
Chemical Management Services: Part of Re-thinking Operations

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Unsustainable Trajectory

- Material use (and corresponding energy and water use) is rising rapidly, driven by population and economic growth
 - Humans have consumed more resources over the last 50 years than in all previous history.
 - The U.S. consumes 1/3 of world's total material consumption.
- The Earth's systems – air, water and land – struggle to withstand the many resulting environmental problems.
 - Half the world's tropical and temperate forests are gone.
 - 75% of marine fisheries are overfished or fished to capacity, and 90% of the predator fish are gone.
 - Habitat destruction has contributed to species disappearing a thousand times faster than normal, something not seen since the dinosaurs disappeared.
 - PBT chemicals are found throughout the food chain and in pristine areas.

Unsustainable Trajectory

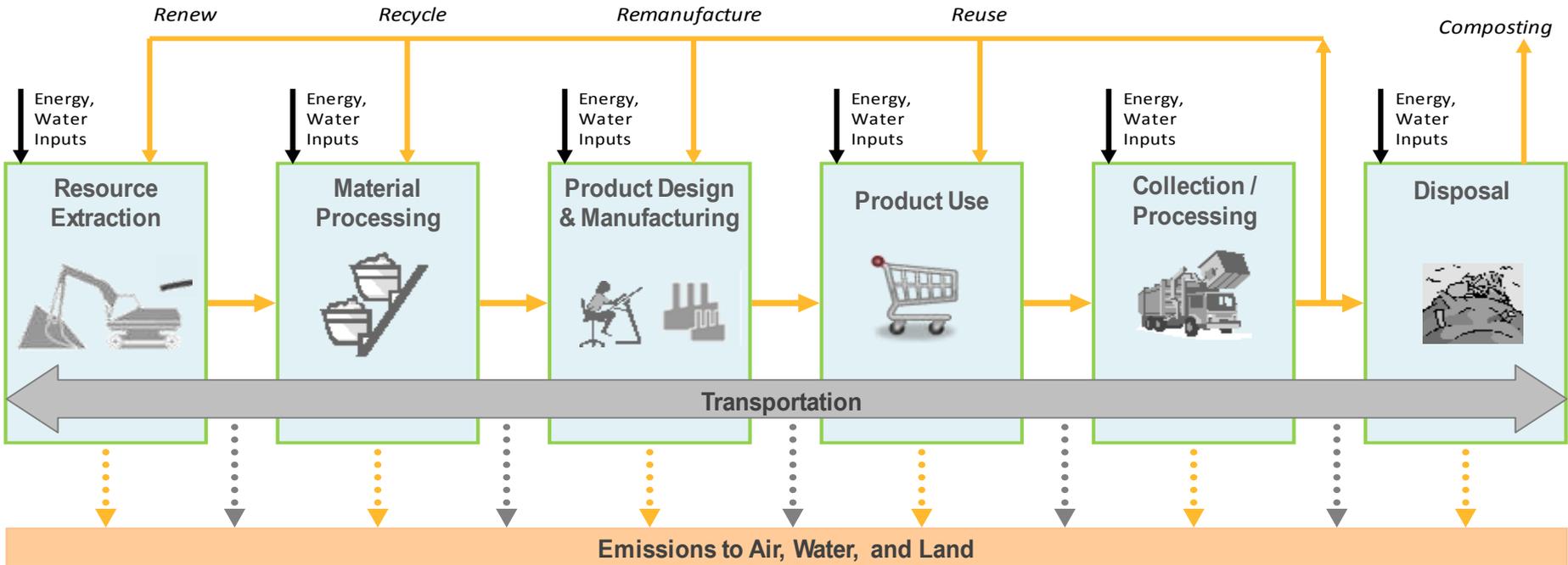
- Growth projections for 2050 (from a 2000 baseline):
 - World population growth: 50%
 - Global economic growth (rise of the middle class): 500%
 - Global energy and materials use: 300%
- Resource demands will only increase as developing nations industrialize and increase their consumption, along with increased potential for future supply shortages.

A Different Future is Needed

- EPA's "Sustainable Materials Management: The Road Ahead" report, the WBCSD's "Vision 2050" report, United Nations Sustainable Production and Consumption efforts have similar goals and conclusions:
 - "Business as usual" cannot continue; it does not bring us to sustainability or economic and social prosperity.
 - A systems approach is needed, and government needs to use its full range of policy instruments.
 - We must start now to achieve the necessary changes to minimize negative environmental impacts and unintended consequences of actions
 - We must fulfill our human needs and prosper while using less material, reducing toxics and recovering more. (SMM: The Road Ahead)
 - *"The radical changes highlighted in Vision 2050 demand a different perspective from business leaders, **requiring them to rethink how they operate to stay on-track for a sustainable future.**"* (Samuel A. DiPiazza, PricewaterhouseCoopers)

- "Materials management" means targeting and coordinating changes throughout the life cycle of materials, products and services.
 - Which materials to use
 - How to use less (materials, energy, water)
 - Reduce hazardous inputs and outputs
 - Design for longer life, refurbishability, recyclability

Life-Cycle Perspective



Source: U.S. Environmental Protection Agency

EPA's State Endorsed Report Recommends Governments:

- Begin managing materials and products on a life-cycle basis using present authorities.
 - Get current programs to deal with more of the life cycle and use market signals.
- Enhance capacity for the future
 - Improve data, tools, research, and internal/external processes.
- Accelerate public dialogue on materials management
 - Educate society on how materials management impacts the environment and the need to make changes.
 - Engage the business community to think across the life cycle, include more stages in the value chain.
 - Talk about using economic instruments to improve materials management.



“Must haves” for 2020

Political

Leadership and legislation

Economic

New success measures and pricing to incorporate externalities

Awareness, incentives and access

Social

Efficiency, innovation and proliferation

Technological

Change is happening

- Green Products
 - The movement is moving toward the life-cycle and multi-attribute.
 - They focus on labels, standards, and verification.
 - Companies (e.g., Walmart, Procter & Gamble) turning to the life cycle understanding (this includes chemicals)
 - EPA engaging, just held listening session with stakeholders.
- Climate change creating an the understanding of direct and embedded environmental issues.
- Consumers becoming more interested in the embedded environmental and social issues of what they buy. (e.g., Good Guide as a response)
- “Green economy” the new mantra for security and prosperity
 - Nordic countries investigating how to gain wider adoption of “green” business models – new forms of delivering value to businesses and consumers.

Federal Government: Lead by Example

- Federal Gov't Executive Order 13514
 - A new level of commitment by the Federal Government; establish an integrated strategy toward sustainability.
 - For chemicals, goals include:
 - Reduce/minimize toxic and hazardous chemicals acquired, used or disposed.
 - Implement integrated pest management and other appropriate landscaping management
 - Increase use of acceptable alternative chemicals and processes
 - Decrease use of chemicals that help achieve GHG targets
 - Reduce pollutants through source reduction.
 - Leverage procurement to foster markets for sustainable tech., environmentally preferable materials, products, services
 - Life cycle approaches
 - Need supply chain to be able to provide information so government can report progress – GSA exploring this.

CMS is Operational Re-thinking

- CMS superior to BAU, gets organizations moving down the sustainability path
 - Life-cycle approach
 - Supply chain relationship change
 - Decoupling material use from growth
- Both EPA's and WBCSD's reports refer to an increasing use of models that substitute services for products.
- EPA will also be engaging in dialogue's around wider market adoption of "green" business models.