

Design for Sustainability: Moving Beyond DfEHS

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Topics

- **DfESH Defined.**
- **History of DfESH in Electronics Industry.**
- **Sustainable Development Defined.**
- **Why Sustainability Now?**
- **Benchmark Results.**
- **Conclusions.**



What is Design for ESH?

- **Concept introduced to electronics industry in late 1980s/early 1990s.**

“A systematic management approach for evaluating and mitigating environmental, health and safety concerns at the earliest possible stages in a process design or product lifecycle.”

Mendicino, et. al., 3rd Annual SSA Texas Hill Country Conference, October, 1995.



History of DfESH in Semiconductor Industry

- **1994 National Technology Roadmap for Semiconductors called for “Integration of DfESH into semiconductor product design” by 2004.**
- **1996 establishment of NSF/SRC Engineering Research Center in Environmentally Benign Manufacturing.**



What is Sustainable Development?

“Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

Source: Brundtland Commission, 1987



Why Sustainability Now?

- **Electronics Industry is International.**
 - Sites in many regions of the world.
 - Customers in many regions of the world.
- **Increased awareness resulting in increased focus on corporate sustainability & responsibility.**
 - Company driven.
 - NGOs.
 - Shareholders.
- **While US environmental regulations have changed little in recent years, same is not true of other regions.**
- **Companies must broaden focus from EHS of products and processes to sustainable development.**



EU Sustainable Development Strategy Priority Challenges

- **Climate change and clean energy.**
- **Sustainable transport.**
- **Sustainable production and consumption.**
- **Public health threats.**
- **Better management of natural resources.**
- **Social inclusion, demography and migration.**
- **Fighting global poverty.**

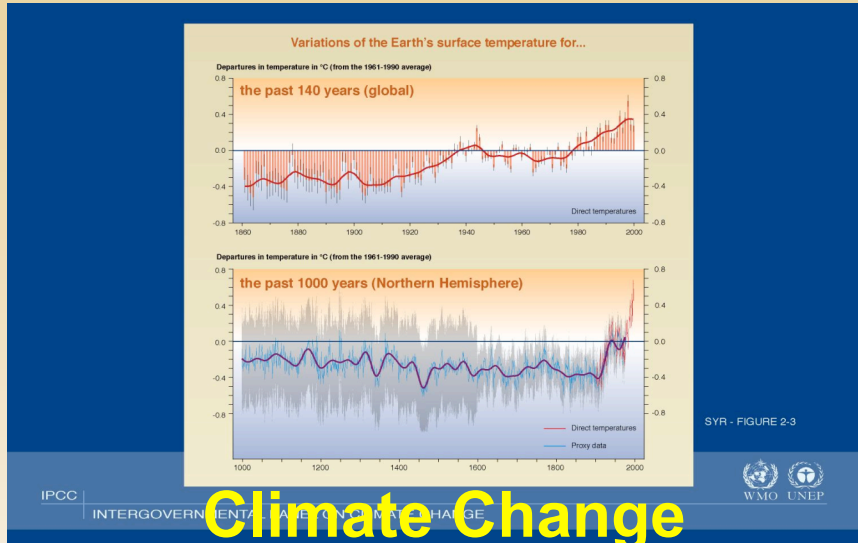


EU 6th Environment Action Programme

- **EAP provides strategic framework for EU environmental policy up to 2012.**
- **Identifies 4 environmental priority areas.**
- **EAP is Environmental Component of EU's strategy for Sustainable Development.**



EAP Environmental Priority Areas



Natural Resources & Waste



**Nature & Biodiversity
Environment & Health
& Quality of Life**



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EAP Thematic Strategies

- **7 Thematic strategies representing next generation of environment policy**
 - Air Pollution (adopted 21/09/2005).
 - Prevention and Recycling of Waste (adopted 21/12/2005).
 - Protection and Conservation of the Marine Environment (adopted 24/10/2005).
 - Soil (adopted 22/09/2006).
 - Sustainable Use of Pesticides (adopted 12/07/2006).
 - Sustainable Use of Resources (adopted 21/12/2005).
 - Urban Environment (adopted 11/01/2006).



Summary of Sustainability Drivers

- **DfESH focused on addressing ESH aspects of PRODUCTS and PROCESSES.**
- **Design for Sustainability broadens the focus beyond products and processes to:**
 - Design of facilities;
 - Energy and natural resources consumption;
 - Transportation issues;
 - Social issues.
- **If companies are not adopting sustainability strategies on their own, governments will drive them to.**

WHAT ARE ELECTRONICS COMPANIES DOING TO INTEGRATE SUSTAINABILITY INTO BUSINESS PRACTICES?



2006 Benchmark of Electronics Industry ESH Organizations

- **ESH Organization Benchmark conducted 1Q2006.**
- **15 multi-national companies participated**
 - US, Europe and Asia based companies.
 - 6 semiconductor equipment manufacturers.
 - 9 electronics manufacturers including semiconductors and electronic products.
- **ESH organization structure and focus including CSR and management of contract manufacturing.**



CSR Organizations

- **7 have CSR organizations separate from ESH reporting to:**
 - Quality and CSR (2).
 - Legal (1).
 - HR and Community Affairs (3).
 - Global Operations (1).
- **1 participant embeds CSR in Procurement, Corp. Env. and HR organizations.**



CSR Laggards

- 6 of 15 participants had <0.05 Fulltime Equivalent (FTE) headcount (HC) addressing CSR.
- 6 participants had no CSR metrics.
- 7 of 15 participants do not have CSR programs (either no HC focused on CSR or no metrics).
- **Characteristics of Lagging Participants:**
 - In 6 of 7, ESH reports to operationally-focused organizations (Facilities, HR, Real Estate, Legal) rather than orgs. focused on stakeholders or customers.
 - **ALL 7 companies are U.S. based.**



CSR Leader Metrics

- **Participants with broad CSR programs track and report following categories of metrics:**
 - Company financial performance.
 - Charitable donations.
 - Employee demographics.
 - Company EHS performance including:
 - Environmental Ops Metrics;
 - Product environmental metrics;
 - Employee safety metrics.
 - Supplier CSR.
- **One participant uses 3rd party to audit ESH data.**



CSR Leaders and Contract Manufacturing

- **13 Participants reported outsourced or contract manufacturing.**
- **Benchmark Leaders addressing CSR for Contract Manufacturing:**
 - Develop specific CSR requirements for key suppliers and contract manufacturers;
 - Develop and implement supplier CSR audit systems including self audits and Participant led site audits;
 - Track and report supplier CSR audit results and conformance; and
 - Consider partnering with others in their industry to adopt uniform supplier CSR standards and to share results of key supplier audits.



Final Thoughts

From “Beyond The Green Corporation,” January 29, 2007, *Business Week* cover story:

- **Assets of socially responsible mutual funds increased:**
 - \$12 billion in 1995;
 - \$178 billion in 2005.
- **Sustainability factors “...show that companies tend to be more strategic, nimble, and better equipped to compete in the complex, high-velocity global environment.”**



Conclusions

- **DfEHS is Product and Process-focused.**
- **New paradigm of Design for Sustainability broadens focus to include:**
 - Climate change and clean energy.
 - Sustainable transport.
 - Sustainable production and consumption.
 - Public health threats.
 - Better management of natural resources.
 - Social inclusion, demography and migration.
 - Fighting global poverty.
- **As competitors in the global marketplace, US electronics companies must adopt the DfS paradigm to succeed or suffer the fate of the US auto industry.**

