taking into consideration the importance and potential risk impacts of each, we recommend assigning the following weights to measure the three categories: Cultural: 25%, Environmental: 60%, and Social: 15%.

Questions to include in the assessment should be:

**Cultural (25%)**
- **Governance**: To what extent does the supplier have a strong corporate governance system to execute sustainability enhancement initiatives
- **Capability**: To what extent does the supplier have capability, knowledge, and technology to drive sustainability enhancement initiatives
- **Willingness to collaborate**: To what extent will the supplier cooperate with GM to optimize whole supply chain sustainably

**Environmental (60%)**
- **GHG emission**: To what extent will the supplier invest to reduce the total emission of GHG
- **Waste water reduction**: To what extent will the supplier invest to reduce the total emission of water waste
- **Energy usage compression**: To what extent will the supplier invest to manage total energy usage by implementing renewable energy sources

**Social (15%)**
- **Wage**: To what extent does the supplier care about employees’ wages compared to local standards
- **Health condition**: To what extent does the supplier care about employees’ health condition compared to local standards
- **Working condition**: To what extent does the supplier care about employees’ working condition compared to local standards

The measurement tools is found below:
4) Common supply chain platform

**Objective:**
To optimize holistic supply chain ecosystem both for economic value and for sustainability enhancement.

**Points to be considered:**
From the experience of China pilot project, GM has identified so many opportunities existing not only within GM’s factories and suppliers’ factories but also in between GM and supplier locations.

Potential optimization opportunity would be:
4 Recommendations

Based on our analysis, we recommend that GM integrate a supplier scorecard in the Strategic Supplier Engagement Questionnaire. It is a tool that is already used to measure supplier performance and it will help suppliers and the GM Supply Chain view sustainability in line with business objectives rather than as a standalone measurement. In order to be most effective, we believe that the supplier scorecard should be complemented with the three other tools.

The Initiative evaluation map will allow GM to measure the sustainability impact and economic value from each activity. KPI monitoring will be key to understand the implementation status of each task and to evaluate their effectiveness. Lastly, a common supply chain platform is necessary to fully understand the entire supply chain ecosystem.

By introducing the scorecard and complementary tools, GM will provide an opportunity for its suppliers to improve and build upon their sustainability efforts. In our interviews we learned that suppliers vary in the sophistication of their sustainability strategies and the majority are eager for assistance on developing tools and platforms to track their activities.

We considered three options for the supplier scorecard formats: 1) GM’s Strategic Supplier Engagement framework, 2) Full-scale supplier evaluation system, 3) Quick check sheet. As we have shown in the table below, option 1 is the best option in terms of the balance between the investment and the expected return.

<table>
<thead>
<tr>
<th>Description</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utilize SSE platform</td>
<td>Add “Sustainability” evaluation format into SSE system</td>
<td>Easy to set-up to utilize upcoming SSE framework</td>
</tr>
<tr>
<td></td>
<td>&lt;10 additional questionnaire</td>
<td>Easy to implement within GM’s corporate wide initiatives</td>
</tr>
<tr>
<td>Setup Supplier Sustainability Estimation System</td>
<td>Establish full-scale supplier evaluation system</td>
<td>Can implement ideal evaluation system on suppliers’ sustainability enhancement initiatives</td>
</tr>
<tr>
<td></td>
<td>Comprehensive analysis all suppliers in terms of sustainability enhancement</td>
<td>Duplicated and complicated initiatives with SSE</td>
</tr>
<tr>
<td>Quick check sheet</td>
<td>Just a quick check sheet for existing suppliers’ sustainability initiatives</td>
<td>Quite easy to implement to check critical points</td>
</tr>
<tr>
<td></td>
<td>For selected a few important suppliers only</td>
<td></td>
</tr>
</tbody>
</table>

To successfully implement the supplier scorecard, we recommend that GM continue to gather supplier input through the Supplier Council. This will allow GM to gain buy-in from its suppliers and make them more engaged. Additionally, GM should be clear about the goals of
the exercises and consistent in their messages to suppliers regarding sustainability. In our interviews, we learned that this has been a misstep by other automobile companies which has resulted in lack of engagement on the part of suppliers. High performing suppliers should be awarded for their efforts in sustainability through public recognition and other incentives as deemed appropriate by GM. Currently suppliers are awarded based on performance that does not include sustainability. One benefit includes access to GM resources to assist with future bidding. Lastly, GM should ensure that it minimizes work and reporting requirement regarding sustainability. It is for these reasons that we believe the scorecard should be integrated in the existing Strategic Supplier Engagement Questionnaire.
## Exhibits

