Green Automotive Supply Chain for an Emerging Economy

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Research Problem

“To develop a green automotive supply chain for a start-up company planning to enter an emerging market, using an environmental management system optimized for its business context and scope.”
Methodology

1. What exactly is a green automotive supply chain?
2. Are there any pre-conditions for success?
3. What would it look like for VDS?
4. How can it be implemented and sustained?
The Product: VDS Vision 200

- 15,000 units
- Eco-conscious customer
- Advanced-technology powertrain
- Product configuration still in development
Pre-Conditions for Success

Biz Context Optimization

Lean Production

Env Cost Acctg

Green Solutioning

Identify best green solutions based on
- Effectiveness
- Efficiency
- Cost
Designing a Green Automotive Supply Chain

Lean Production

<table>
<thead>
<tr>
<th>SC Functions</th>
<th>Activities</th>
<th>Env Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Sourcing/Procurement</td>
<td>1. Collaboration with Suppliers</td>
<td>1. Pollution from suppliers’ supply chains</td>
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<tr>
<td>2. Raw Mat’l Transportation</td>
<td>2. Transportation</td>
<td>2. Engine emissions</td>
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<tr>
<td>3. Assembly/Manufacturing</td>
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<td>3. Industrial pollution and energy wastage</td>
</tr>
<tr>
<td>5. Product Recovery</td>
<td>5. End-of-Life Veh disposal</td>
<td>5. Pollution from ELV hulks</td>
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Proposed Green Supply Chain for VDS

- Select ISO14001-certified local Tier 1 suppliers
- Encourage suppliers without an EMS to implement one
- Become GSN Corporate Champion to learn and share lean production best practices with suppliers and their supply chain partners
- Design and build assembly/manufacturing facilities to LEED Green Bldg standard
Proposed Green Supply Chain for VDS

- Join SmartWay Transport Partnership to learn, share and implement energy-efficient and emissions-reduction best practices

- Use fuel-efficient technologies like aerodynamic cab design, low-viscosity lubricants, wide-base auto-inflating tires etc.

- Train truck drivers to drive economically and reduce engine idling

- Practice efficient transport scheduling, modes and route planning
Example of Green Transport Solution

- Engine supplier trucks to nearest rail node
- Intermodal (truck-to-rail) shipping to seaport
- Consolidate shipments and sea-freight via shortest route
- Use rail where land transportation within India is necessary
- Transmission supplier uses Nat’l Idle-free Corridors to minimize emissions
- Use coastal shipping to distribute cars to dealerships
- Locate assembly plant near port to minimize inbound land transportation

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Proposed Green Supply Chain for VDS

- Encourage dealerships to implement EMS for sales & servicing activities
- Indoor car storage to minimize washing
- Gather customer feedback for focused design of next product
Proposed Green Supply Chain for VDS

- Design Vision 200 with future dismantling and recycling in mind
- Close supply chain loop between Sales and Sourcing by recovering Vision 200 End-of-Life Vehicles (ELV) for proper disposal and component recycling
- Recover engines and transmissions for possible remanufacturing
ISO14001-compliant EMS adopted to provide an auditable framework for ensuring that the green solutions for each supply chain function are properly implemented and continuously improved upon.

**Scope of EMS for VDS**

- Environmental Policy, Objectives and Targets
- Organizational Structure & Responsibility
- Training Awareness and Competence
- Internal & External Communication
- Emergency Preparedness & Response
- Audit Management
- Review and Continuous Improvement

Planning
Execution
Sustainment
Recommendations

• Select supply chain partners carefully
• Optimize network to business landscape
• Leverage existing green solutions thru participation and partnership
• Discipline in applying ECA for environmental investment decision-making
• Discipline in adhering to EMS requirements and continuously improve on them
Questions?

Thanks!