



CALCAS: a Pan-European Project for innovation in the scientific framework of Life Cycle Analysis

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Context

- Environmental problems are worsening
- We need to act effectively and in time in order to progress towards the ultimate goal of sustainability
- The third revolution opens up options for new forms of governance, based on diffuse and broad availability of scientific, technical and administrative knowledge throughout society
- Supplying this information in a consistent way at all levels in society is a central issue for sustainability policies.
- Life Cycle approach is recognised as the most suitable model for providing environmental information because it takes into account the whole system of relations connected to a single choice
- ISO-LCA with its simplifications has been the driving power for LCA diffusion, but it has limitations regarding empirical mechanisms, spatial/temporal aspects and economic/social parameters.



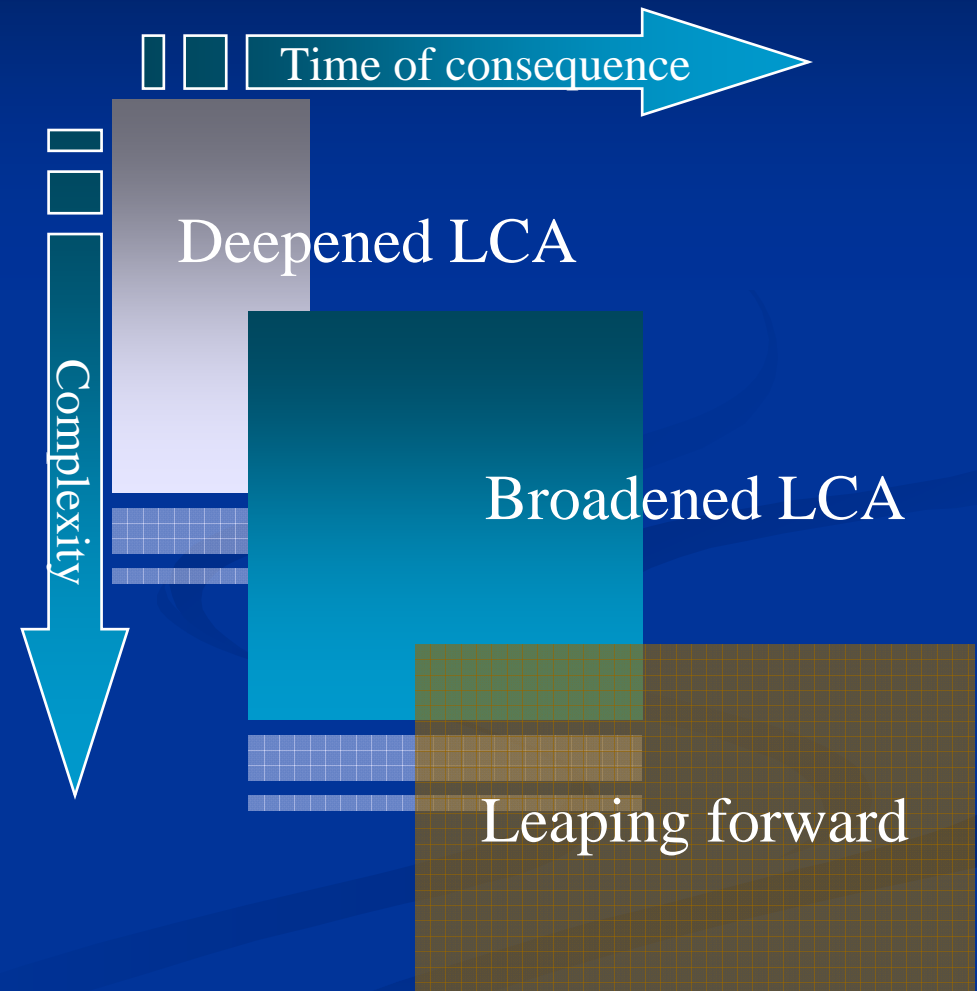
CALCAS objectives

- to develop (ISO-)LCA by
 - “**deepening**” the present model and tools (i.e.: including more mechanisms) to improve their applicability in different contexts while increasing their reliability and usability
 - “**broadening**” the LCA scope by better incorporating sustainability aspects (economic and social aspects) and linking to neighbouring models, to improve their significance
 - “**leaping forward**” by a revision/enrichment of foundations, through the crossing with other disciplines for sustainability evaluation.