### 5.1 Exhibit 1: Main Social and Environmental Impacts Generated by Automobile Industry

<table>
<thead>
<tr>
<th>Environmental Impact</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Consumption of non-renewable</strong></td>
<td>Consumption of non-renewable resources like fossil fuels is another important parameter contributing to the environmental depletion caused by the automobile industry, during their manufacture and use. The majority of vehicles use either gasoline or diesel resulting to a great dependence on oil.</td>
</tr>
<tr>
<td><strong>Green House Emissions</strong></td>
<td>At a global level, the transportation sector is pretty much related to greenhouse gas (GHG) emissions and global warming since the utilization of the vehicle and other activities related to the sector are responsible for a significant amount of carbon dioxide emitted to the atmosphere.</td>
</tr>
<tr>
<td><strong>Air Pollution</strong></td>
<td>When discussing about the environmental impacts of vehicles the focus is primarily on air pollution created during the utilization phase. Direct exhaust emissions of hazardous substances like carbon monoxide, nitrogen oxides and small particles are important contributors to many environmental problems like smog creation and biodiversity disturbances.</td>
</tr>
<tr>
<td><strong>Liberation of Toxic Compounds</strong></td>
<td>Cars should be designed to accommodate less toxic materials. <strong>Brake debris and tire particles:</strong> These substances raise toxicity levels in nearby soils and, in the case of tire particles, lead to the formation of black carbon. Both pollutants have been shown to cause lung toxicity and account for significant proportions of particulate matter in urban areas. <strong>Painting and Coating:</strong> account for 62%, or the largest share of environmental impacts during the manufacture of automobiles.</td>
</tr>
<tr>
<td><strong>CO₂</strong></td>
<td><strong>Vehicle Weight:</strong> Many of the environmental impacts of automobiles are directly related to vehicle mass. Widespread concern regarding global climate change and the subsequent charge to reduce vehicle emissions has led to numerous efforts to lower vehicle weight.</td>
</tr>
<tr>
<td><strong>Wastes</strong></td>
<td><strong>Batteries:</strong> The typical automobile contains a lead-acid battery, which can be returned manufacturers who recover and recycle 93% of the lead. Nonetheless, the remaining 7% accounts for 42,000 tons of lead release into the environment.</td>
</tr>
<tr>
<td><strong>Land Occupation and Biodiversity</strong></td>
<td>The acquisition of the required resources for materials and energy productions begins with mining. Both surface and underground mining processes are used for the extraction of coal, iron ore, bauxite ore etc. Some of the impacts resulting from mining processes are: landscape deterioration, damage of areas used for vegetation, deforestation, occupation of large excavation areas, changes in land use, changes to hydrological and geological characteristics of the area.</td>
</tr>
</tbody>
</table>

---

2 [http://yosemite.epa.gov/r10/owcm.nsf/Product+Stewardship/autos-impacts](http://yosemite.epa.gov/r10/owcm.nsf/Product+Stewardship/autos-impacts)
the local area, etc. Land occupation is also connected to landfill as a method of waste final disposal. Waste is produced in every stage of the vehicle’s life cycle and there is a considerable flow of materials that are disposed to landfills.

<table>
<thead>
<tr>
<th>Social Impact</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>GHE generations and toxic compounds emissions can cause respiratory problems to employees during automobile fabrication and use.</td>
</tr>
<tr>
<td>Workers</td>
<td>Working conditions for factory workers making vehicles and parts overseas have come under greater scrutiny in recent years. Working hours and wage issues, in particular, have been the focus of human rights abuse allegations for many major automakers.</td>
</tr>
<tr>
<td>Supply chain</td>
<td>Supply chains can have serious problems related with human rights (working conditions, working hours, wage issues).</td>
</tr>
<tr>
<td>Safety</td>
<td>The personal vehicle has helped enable greater mobility, but the potential impacts on safety are undeniable. In 2010, 32,788 people were killed in traffic accidents in the U.S. Vehicles themselves should be, as much as possible, safe and not a hazard to consumers or the public.</td>
</tr>
</tbody>
</table>

