Maximizing the Benefits of Environmental Management Systems through Life Cycle Assessment

Shirish Sangle and Arvind Nema

National Institute of Industrial Engineering (NITIE)

Vihar Lake, Powai

Mumbai-40087, INDIA

Tel: +91-22-8573371 Fax: +91-22-8573251

Email: shirishsangle@faculty.nitie.edu

- Environmental Management Paradigm Shift
  - Factory----Supply Chain----Life Cycle of Business
- Hence life cycle view and life cycle thinking is getting a prominent position in corporate board rooms
- Life cycle assessment (LCA) and Environmental Management System (EMS) are chain management tool.

Integration of Life Cycle Assessment and Environmental Management System

- The most fundamental changes in the field of Corporate Environmental Management have been in the ‘stakeholders’ and their expectation.
- With the enlargement of environmental stakeholders group, has come a change in stakeholders expectations
- Regulatory agency interests in compliance with applicable regulatory requirements have been augmented by concerns that go well beyond compliance

Salient elements of the extended / renovisioned environmental responsibility of a corporation

- Activities along forward and backward elements of a product life cycle chain
- Point organization → SCM → Networked organization (production-consumption chain) hence life cycle view in business organization is very important.

Environmental Management System

- EMS provides the opportunity for a corporation to continuously improve the environmental quality of its operations because the achievement of environmental quality increasingly supports the core business decision of corporation.

Is integration of EMS and LCA logical?

- Currently, EMS focuses on site operations mainly but keeping with renovisioned goal of corporate sustainability it is essential to integrate LCA with EMS.
- Such integration is quite logical as both LCA and EMS are chain management tools.

Why LCA?

- Industrial customers want to know the environmental consequences of products and services they buy.
- Companies may extend market share or reach new markets by making their products and services environmentally benign
- Companies can adopt a remanufacture approach to reduce the resource use and cost

What level of Integration?

- EMS is all about meeting environmental goals of a corporation by **all** the people at **all** the level at **all** all the time.
- LCA is all about assessing environmental consequences of at **all** stages of products and services .
- Integration of LCA and EMS means satisfying environmental stakeholders at each life cycle stages of products and services of a corporation

- Small incremental changes can make current products more environmentally benign.
- Focus on process changes that can significantly reduce the environmental impacts of many manufactured products.
- LCA can lead to radical changes in products, processes, or new manufacturing technologies by helping designers rethink the function of a product or new product concepts.
- These kinds of changes require lateral thinking but may offer mind boggling business opportunities.

