Sustainability: What Are the Benefits to Our Business?

J.C. (Jack) Gustashaw, P.E.
Sr. Vice President
Middough Inc.
Sustainability: What Are the Benefits to Our Business?

J.C. (Jack) Gustashaw, P.E.
Middough Inc.
Sr. Vice President
Business Development

- Responsible for the Business Development and Marketing activities for eight business units nationwide.
- During his 34 years in the engineering / construction business, he has had the opportunity to work in many different industries including process, pharmaceutical, consumer, manufacturing, commercial and institutional.
- BS Degree in Agricultural Engineering; MS Degree in Mechanical Engineering; University of Florida.
Sustainability: What Are the Benefits to Our Business?

**SPM²**

Sustainable Process Methods at Middough

A Systematic Approach to Sustainability

An integrated full-service Architectural, Engineering and Management firm with offices nationwide.

Redefining Our Industry 38TH ENGINEERING AND CONSTRUCTION CONTRACTING CONFERENCE
Sustainability: What Are the Benefits to Our Business?

SPM² at the Project Level

Environmental Opportunities
- Quantitative (Energy/Mass Balance)
- Qualitative (Life Cycle Analysis)
- Assimilative/Regenerative

Social Opportunities
- Safety
- Staff Efficiency
- Turnover Rate

Financial Opportunities
- Direct Costs
- Indirect Costs
- Future Costs
- Intangible Costs

Gaseous Waste

Raw Materials
- Energy
- People

Project

Liquid Waste

Solid Waste

Product

People
Sustainability: What Are the Benefits to Our Business?

SPM² at the Macro Level (Big Picture)

The Objective is to Win all Three:
- Environmental
- Social
- Financial

- Raw Materials
- Project
- Customer
- Recycle

The Objective is to Win all Three:
- Environmental
- Social
- Financial
Sustainability Roadmap Developed By Industry for Industry

D. S. Schuster, PhD
Director
Institute for Sustainability
Center for Sustainable Technology Practices

Redefining Our Industry
Solutions through Collaboration, Innovation and Organization
### 155 Key Sustainability Questions

- Where to ask them during process and product development
- Who should be included in the “answers?”

<table>
<thead>
<tr>
<th>Sustainability Considerations</th>
<th>Assessment</th>
<th>Rating</th>
<th>Answered by</th>
</tr>
</thead>
<tbody>
<tr>
<td>- What policies and processes are in place to ensure a sustainable performance of the supply chain (e.g., EMS registration)?</td>
<td></td>
<td></td>
<td>Certification &amp; Services pd, Code p</td>
</tr>
<tr>
<td>- What tools are available to evaluate the sustainability performance of the supply chain?</td>
<td></td>
<td></td>
<td>Phase II (2003), Phase III (2006)</td>
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<tr>
<td>- VQA’s supply chain plan on waste and recycling</td>
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<td>Business (2007)</td>
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<td>- What are the key SD issues (internal vs. external, along the supply chain) and how does the company communicate with them? (e.g., engaging, sharing, involving SD professionals and executive management)?</td>
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<td>Business (2007)</td>
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<td>- What is the company’s position on sustainability</td>
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<td>Business (2007)</td>
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<td>- How can the company implement sustainable practices?</td>
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<td>Business (2007)</td>
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<td>Business (2007)</td>
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<td>- What are the sustainability standards of your business partners?</td>
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### Resource Usage: energy, land, water

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<td>- Resource intensity of the product</td>
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<td></td>
<td>Positive Impacts &amp; Impacts</td>
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<td>- Material content and sustainability</td>
<td></td>
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<td>Positive Impacts &amp; Impacts</td>
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<td>- Can the material be recycled or reused?</td>
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**Redefining Our Industry**

Solutions through Collaboration, Innovation and Organization
Sustainable Development (SD) Roadmap

- The Roadmap
  - Categories concerning a new product and/or process sustainability

  - Developed by the Center of Sustainable Technology Practices (CSTP) team of the American Institute of Chemical Engineers
  - Team members include:

  - Continued testing is taking place
**SD Considerations**

<table>
<thead>
<tr>
<th>Environmental</th>
<th>Economic Impact</th>
<th>Resource Use</th>
<th>Management</th>
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<tbody>
<tr>
<td>Energy use, material intensity, water use, land use</td>
<td>Financials along value-chain (corporate, customers, …)</td>
<td>GHG emissions, air emissions, solid waste, (pollutant effects)</td>
<td>SD alignment with biz strategy &amp; core value, core competencies</td>
</tr>
<tr>
<td>Toxic reduction, hazards, process safety</td>
<td>Internal process, value-chain partnership, stakeholder engagement</td>
<td>Workers’ well-being, local community impacts/QOL, global societal impacts/contributions</td>
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<td>Societal Impact</td>
<td>Business Strategy</td>
<td>Health &amp; Safety</td>
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<td>Toxic reduction, hazards, process safety</td>
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<td>Social</td>
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<td>Workers’ well-being, local community impacts/QOL, global societal impacts/contributions</td>
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<tr>
<td>Business Perspective</td>
<td></td>
<td>Financials along value-chain (corporate, customers, …)</td>
<td></td>
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<td>Environmental Social Econ.</td>
<td></td>
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Elements of the SD Roadmap

Value Chain Stages →

Corporate Functions Axis
(from top to bottom, each box represents a different corporate function that is critical to driving sustainability in the organization)

- Executive Management
- Financial
- Business Management
- R&D
- EHS
- Engineering
- Manufacturing / Operations
- Logistics / Supply Chain
- Sales
- Customer Technical Service/Support
- Marketing
- Communications
- Public Relations
- Human Resources
- Legal
- Information Technology & Management
Upstream Input

18. Would customer/stakeholder concerns affect the future use of the feedstock?

- Willow-based ethanol industrial scale is very dependent on interest from investors, customers and potential farmers.
  - Willow feedstock initially would be grown almost exclusively on land being leased to the producers via private land owners and farmers. (Pioneering Energy Crops..., 2000)
  - Cooperation and the future of the feedstock are contingent on the confidence of landowners in the market for willow ethanol.
Sustainability Index: Benchmark for Industry

Calvin B. Cobb
President
Chair, AIChE Institute for Sustainability
AIChE Sustainability Index for the Chemical Industry
September 2007

Strategic Commitment

Environmental Performance

Safety Performance

Product Stewardship

Social Responsibility

Sustainability Innovation

Value Chain Management

Net Revenue > $10 Billion USD

Net Revenue < $10 Billion USD