5.2 Exhibit 2: GPSC Sustainability Related Initiatives

<table>
<thead>
<tr>
<th>Initiatives</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greening the Supply Chain activities (China, India, Aust)</td>
<td>Reduced environmental impacts, reduced costs, reduced risks</td>
</tr>
<tr>
<td>Green Logistics project &amp; EPA SmartWay Partnership (note: TBA)</td>
<td>Reduced GHG emissions, reduced costs</td>
</tr>
<tr>
<td>Conflict Minerals</td>
<td>Reduced risks, improved transparency within tiered supply base</td>
</tr>
<tr>
<td>Renewables workshop for suppliers</td>
<td>Improved relations, potential cost reductions</td>
</tr>
<tr>
<td>Recognition (Global and local)</td>
<td>Improved relations</td>
</tr>
<tr>
<td>EPA’s Suppliers Partnership</td>
<td>Improved relations, reduced environmental impact, reduced costs</td>
</tr>
<tr>
<td>CDP Supply Chain Initiative</td>
<td>Improved relations, reduced GHG emissions, reduced costs</td>
</tr>
<tr>
<td>Supplier Diversity</td>
<td>Improved relations, Improved reputation</td>
</tr>
<tr>
<td>Localization Goal</td>
<td>Improved relations, reduced risks, reduced env impact</td>
</tr>
</tbody>
</table>

Source: David Tulauskas GM
5.3 Exhibit 3: Competitors’ Supply Chain Management Tools and Objectives

✔️ = General Use  ✔️✔️ = Proactive Use

5.4 Exhibit 4: Scorecard Examples

Nissan CSR Scorecard (internal use): a section of Value Chain
P&G Supply Chain Environmental Sustainability Scorecard (Excel Sheet)
5.5  Exhibit 5: Interview Transcripts

Interview with Robert Fisher VP Sales Dept. Takata
April 14, 2014
Participants: Rocio Chamorro, Takao Miki, and Bita Diomande

1) Does your company have sustainability goals and programs? If yes, could you describe your program and how you measure progress towards these goals?

Currently the sustainability efforts are regional. As the company is becoming more global, it is getting harder to track and measure what is happening on a global level. Don’t collectively know what is happening on a global level. Also activities happen within specific business units, i.e. Production. There is now a group called Corporate Planning, responsible for tracking the sustainability efforts. Tracking what is happening regionally. Rob wants to add a section to their website. No good ways to update customers and OEMs when they ask for information.

Sustainability efforts focus on the Environment, sustainability in the production, charitable programs, health and safety. No way to currently measure. For production, if OEM target assigns it, there is a percent target to reach. Health and safety- internal target percentage. On a regional level, they comply to government standards.

Do you have the same framework in the regions? No, but very interested in knowing how to develop one and track on global level. What if there was a platform where this could all be plugged into.

2) Have you established any sustainability requirements for your suppliers? (e.g.: green procurement requirements, ISO14001, human rights policies, etc) No

From a supply base no, we struggle with this. Some of it is the responsibility of purchasing, sometimes it falls under plant management. Conflict minerals- one area that we struggle with.

3) Do you have experience working with other customers on sustainability initiatives? Do any of your customers use tools such as a balance scorecard to measure sustainability efforts?

No but they work with Honda, Toyota, and Ford. Rob will be sending us the Ford ABF document. Companies ask for annual updates, just supplier reported. They are more guidelines than a requirement.

Made a comment that a company is only as sustainable and ethical as its supply base.
4) How familiar are you with GM’s sustainability strategy and various related supply chain initiatives? How have you worked together in the past towards sustainability goals? Do you feel that both programs (from GM and your company) could be aligned? Not really familiar. They are part of the Supplier Council with 10 other members. Not sure what other companies are doing. Developing a new score card with SSE program. Score card looks at 1) Delivery quality, price, and 2) cultural alignment. Problem is how to measure it.

Suppliers should look at better coordinating sustainability efforts. Can be a marketing tool for OEMs to state specific certifications that they have passed.
Interview with Mike Wild Account Manager for GM Takata
Tuesday, April 22
Participants: Bita Diomande

1) Does your company have sustainability goals and programs? If yes, could you describe your program and how you measure progress towards these goals?

Responsibility for global GM account- involves sales, engineering, program management. Focus is on designing products.

GM reaching out to supply base- trying to expand their sustainability efforts to suppliers. If GM makes directives- not very effective up until you sell the supplier on it. Get their input.