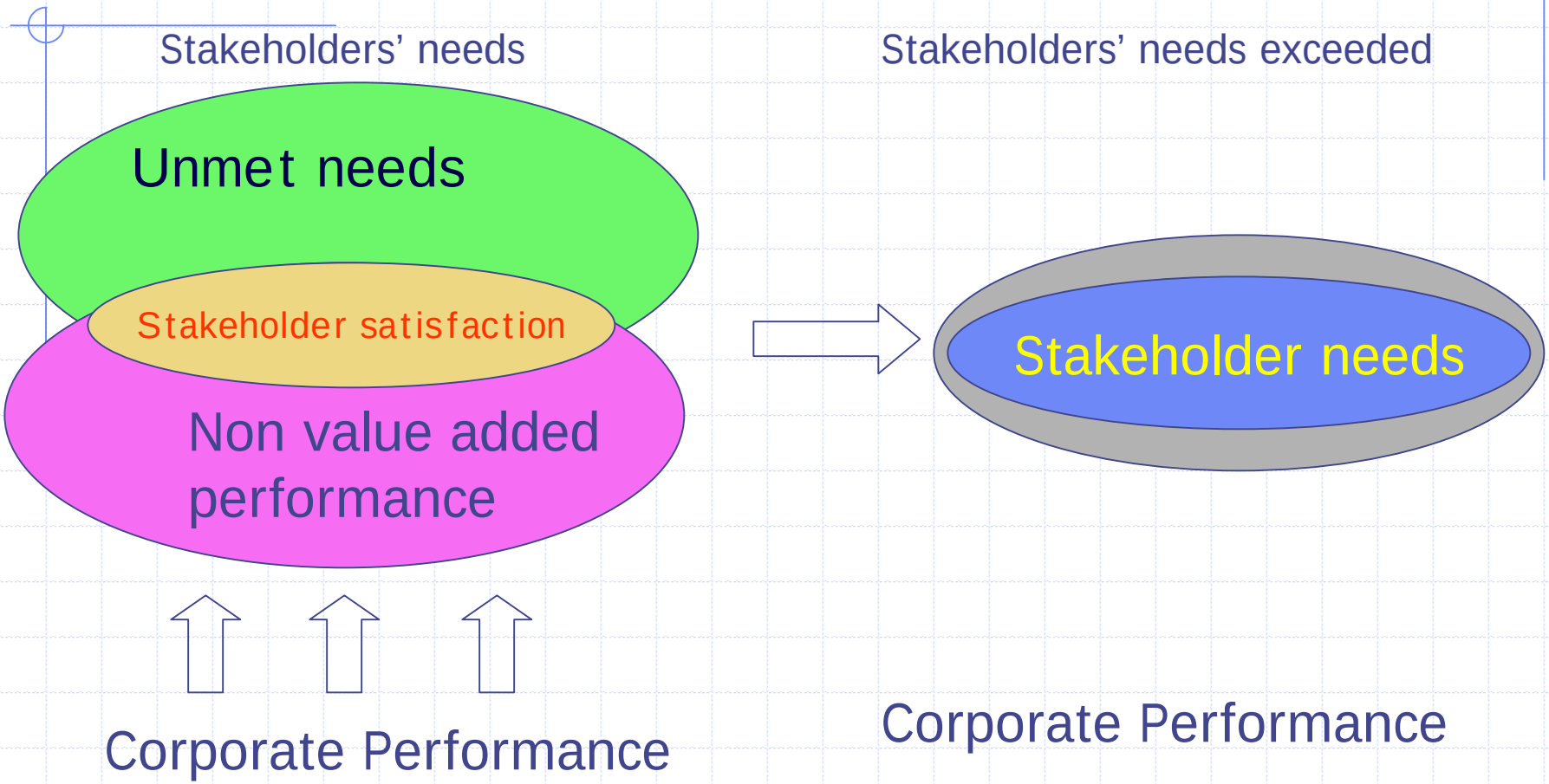
Integration of LCA and EMS

Integration of LCA with EMS involves:

