A sustainable consumption and production strategy for South African construction products

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CSIR BUILT ENVIRONMENT
Outline

- Introduction to Sustainable Consumption and Production (SCP)
- International trends in SCP
- SCP in South Africa
- Lessons learnt
- SCP action agenda for South African construction products
Introduction to Sustainable Consumption and Production (SCP)

Attributes of consumption and production (economic) process

INPUT
- Material
- Energy

OUTPUT
- Product
- Air emissions
- Water effluent
- Solid waste

ECONOMY
- Manufacture
- Use
- Disposal

Prerequisites for SCP, i.e. “green economy”
- ✓ Resource efficiency
- ✓ Zero pollution
Introduction to SCP

Closed loop

Resource Extraction

Use

Manufacture

Disposal

Open loop

Disposal

Use

Manufacture

Resource Extraction

Life cycle of conventional human economy

✓ Inefficiency
✓ Excessive pollution

Life cycle of “natural economy”

✓ Efficiency
✓ Zero pollution
Introduction to SCP

Attributes of construction economy

Socio-economic benefits
✓ Construction products
✓ Job creation, contribution to GDP, etc

Environmental deficits (global)
✓ Raw materials use: 50%
✓ Non-renewable energy use: 50%
✓ Freshwater use: 40%
✓ Solid waste generation: 50%
✓ Air pollution (GHG): 40%
✓ Freshwater scarcity
International trends in SCP

The imperatives of SCP a.k.a. “the green economy” are globally endorsed.....

- UN, Stockholm, 1972
- Brundtland Report, 1987
- Agenda 21, 1992
- Kyoto Protocol, 1997
- WSSD, 2002
- Stern Review, 2006

But the approach to SCP is contentious..
- Prescriptive approach?
- Science-based approach?
International trends in SCP

Route 1: The prescriptive approach

Principle
✓ Pollution control (reactive)

Key features of prescriptive approach
✓ Fragmented perspectives on environmental management
✓ Subjective assessment criteria
✓ No step change (old framework, refined behaviour)

Key challenges
✓ Escalating resource deficits
✓ Uncontrollable pollution
✓ Escalating costs
✓ Outdated, but still in use
International trends in SCP

Route 2: The science-based approach

Principle
✓ Pollution prevention (pro-active)

Key features of science-based approach
✓ Systems perspectives on environmental management
✓ Objective assessment criteria

Key advantages
✓ Comprehensive
✓ Win-win for economy and environment
✓ Current environmental knowledge

Key challenge
✓ Step changes for entire supply chain
International trends in SCP
Life Cycle Assessment (LCA): the science-based tool

Why LCA?
✓ LCA is central to SCP (UNEP)
✓ LCA is a prerequisite for the life cycle or “green economy” – WSSD
✓ Flexible applications – suitable for product, process or service

What is LCA?
✓ decision-support for integrating environmental concerns into economic activity from cradle-to-grave
✓ International standard
International trends in SCP
LCA applications
International trends in SCP

Life Cycle Approaches - European Union policy

LCT application
Integrated Product Policy / Extended Producer Responsibility (EPR)

LCM applications
Design for Environment (DfE), Cleaner Production (CP), green procurement, Green marketing

LCA applications
Eco-labelling / Environmental Product Declarations (EPD)
LCA-based decision support tools, e.g. Life Cycle Inventory (LCI) databases
SCP in South Africa

National status

National environmental issues
- Material and energy intensive economy
- Water scarcity

National responses to environmental issues
- Pollution prevention policy
- Ratification of Kyoto Protocol
- Energy efficiency and LTMS
- LCA role – national standard, CP and EPR strategies

Key national challenge
- Mismatch between policy position and government action
SCP in South Africa

construction status

Environmental issues in construction
✓ Energy-related: Consumption (16%), GHG emissions (28%)
✓ Material-related: resource intensive, toxic emissions, high volume solid waste

SCP status in construction
✓ Energy efficiency Regulations
✓ Green Building Movement

Key construction challenges
✓ Green buildings from non-green supply chain
✓ Energy efficiency versus materials inefficiency
Lessons learnt

- Green building principles and new regulations cannot drive SCP in the construction sector
- Mindsets need to change from prescriptive to science-based
- Approaches need to change from fragmented efforts to shared responsibility
- The science-based approach is win-win – do more with less resources, cheaper operating costs
SCP action agenda for construction products

**Strategic considerations**
- LCT-based policy strategy for entire construction sector.

**Practical considerations**
- LCM strategies and techniques for each sub-sector

**Operational considerations**
- LCA-based decision support tools
- SA-specific LCA methods

**Key areas for policy and strategy shifts**
- Regulation, education
- Procurement, marketing
SCP action agenda construction products

Regulatory instruments
- Legal
- Financial
- Communication
- Structural
- Voluntary

Management policy
- Design for Environment
- Cleaner Production
- Green procurement
- Green marketing

Operational support
- SA-specific LCA methods
- Public LCI database
- LCA-based tools
Thank you