New LCA

- Product
- Service
- System
- Industrialized technology
- New technology

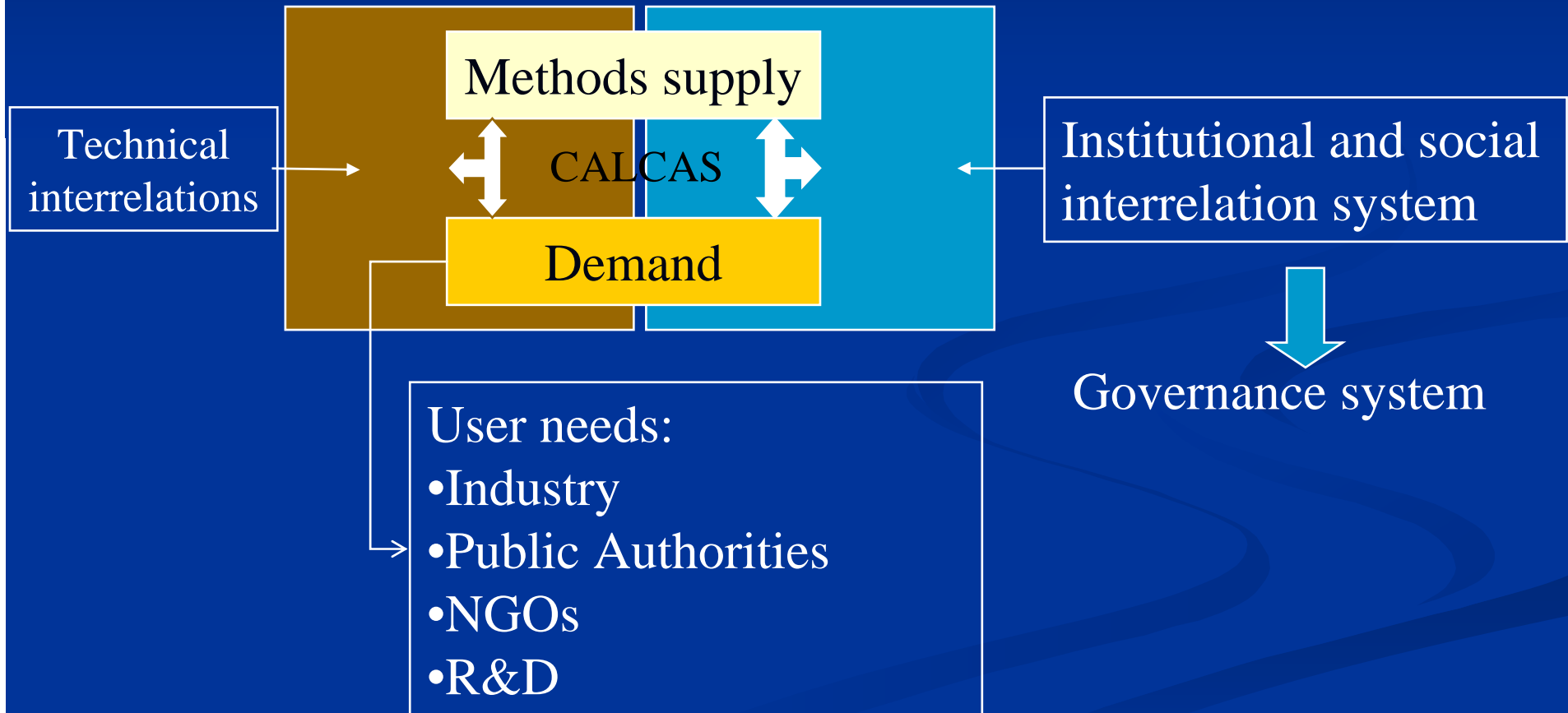


Partners

- ENEA (**Coordinator**)
- Institute of Environmental Sciences, Leiden University (**scientific co-ordination**) – CML;
- Swedish Environmental Research Institute – IVL;
- Wuppertal Institute for Climate, Environment and Energy – WI;
- Division of Technology, Industry and Environment United Nations Environment Programme – UNEP;
- Joint Research Centre, Institute for Environment and Sustainability - JRC IES;
- University of Manchester;
- ARMINES;
- Environmental Policy Research Center, Freie Universität Berlin - FFU;
- Instituto Superior Tecnico, Technical University of Lisbon – IST;
- European Science Foundation – ESF;
- Crystal Faraday Partnership – CRYSTAL;
- Institut für ökologische Wirtschaftsforschung gGmbH, Institute for Ecological Economy Research – IÖW.



Method



Method (cont.ed)

- Involvement of a broad scientific community (not limited to LCA domain)
- Involvement of main stakeholders (R&D, Industry, Technology Platforms, NGOs, Public Authorities, consumer associations)
- Organisation of thematic workshops
- Publication and consultation on a “Blue Paper on New LCA”
- Promotion of a pan European LCA Network



Scope of CALCAS

- Environmental, economic and social aspects:
 - The prime focus is on the environmental pillar
 - Economic aspects are covered both from a collective, a governmental and a private perspective.
