The Triple Bottom Line of Sustainable Development:

Toward a Framework for Economic, Social and Environmental Sustainability in China

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“Capturing the Gains: Economic and Social Upgrading in Global Production Networks and Trade”
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Agenda

• Sustainable Development: Diverse Approaches

• China and Industrial Development: Economic Upgrading

• The Triple Bottom Line of Sustainability: China and Beyond

• Conclusion: Toward Sustainable Value Chains
Sustainable Development: Three Approaches

• Upgrading (economic + social + environmental)
  – Unit of analysis: Country, region, locality

• Corporate social responsibility (CSR)
  – Unit of analysis: Lead firms in diverse industries

• Sustainable value chains
  – Unit of analysis: entire supply chain, not just lead firms
#1. Upgrading

- Types of economic upgrading
  - Product & process upgrading
  - Functional upgrading
  - Chain upgrading
- Trajectories of upgrading
  - Assembly, OEM, ODM, OBM (manufacturing)
- Upgrading & downgrading
- Relevant literature:
  - Humphrey, Schmitz, Kaplinsky, Gereffi, Gibbon, Ponte
  - DFID project (economic + social)
Sustainable Upgrading: Three Dimensions

<table>
<thead>
<tr>
<th>Ecological</th>
<th>Social</th>
<th>Economic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protection of life support systems</td>
<td>Survival sustainability</td>
<td>Subsistence</td>
</tr>
<tr>
<td>Prevention of species extinction</td>
<td>Capacity to solve serious problems</td>
<td>Global</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Local</td>
</tr>
<tr>
<td>Maintenance of decent quality</td>
<td>Maintaining quality of life</td>
<td>Global</td>
</tr>
<tr>
<td>Maintenance of decent social quality (eg. vibrant community life)</td>
<td>Maintenance of decent standard of living</td>
<td>Local</td>
</tr>
<tr>
<td>Improving environmental quality</td>
<td>Improving quality of life</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Improving social quality</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Improving standard of living</td>
<td></td>
</tr>
</tbody>
</table>

Source: http://www.green-innovations.asn.au/sustblty.htm
Sustainable Upgrading: Metrics

<table>
<thead>
<tr>
<th>Economic</th>
<th>-Quantity of Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-Growth of Exports</td>
</tr>
<tr>
<td></td>
<td>-Growth of GDP</td>
</tr>
<tr>
<td>Social</td>
<td>-Quality of Jobs</td>
</tr>
<tr>
<td></td>
<td>-Improved Conditions of Work</td>
</tr>
<tr>
<td></td>
<td>-Growth of Incomes &amp; Wages</td>
</tr>
<tr>
<td>Environmental</td>
<td>-16 of world’s 20 most polluted cities are in China</td>
</tr>
<tr>
<td></td>
<td>-Half of the population lacks clean drinking water</td>
</tr>
<tr>
<td></td>
<td>-Over 50 years, China has lost half its arable land</td>
</tr>
<tr>
<td></td>
<td>-One-third of China suffers from acid rain</td>
</tr>
</tbody>
</table>
#2. Corporate Social Responsibility

- Unit of analysis: strategies of lead firms

- Relevant literature:
  - Barrientos (2003, 2006): corporate codes of conduct and ethical trade
## CSR Strategies: Four Types

<table>
<thead>
<tr>
<th>Mode</th>
<th>IN-ACTIVE</th>
<th>RE-ACTIVE</th>
<th>ACTIVE</th>
<th>PRO-ACTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate Self Responsibility</td>
<td>Corporate Social Responsiveness</td>
<td>Corporate Social Responsibility</td>
<td>Corporate Societal Responsibility</td>
<td></td>
</tr>
<tr>
<td>Objective</td>
<td>Cost, Control, risk aversion</td>
<td>Cost, control, quality</td>
<td>Control and quality</td>
<td>Co-development and quality</td>
</tr>
<tr>
<td>CSR % of purchases</td>
<td>&lt;5%</td>
<td>5-25%</td>
<td>25%-60%</td>
<td>&gt;60%</td>
</tr>
<tr>
<td>Supplier’s code of conduct strategy</td>
<td>Internal codes</td>
<td>Specific supplier codes</td>
<td>General supplier codes</td>
<td>Joint codification initiatives: dialogues</td>
</tr>
<tr>
<td>Specificity</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Compliance</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
</tr>
</tbody>
</table>