Takata has scorecard with suppliers. Has meetings with suppliers to talk initiatives. Will put us in touch Purchasing person who works on sustainability with suppliers. GM wants to create an overall theme. GM has monthly supplier meeting. Should push sustainability initiatives at this meeting.

2) How familiar are you with GM’s sustainability strategy and various related supply chain initiatives? How have you worked together in the past towards sustainability goals? Do you feel that both programs (from GM and your company) could be aligned?

Most suppliers wouldn’t know what GM is working on. GM is starting to do that now. Want to include suppliers from the council.

There is currently a purchasing tool- dashboard includes quality, cost competitiveness, technology. Can you include environmental concerns? Is it going to be the same? Can you tie in other goals. Yes should be one tool.

Most customers have scorecards- measuring usual things, warranty, delivery. Will they integrate?
From a supplier perspective, minimize and streamlining. Overarching your entire business. Scorecard only as effective as you’re using them. No meaning if generated by the company and they aren’t consistent. Make sure doing it on a regular basis, consistent, rules are clear.

3) How to align with SES?

AIAG sets the standard for operations, develop the standard forms. Could be the medium of how it gets established.
Interview with Steve Montague  
April 22, 2014  
Participants: Takao Miki

**How familiar are you with sustainability initiatives within your unit? Are current initiatives measured and tracked within GM? Suppliers tracked?**

Here’s how GM keeps track of environmental activities in all its factories all around the world (vehicle assembly, powertain and stamping). This is a common process under GM’s Global Manufacturing System (GMS) whereby each plant establishes business objectives with owners and timing under the principles of Safety, People, Quality, Responsiveness, Cost & Environment. This GMS process is called Business Plan Deployment (BPD). I have attached a picture of SGMW’s Liuzhou, China BPD board, which looks nearly identical to that of the Lordstown, Ohio plant site I worked at right before relocating to SGMW. I have attached photos of the "Environment" section that tracks typical plant performance in the areas of energy consumption, water consumption, and emissions in the form of wastewater, exhaust gas and solid waste. GM plants around the world strive to achieve world-class levels of energy efficiency and landfill-free status while minimizing greenhouse gas emissions. This is how GM’s "front line" operations contribute to concrete, measurable sustainability improvements.

**Overall, how are sustainability initiatives integrated within key GM business activities? What improvements could be made to align sustainability and business goals?**

In order to optimize supply chain efficiency, he is trying to focus following four initiatives:

1. **Redesign transportation mode:**
   - Optimize logistics to minimize the cost of transportation

2. **Internal material handling:**
   - Optimize packaging, post signals, etc. Also, implementing “Just in Time" process by referring best practices

3. **Lean material usage strategy:**
   - Seek maximum efficiency in the field of manufacturing process

4. **Supplier development:**
   - Help suppliers to enhance their business process, which includes “Green supply chain initiatives” GM has significant power to guide suppliers to follow GM’s lead to think about holistic eco-system improvement

Through these strategically important initiatives, GM is seeking to enhance sustainability of their business at the same time.

**What are the biggest challenges that GM faces regarding sustainability and aligning them to business goals?**
Green supply chain initiatives in China are a new pilot project, which is not directed by HQ directly. Their initiatives are gathering corporate wide interests. At this moment, GM is trying to implement low-hanging fruits first. Meaning that, they are focusing on the projects with short pay-back period and low initial investment. After achieving tangible result and establishing the foundation of trust with suppliers, they will expand their initiative more complicated and capital intensive areas. From the standpoint of his past career experiences (Finance), this sustainability initiative is a big surprise, because it doesn’t make business sense. However, he believes that this trend would be the main stream within ten years or so and it will be MUST-DO. At this moment, it focuses environmental issues only (not including HR related issues and others), but he has no idea in what way this initiative will evolve.
Interview with David Talauskas  
April 23, 2014  
Participants: Takao Miki, Rocio Chamorro, and Bita Diomande

**GM is currently in the process of developing a supply sustainability strategy**
- Already does a lot of work but not consolidated.  
- GM sustainability report- greening initiatives around the world, joined EPA Smartway program.  
- Doesn’t have a good overarching strategy, how to align with business model.  
- Want to develop best practices for policies, code, engagements, disclosure and performance.  
- Develop strategy according to these best practices  
- Scorecard fits under engagements, disclosure, and performance monitoring.