 - Social aspects are more in a stage of conceptual development. CALCAS will contribute to that development, by indicating which aspects can be covered now in different life cycle approaches, and which cannot.
- Governance:
 - covers all types of governance, at all levels of decision making, and for all questions arising there. The focus is more on clarifying these complex relations than on filling in one part as a detail.
- Principle of coherence
 - Link micro level decision to macro level sustainability target



Scope of CALCAS (2)

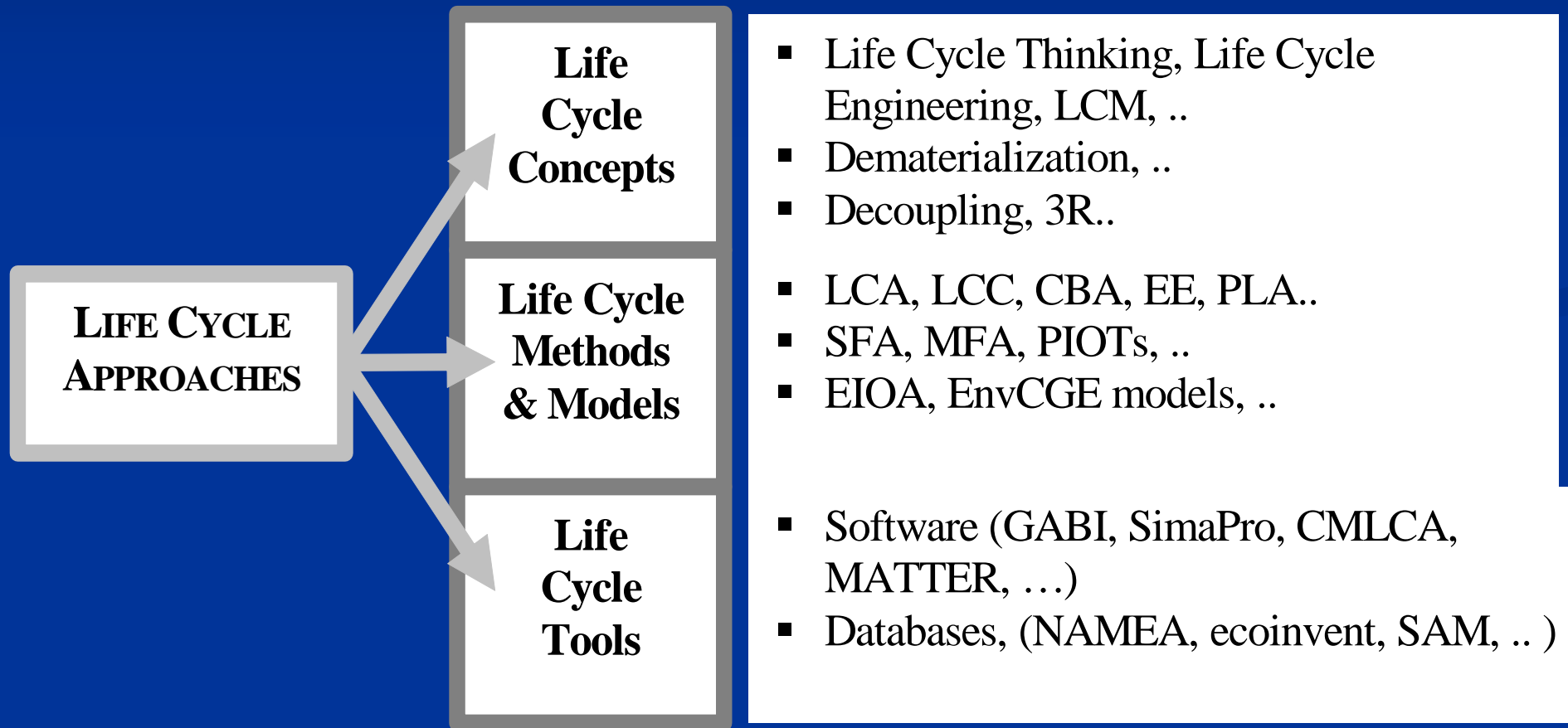
- Broadening LCA:
 - Steps towards including more types of sustainability aspects will be investigated actively and in depth.
- Deepening LCA:
 - The steps towards including more mechanisms and detail will first search for options within the realm of steady state or comparative static equilibrium analysis as central modelling mechanism.
 - Steps going beyond the steady state analysis, will primarily be investigated at a conceptual level only, to see what might become possible.
- Emphasis on methods and models:
 - Clarify the options and structure for demand and supply of information, and to indicate how most relevant operational models may be developed for actual decision support
- Demand driven:
 - The demand for life cycle based sustainability information guides the supply, not the other way around.