### Chain Liability

### Chain Responsibility

# SAP Sustainability Map

<table>
<thead>
<tr>
<th>SUSTAINABILITY PERFORMANCE MANAGEMENT</th>
<th>Assured Reporting</th>
<th>Benchmarks &amp; Analytics</th>
<th>Strategy &amp; Risk</th>
<th>Financial Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENERGY &amp; CARBON</td>
<td>Energy-Efficient Assets</td>
<td>Energy Management</td>
<td>Carbon Management</td>
<td>Smart Grids</td>
</tr>
<tr>
<td>PRODUCT SAFETY &amp; STEWARDSHIP</td>
<td>Product Compliance</td>
<td>Material &amp; Product Safety</td>
<td>Recycling &amp; Re-Use</td>
<td>Recall Management</td>
</tr>
<tr>
<td>SUSTAINABLE SUPPLY CHAIN</td>
<td>Procurement</td>
<td>Traceability</td>
<td>Commodity Trade &amp; Risk Management</td>
<td>Resource Optimization</td>
</tr>
<tr>
<td>ENVIRONMENT, HEALTH &amp; SAFETY</td>
<td>Environmental Compliance</td>
<td>Occupational Health</td>
<td>Industrial Hygiene &amp; Safety</td>
<td>Emergency Management</td>
</tr>
<tr>
<td>SUSTAINABLE WORKFORCE</td>
<td>Labor Compliance &amp; Rights</td>
<td>Diversity</td>
<td>Talent Management</td>
<td></td>
</tr>
<tr>
<td>IT INFRASTRUCTURE</td>
<td>Availability, Security, Accessibility, &amp; Privacy</td>
<td></td>
<td></td>
<td>Green IT</td>
</tr>
</tbody>
</table>

#3. Sustainable Value Chains

- Unit of analysis: entire supply chain, not just the lead firms

- Relevant projects:
  - Agro-food supply chains (food safety and quality)
  - Certified wood and “chain of custody”
  - Fair trade products (cocoa, coffee, bananas, garments)
  - NGO and Corporate partnerships (Oxfam, ETI, Cadbury, Unilever, Coca Cola)
  - Wal-Mart “environmental sustainability” initiative
The Footprint Chronicles were developed to document the changes we’re making as a company to lighten our environmental impact and do less harm. These chronicles are as much an inspiration to Patagonia employees as they are an outgrowth of our personal values. The “My Footprint” series shares the stories of Patagonia employees who have been inspired by the Chronicles, and whose inspiring lives help fuel the vision of what we can do as a company.
CHINA AND INDUSTRIAL DEVELOPMENT

Economic Upgrading and International Trade
The New Global Labor Market

• After 1989, 3 billion workers from China, India, Russia, and Eastern Europe – half of world’s labor force – joined the capitalist world economy

• Technological changes associated with the Internet greatly expanded outsourcing & offshoring options

• TNC business strategies have been unrelenting in their search for cost-based efficiencies, esp. on labor side, but they also are looking for new knowledge workers
Main Features of China’s Economic Development Model (1985-2009)

- Export-Oriented Industrialization
- Climbing the Value Chain
- Role of Foreign Direct Investment
  - Inward (e.g., autos; selected export sectors)
  - Outward (e.g., primary commodities)
- Endogenous Innovation & Environmental Sustainability
- Impact of Current Economic Crisis – New Development Strategy?
Mexico vs. China

- Head-to-head competition in U.S. market
- China is world’s leading exporter of many manufactures, esp. consumer goods
- China and Mexico are typically among the top three exporters to the U.S. market in many product categories
- China is moving ahead of Mexico with dominant market shares in the United States, especially in 2000-2008 period
Mexico’s Exports to the World: 1986-2008

Source: UN Comtrade.
China leads in low AND high tech sectors

Low Tech: Apparel

High Tech: Computers
Why is China gaining U.S. Market share over Mexico?

- China is a **lower-cost producer** overall (labor costs lower, but not transport & tariffs)
- China has **huge scale and scope economies** (supply-chain cities)
- China has a coherent and multidimensional **upgrading strategy** – diversify and add high value activities
- China is using **direct foreign investment** to promote “**fast learning**” in new industries
- China uses access to its **domestic market** to attract TNCs and promote **knowledge spillovers**
Value-Added Curve in Textiles

DISTRIBUTION of TEXTILE COMPLEX BUSINESS

- Research & Development
- Design
- Production
- Logistics
- Marketing
- Services
China’s Supply Chain Cities in Apparel

Made in China, Shipped Worldwide

The factory towns on the coast of China manufacture clothing to keep America’s closets full, making everything to wear from head to toe.