**Tools**
Need tools to help achieve the strategy  
Scorecard is a tool they are leaning towards

**Have multi-pronged engagement process**
Supplier Business Council- monthly meeting with Purchasing Department  
Monthly conference call with all suppliers  
Discuss supplier diversity, quality, sustainability included. Drafting overall strategy with Council members who were interested in participating. Ie. Takata

**Sustainability Self-assessment**
Rolled out but it is voluntary. 100 suppliers/700 have used so far. Don’t want to create additional burdens  
Okay to use questions from this for the score card to streamline

**WRI**
Greenhouse gas reporting protocol- use this also as basis

**Scorecard**
Has to fit within business priorities. Must be easy to understand.  
Looking for max 10 questions, ideally 3-4. Most important questions, rank them. Place importance on certain questions.

Will put us in touch with Bob Harris from Purchasing to discuss the Strategic Supplier Engagement. Missing sustainability aspect.

**Sustainability= Maximizing value of being in business.**  
What are things at minimum that would show value return to suppliers? More competitive to GM, more profitable supplier.
Interview with Bob Harris
April 24, 2014
Meeting Participants: Bita Diomande, Takao Miki, and Satoko Yoshida

**Revised Strategic Supplier Engagement rolling out May 1**
- Segmentation on business measures
- Training for supply chain staff
- Business and relationship priorities
- Introducing cultural aspect

**Cultural Priorities**
- 38 questions
- Will be updated twice a year
- Based on survey
- Will be rolled out to 1st 400 suppliers, not all because of sheer size and manpower required to aggregate data

**Rewards: Supplier of the year award**
- Set of benefits they will receive- includes access to strategic information that will help with future bids. No commitment for new business

**If in the red, GM will work with them on corrective action. Put on new business hold.**

**What is new?**
- Introducing cultural part, first time it is happening in writing.
- More segmentation levels used to be a tool to separate the worst from the group.
- Now there are varying levels to help suppliers understand where they can improve.

**Suggestions about where sustainability could fit in-** he believes this could be a tool that incorporates sustainability questions. Thinks it’s a good idea.

**Global assessment-** GM conducts based on supplier interaction with Commercial Team
Interview with John Behr. Bridgestone
May 1, 2014
Participants: Takao Miki and Satoko Yoshida

1) Does your company have sustainability goals and programs? If yes, could you describe your program and how you measure progress towards these goals?

We consider that sustainability is direct application. It’s not general matter. We issue “Environmental Report” and “CSR Report.”

<Environmental initiatives>

We are focusing on three objectives to achieve our environmental goal; “In harmony with nature”, “Value natural resources”, and “Reduce CO2 emissions.” As the group, we set a mid-term target to reduce CO2 emissions by 35% in 2020 (compared 2005 emissions). We are also aiming to decrease water footprints by 30% in 2020, improve supply chain in terms of LCA, and 100% sustainable waste by 2015.

As our featuring initiative, we conduct R&D to find 100% sustainable materials to minimize impacts on the nature. One of our PJ has launched in Arizona and plant “Guayule” to produces natural rubber.

At the LCA viewpoint, our product provides the most impact at the customer usage. It means that the highest value for our customer is that improving rolling tires resistance and reducing waste from used tires. In the US, we launched a unique initiative called “Tires4Ward Program.” We collect one used tire when we sell one new tire.

2) Have you established any sustainability requirements for your suppliers? (e.g.: green procurement requirements, ISO14001, human rights policies, etc)

Bridgestone is a global company and set sort of requirement to manufacture tires. We have to ensure that we use no hazardous chemicals and materials. Also comply procurement requirement under the sustainability guideline.

(Basically, Bridgestone’s manufacturing sites need to comply all policy and regulation to keep its own certifications, such as ISO- it means that their primary materials must be complied to the regulations as well.)

3) Do you have experience working with other customers on sustainability initiatives? Do any of your customers use tools such as a balance scorecard to measure sustainability efforts?
Initiatives: Yes. We can’t tell the company name, but we work together, especially working to improve the tires durability. Rolling resistance is closely connected to the fuel efficiency. It has huge potential to reduce fuel and positive impact on economy.