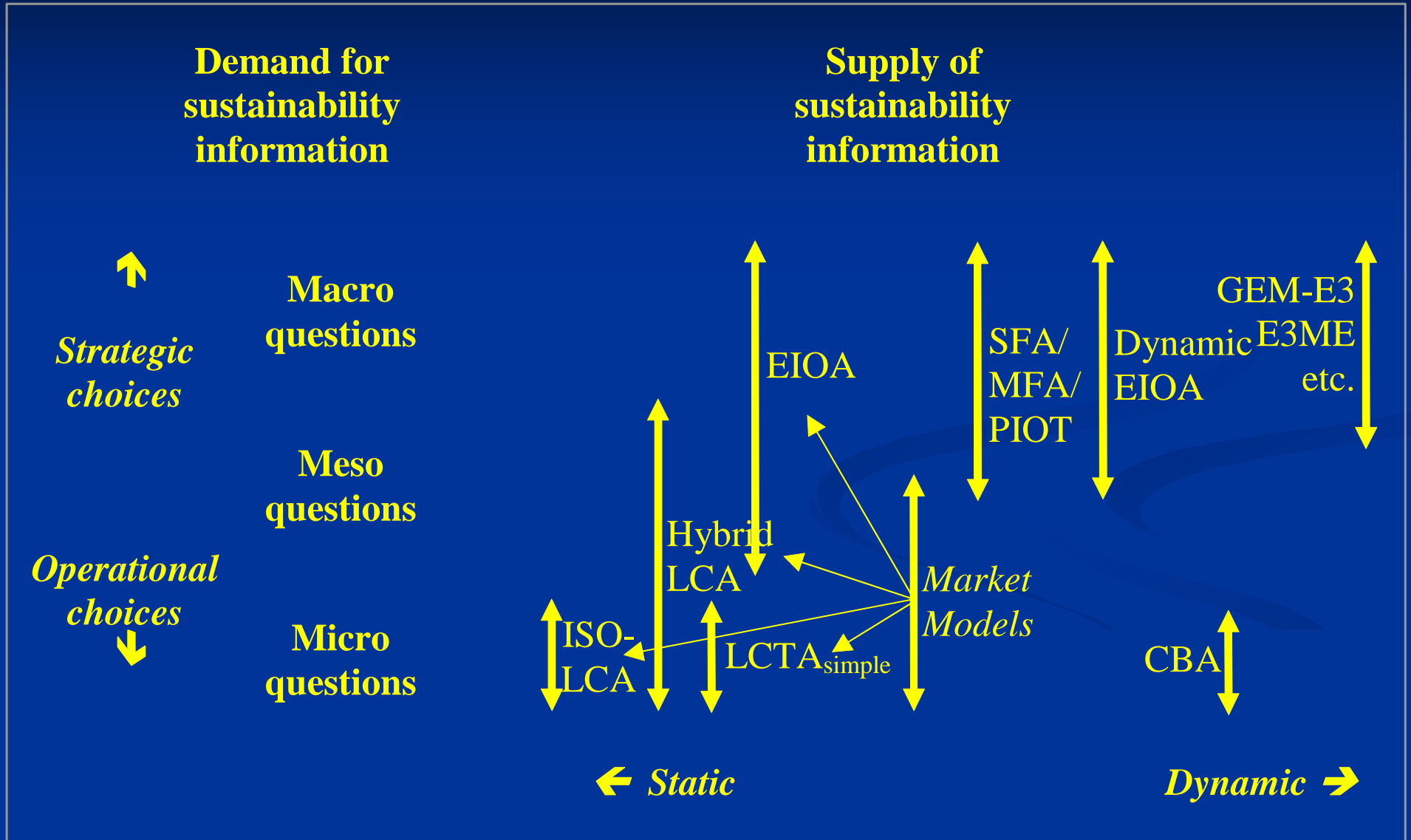
Other life cycle approaches: levels

Hierarchy:

Examples:



LCA & 'other models'



Structuring the demand for sustainability assessment

- The nature of sustainability information
 - Three domains (environment, economy, society)
- Levels of questions:
 - Micro
 - Meso
 - Macro
- Do we need predictive models or models supporting us to reach a defined goal, i.e. the sustainable development?
- Quantitative measure or an insight of the complexities of the system under assessment, the interconnections, the feedbacks, etc?
- Integrated assessment of environmental, economic and social issues or keep separate the three aspects?
- Comparative tool?



Demand (2)

- Types of questions
 - Retrospective or prospective
 - Single product or product families
 - Justification of what produced or innovation support
 - Simple product or larger scale consumption
 - Functional Unit or totals
 - Effects on the environment of the product or understanding the place of the product in overall sustainability performance of society
 - Time:
 - Past, present, future
 - diachronically - synchronically
 - Satisfying (“enough improvement”) or optimising/maximising
 - Optimising – choosing
 - Operational choice - strategic choice
 - Time horizon of question



Demand (3)

- Type of decision makers
- Inputs of policies and institutions for the construction of LCA
- Analyses of LCA as a knowledge base for sustainable governance

*WORKSHOP: GOVERNANCE AND LIFE CYCLE
ANALISYS*

Opportunities for going beyond ISO-LCA

Brussels, 27-28 September

Call for paper open till 18 May



Integration of environmental, economic and social aspects or not?

- Hard integration of environmental, social and economic aspects : one single model
- Soft integration: at level of valuation (e.g. monetarised)
- The rationale behind the (hard) integration in a single framework is:
“if there is a mutual influence, you cannot study them separately and get a correct picture of how the society/ economy/ environment system as a whole will behave. Only the study of the whole system as one feedback system will lead to relevant results.”
- But, while environment is ruled by physical relationships, economy and (more) society does not follow physical rules.
- Soft integration: simplification in the interpretation but requires a knowledge of the relations among the indicators
- Separated assessments but with a common background to assure coherence among them?



Aknowledgment and contact

- This presentation is based on authors' synthesis of CALCAS documents written with the contribution from all the CALCAS partners.
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(soon available)