Factory orders, 2003

<table>
<thead>
<tr>
<th>Category</th>
<th>Order</th>
<th>Production</th>
<th>Total Sales</th>
<th>U.S. Exports</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEN’S WEAR</td>
<td>100</td>
<td>$600</td>
<td>$100</td>
<td></td>
</tr>
<tr>
<td>Zhucheng</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CASUAL WEAR</td>
<td>160</td>
<td>$260</td>
<td>$58</td>
<td></td>
</tr>
<tr>
<td>Haiyu, Changshu</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DOWN-FILLED PRODUCTS</td>
<td>26</td>
<td>$470</td>
<td>$290</td>
<td></td>
</tr>
<tr>
<td>Xintang, Hangzhou, Xiaoshan</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TIES</td>
<td>300</td>
<td>$1.21</td>
<td>$384</td>
<td></td>
</tr>
<tr>
<td>Shengzhou</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOCKS</td>
<td>9 billion</td>
<td>$1.57</td>
<td>$240</td>
<td></td>
</tr>
<tr>
<td>Datang, Zhuji</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNDERWEAR</td>
<td>969</td>
<td>$360</td>
<td>$290</td>
<td></td>
</tr>
<tr>
<td>Jinjiang, Shenzhu</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WEDDING DRESSES, EVENING GOWNS</td>
<td>510</td>
<td>$950*</td>
<td>$640+</td>
<td></td>
</tr>
<tr>
<td>Chaozhou</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JEANS</td>
<td>225</td>
<td>$1.04</td>
<td>$480</td>
<td></td>
</tr>
<tr>
<td>Xintang, Zengcheng</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

*Includes all textiles made in the city. †Wedding dress and evening gown exports only.

Sources: China National Textile Council; Shenzhu Underwear Association; Datang Town Government

MNC R&D Centers in China

• China: More than 1,000 MNC R&D Centers
  – GE’s China Technology Center: Advanced research in energy storage, environmental management
  – Microsoft Research Asia: Cutting-edge graphics & multimedia research

• What kinds of work are Chinese, Indian, and American engineers actually doing?
  – Answer: Not just product adaptation, but cutting-edge research & commercialization
China Is Climbing the Value Chain

• Moving from low-technology to high-technology manufactured goods

• Moving from manufacturing to high value services
  – R&D, design, marketing of national brands (autos, appliances, telecom), logistics, finance

• Moving from inward FDI (joint ventures & technology transfer) to outward FDI (primary commodities, computers, shipping)
But Beware...

- High tech exports don’t necessarily mean high value added production

  – CASE: China and the iPod

- Export dependence has economic growth and employment risks
China assembles all iPods, but it only gets about $4 per unit—or just over 1% of the US retail price of $300.

451 parts that go into the iPod

Hard Drive by Toshiba ➔ Japanese company, most of its hard drives made in the Philippines and China; it costs about $73 - $54 in parts and labor -- so the value that Toshiba added to the hard drive was $19 plus its own direct labor costs.

Video/multimedia processor chip by Broadcom ➔ American company with manufactures facilities in Taiwan. This component costs $8.

Controller chip by Portal Player ➔ American company with manufactures. This component costs $5.

-Final assembly ➔ done in China, costs only about $4 a unit.

The unaccounted-for parts and labor costs involved in making the iPod came to about $110.

The largest share of the value added in the iPod goes to enterprises in the United States ➔ $163 of the iPod’s $299 retail value in the United States was captured by American companies and workers, breaking it down to $75 for distribution and retail costs, $80 to Apple, and $8 to various domestic component makers.

The bulk of the iPod’s value is in the conception and design of the iPod. That is why Apple gets $80 for each of these video iPods it sells, which is by far the largest piece of value added in the entire supply chain. Apple figured out how to combine 451 mostly generic parts into a valuable product.

China’s Current Economic Crisis

• Decline in global demand for Chinese exports

• Growing unemployment in China’s export industries

• Return migration of laid off factory workers to rural areas

• Not enough jobs for college educated population

• Heightened awareness of environmental problems
## Unemployment in China – 2009 (estimates)

<table>
<thead>
<tr>
<th>Category</th>
<th>Estimate</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Migrant Workers</td>
<td>20 M</td>
<td>“Over 15% - or 20 million workers – of the nation’s pool of some 120 million migrant workers” have lost jobs in coastal export manufacturing businesses (Job losses increase potential for unrest in China's Guangdong - Xinhua 2009). Reportedly, up to 25-33% are unemployed (China: New Subsidies To Help Unemployed Millions 2009), other reports estimate 26 million</td>
</tr>
<tr>
<td>Urban Workers</td>
<td>8.9M</td>
<td>The urban jobless rate in China rose to 4.2 percent at the end of 2008, the first rise in five years and the highest rate since June 2006 (Blanchard 2009) / (Wang, Wu, and Chen 2009)</td>
</tr>
<tr>
<td>College Graduates</td>
<td>8.1 M</td>
<td>7.1 million college graduates seeking work along with 1 million graduates who were unable to find work last year (Yanping and Hamlin 2009)</td>
</tr>
<tr>
<td>Total</td>
<td>37.0M</td>
<td>Estimate of total unemployment based on reports</td>
</tr>
</tbody>
</table>
THE TRIPLE BOTTOM LINE OF SUSTAINABILITY

China and Beyond
Why Sustainability Matters for China?