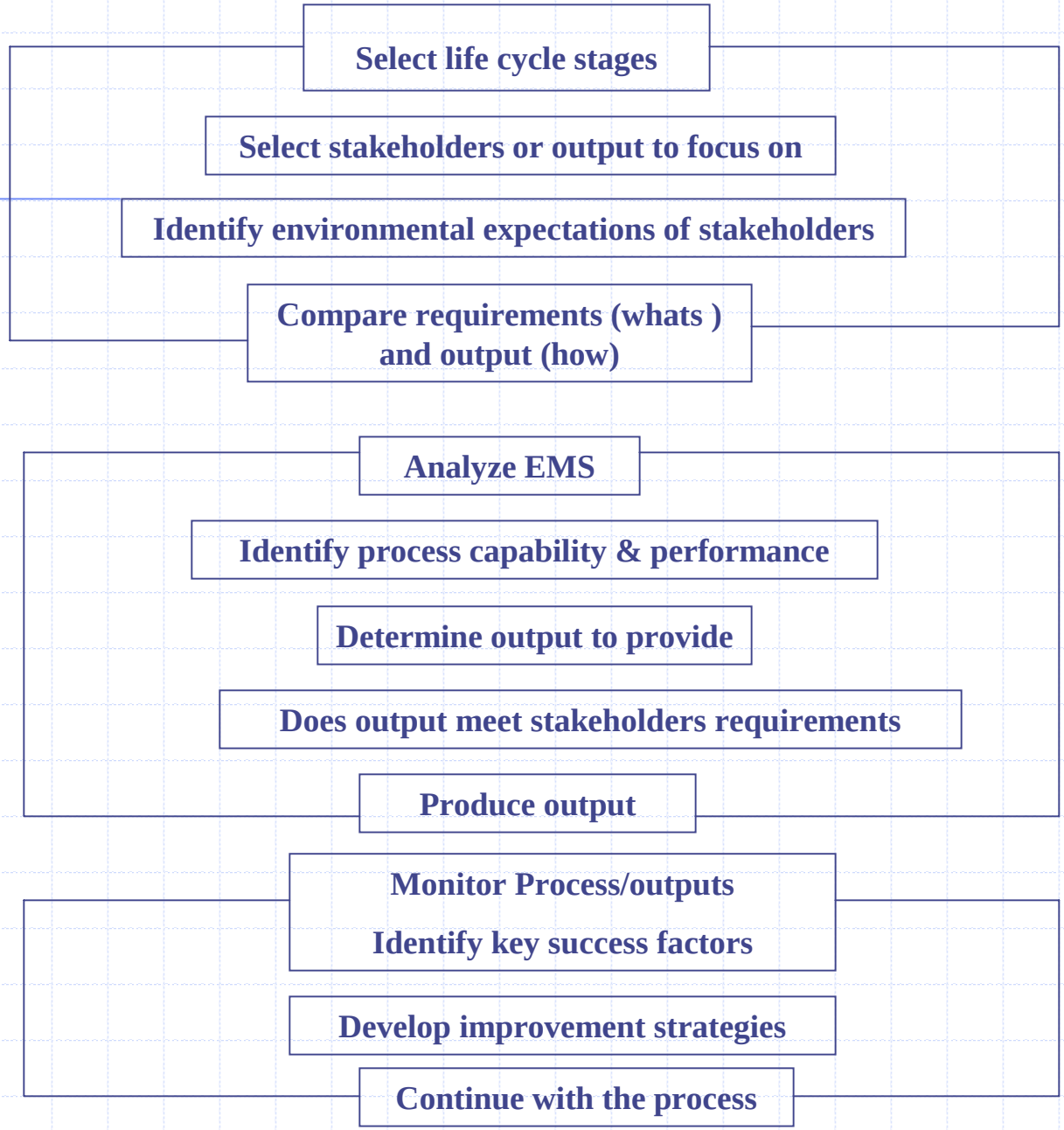
- To assess the environmental impacts of activities across the product life cycle using the expectations of stakeholders
- To measure the total stakeholders' satisfaction and navigate the organization's environmental programs within the MS framework

Environmental Performance is what the stakeholder says it is

"TQEM shifted its focus from pollution control to stakeholders' satisfaction"



- The life cycle view is critical; it allows one to identify opportunities that exist to minimize environmental impacts at various stages of products and services. By integrating LCA and EMS, one can internalize environmental issues throughout the life cycle of products and services into corporate thinking at all levels.



A three phase program for achieving stakeholder satisfaction

Challenges of LCA for an EMS

- EMS is management system and is evolved by the management's stated policies, goals, and objectives and may not necessarily support the use of life cycle tools.
- EMS is inward looking but LCA is outward looking and hence relationships, communication and effective management may be problematic.
- EMS is site specific and responsible for compliance and accomplishing envisioned goals, thus objectives may not address broader issues like life cycle.

How companies would benefit from such integration?

In principle all business organization may benefit from integration of LCA and EMS. However, the degree of benefits may vary from case to case. However, some examples are:

- Companies that manufacture product with high energy requirements during the use phase of the their life.
- Companies that require relatively high energy usage during the manufacturing phase of the product.

How companies would benefit from such integration? .....contd.

- Companies in which the customer is interested in environmental attributes of products and services
- Companies with products having disposal problems for the customers
- Companies doing business in international markets
- Companies working in environmentally sensitive or enlightened sector

How companies would benefit from such integration? .....contd.

- Companies in which environmental costs are quite high
- Companies using raw materials that are made from nonrenewble and nonrecyclable materials where the only disposal option is to landfill or burn the product after its useful life.

Final remarks

- Life cycle thinking offers important benefits of cost and liability reduction and market enhancement.
- EMS provide an framework for sustained improvement in environmental performance.
- Most of the EMS do not internalize life cycle oriented goals and objectives

Final remarks

...contd.

- Internalization of LC view into EMS enables organization to identify environmental stakeholders; understand their environmental concerns; deploy environmental improvement programs that maximizes the stakeholders' satisfaction and thereby reduce non value performance.

Final remarks

...contd.

- If EMS are going to improve environmental performance across the production-consumption chain, LC thinking is may be a better lever available.
- LCA needs the stability that a management system affords to be sustained in an organization.