

**Sustainable
Production and Consumption
Systems:
Key Elements**

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State of current research

- **Underconceptualised**; no agreement on what SPCS is.
- „**Systems**“ everywhere: true but useless; just slogans.
- **Systems definition?**: network not just hierarchy; emergent not just linear properties; multi-featured not narrow-focus; goal-oriented not just comprehensive?; pragmatic not perfect? Problem with reduction to variables!!
- **SPC Systems definition?**: see summary...(very heterogenous)

Summary of current research

- **Flows:** e.g. Suh, Giljum (I-O); Fischer-Kowalski (ind metab)
- **Actors:** Various types (SCM; experimental)
 - Flows and Actors: natural sci/business studies
- **Institutions:** e.g. Cohen, Miller, Schor (retail-consumer interface); Layard („happiness“)
 - Institutions: social sciences

SPACES

(Chiang-Mai, Harvard SustSci,

Packard

Lebel et al.)

- Shrimp, coffee, energy, consumer behaviour, etc.
- No agreed model of SPCS; evidence that looking at the „whole“ is not the same as looking at the system.
- Reports 2007; may merge into Co-Op Project and/or SCORE.
- (cf. SCORE)

Conceptual core

- **R/U ratio:** Optimise for each use of resources, maintain total R within limits.
- ?? Value added and costs accrued >> „**Profit**“
- ?? Welfare actually experienced >> „**Consumer expenditure**“
- **Profit does not equal U+:** distortion, competitive dynamics, etc.
- **Expenditure does not U-:** irrational consumption, etc.
- **Problem:** track creation and consumption (etc) of value without money proxy (> ecol econ).
- Current research **cheats** and uses money proxy; and generally is a very **narrow** (prod-side) attempt to track value.

From impact management to demand (intensity) management

- **Impact management:** pollution (substitution, waste management), conservation of single-stocks (sci management), preservation (species and area protections).
- **Volume of resource demand** outweighs impact management success
- > Demand management required as separate agenda.
 - **Confusion:** Demand management used for impact management in some instances.
 - **Consider:** Symptom, Sector, Strategy, System

From consumer demand to systemic demand

- When (if) demand is understood as additional agenda to impact management, consumer demand is implicated (due to assumptions of economic model).
- **Tools:** fiscal, information, regulation.
- **Problems:** political!; technical (costing of impacts of overconsumption, „economic fist“ (displacement), etc)
- **Economic fist:** tax on consumer product could lead to factory shift to less regulated country.
- **Systemic demand:** no Factor-X, no services, unskilled consumption; systemic demand exists beyond consumer demand.

Formalising systemic consumption

- Where I = impact, R = resource use, P = production (physical), FS = functional surface (available value), UC = use consumption (use but not utility), U = utility/welfare, we have a **systemic resource consumption identity**:

$$I/R. R/P. P/FS. FS/UC. UC/U$$

- Systemic sustainable consumption requires optimisation of each parameter of this identity.
- This requires demonstration that economics, conventionally, does not do this directly, or at all.

Optimising systemic consumption

- **Formalise variables:** R/P, FS/US
- **Avoid shift to monetary proxy:** R/P (distortion, factor substitution, competition dynamics, path dependence, etc), U (non-autonomous consumption, priority (non-preference) consumption) etc)
- **New optimisation techniques:** e.g. functional surface/organisational efficiency, use consumption parity; spatial, institutional, behavioural.