Scorecard: Yes, we receive a lot of different questionnaires from our customers, such as CO2 emission, water usage, recycling, quality assurance policies, human rights, and social initiatives. We respond to more than 50 customers. Additionally, we answer for global standards, such as Carbon Disclosure Project, GRI, ISO 14001. Also we respond to the requests from media, such as News Week, Fortune 500. Currently, auto industry’s questionnaires are not standardized, and we have to answer a variety of questions. We keep recording all questions/answers in the database, but we can use a few answers that same to others’ questions. This is huge challenge for us, middle position of supply chain. To answer the questions, we need to pull together our global data. For example, we have to collect our group global CO2 emission numbers as our products are exported globally and we need coordination to figure out the real impacts. We are member of the suppliers partnership, AIAG, and share some information.

4) How familiar are you with GM’s sustainability strategy and various related supply chain initiatives? How have you worked together in the past towards sustainability goals? Do you feel that both programs (from GM and your company) could be aligned?

Not really familiar.
Interview with Bill Hurles. GM
May 1, 2014
Participants: Takao Miki and Satoko Yoshida

1) Please describe your role and how you fit into GM’s Global Purchasing and Supply Chain activity.

Bill: Executive Director of Group Global Supply Chain. Take care of all supply chain including capacity risk management and all plants operations across the world.

Board member of AIAG.

What is your expectation to the supply chain sustainability initiatives in GM? What kind of activities do you prioritize for supply chain sustainability?

<Expectations>

1. Help communication with suppliers.
2. Operation and products improvement
3. Embracing supply chain management
4. Improving logistics- it impact on carbon emission. We engage external parties, such as MIT (e.g. Adam Millar’ PJ), EPA, and Smart Way Program.

<Priority>

Encourage suppliers to learn the benefit of supply chain sustainability. Educating and learning both internally and externally.

Key objective: Help to improve customers’ products efficiencies. We are working with suppliers.

2) What are the biggest challenges that GM faces regarding sustainability and aligning them to business goals?

1. Inconsistency in the common understanding of sustainability. Not only externally but also internally. It comes from less education in this topic.
2. Help suppliers to build and execute their sustainability strategy. Typical their response to sustainability activities is that “another requirement is coming” or “it’s good idea, but it should cost a lot.” To change their mindset, we should help them with education. We’d like to have win-win relationship with our customers.

3) How do you consider the supply chain sustainability initiative in GM China? Do you have any chance to roll it out into GM globally?
It has huge opportunity. However we have business priority. Currently, we are focusing on more education and continue to pursue win-win relationship.

4) Are there any supply chain sustainability initiatives in other region in GM?

Each region has different activities, but China is the most advanced one. Also each region is on different level.

5) How do you monitor suppliers’ sustainability initiatives?

We are studying and developing it. The timeline is unsure.

6) Do you have any initiatives to build standard to measure supplier sustainability initiatives? If so, what is the timeline?

Yes. AIAG accounts for it. At this stage, we are unsure the timeline. It should be beneficial for suppliers.

7) Do you have any chance to financially support suppliers to enhance their sustainability initiatives that improve supply chain sustainability?

Currently we don’t have financial support system. It could be. However, now we are focusing education first.
6 References


Andresen, Christine and all. Biobased Automobile Parts Investigation: A report developed for the USDA Office of Energy Policy and New Use. Iowa State University. September 2012 [link]


Automotive Industry Guiding Principles to Enhance Sustainability Performance in the Supply Chain. AIAG. Web 12 May 2014. [link]


BMW Group Dow Jones Sustainability Index Leader for 8th consecutive year. BMW Group. 2014. Web 12 March 2014. [link]


Case Study: General Motors Managing Chemicals of Concern in Products and the Supply Chain. Lowell Center for Sustainable Production. University of Massachusetts Lowell. Web 28 April 2014. [link]


Harris, Robert. Presentation “Strategic Supplier Engagement Overview and Training”. GM. 24 April 2014.


Nick, Alexander. Corporate Sustainability at the BMW Group. BMW Group. 4 November 2011. Web 12 March 2014. [http://www.bmwgroup.com/e/0_0_www_bmwgroup_com/investor_relations/ir_services/_pdf/sri_capital_markets_day/01_Corporate_Sustainability_at_the_BMW_Group_Nick.pdf](http://www.bmwgroup.com/e/0_0_www_bmwgroup_com/investor_relations/ir_services/_pdf/sri_capital_markets_day/01_Corporate_Sustainability_at_the_BMW_Group_Nick.pdf)


Tulaskas, David. Presentation “Going from Good to Great”. GM. 3 December 2013