• External conditions
  – The leading supply base for many MNCs
  – Growing concerns for China’s social and environmental conditions
  – Potential impact on global sustainability due to its big-country effect (area, population, resource use)

• Internal conditions
  – Need for balanced development: export/domestic market; coastal/inner area
  – Lacking natural resource and low energy efficiency
  – Low “lock-in” in high-carbon economies as opportunity
Determinants of Value Chain Sustainability

1) GVC lead firms
2) Regulatory structures
   – International organizations
   – National policies
   – Standards and certifications
3) NGO pressure or partnerships
4) Local institutional factors
   – Political, legal, educational, technological
5) Societal values
   – E.g., EU vs. US (climate change, risk w/ GMOs)
Three Approaches toward Sustainable Development in China

1. Beyond economic upgrading (multiple drivers)

2. CSR model (externally driven)

3. National sustainability model (internally driven)
#1. Beyond Economic Upgrading

- Link economic upgrading with social and environmental upgrading
  - Skill-based upgrading + decent work
  - Competiveness + environmental sustainability
Economic Upgrading and Types of Work

Figure 2  Hypothesized Workforce Composition Across Different Industries

Source: Stephanie Barrientos, Gary Gereffi, and Arianna Rossi. 2008. "What Are the Challenges and Opportunities for Economic and Social Upgrading?" Presented to 'Capturing the Gains' Manchester Workshop, December 8-9, 2008.
Three Scenarios of Social Upgrading

An improvement in the type of work performed may not correspond to social upgrading. It may occur in lower skilled work and may not occur in highly skilled work.

Source: Stephanie Barrientos, Gary Gereffi, and Arianna Rossi. 2008. "What Are the Challenges and Opportunities for Economic and Social Upgrading?" Presented to 'Capturing the Gains' Manchester Workshop, December 8-9, 2008.
#2. Corporate Sustainability Model

- Major multinational firms are under growing pressure from consumers and NGOs to improve their social and environmental performance.
- China is the leading supply base for many MNCs.
- China can consolidate its economic position by simultaneously strengthening its social and environmental standards.
- In short, China can create a “market for high standards.”
SUPPLY CHAIN SUSTAINABILITY

**Global Warming** - Working to stop or reverse the growth curve for heat-trapping greenhouse gas emissions

**Packaging** - Creating tracking metrics for understanding and communicating the overall solid waste, greenhouse gas and environmental health impacts of packaging changes

**Toxic Materials** - Creating a system that will allow Wal-Mart to assess and reduce the toxic components in products while fostering continuous improvement and product innovation

**China** - Improving environmental performance at the 30,000 Chinese factories that supply Wal-Mart and building a purchasing system that rewards suppliers with environmentally preferable products

Source: edf.org
#3: National Sustainability Model

- China can build links between the “green economy” and the “real economy” (manufacturing & services)

- China increases its potential to innovate in the new growth area of “environmental technologies”

- China can solve pressing problems of environmental degradation
Rapid Growth of Environmental Certification in China


CONCLUSION

Toward Sustainable Value Chains
What Can Governments Do to Promote Sustainable Development?

• Provide better information to citizens, consumers, and SMEs on products, labels and markets

• Help smallholders and firms at the bottom of chains become certified to meet international standards

• Promote and enforce good environmental and labor regulations to create “a market for standards”

• Support sustainability objectives of international organizations (e.g., ILO’s Decent Work program in Cambodia)
NGO & Corporate Partnerships: Coalitions Promoting Sustainable Development

• Cadbury and sustainable cocoa production in Ghana (2008)
• Oxfam GB and Unilever in Indonesia (2005)
• Oxfam America and Coca Cola / SAB Miller in Zambia and El Salvador (2009)
• EDF (Environmental Defense Fund) and CGGC (Duke) to study “clean technologies” & US jobs (2008-09)
Crisis as Opportunity

• Use the current crisis to reorient China’s national development model
  • Move labor-intensive industries to rural areas
  • High-tech upgrading and innovation in coastal areas

• Develop external partnerships to promote social & environmental upgrading

• Develop clean technologies at national level
  • Link Chinese supply base with “green” products

• Implement a “decent work” agenda to spread gains broadly
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