

Inventory and the Environment

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The Special Session aims to identify principles and structures so that the future environmental inventory studies have a basis on which to build. The world is facing important and urgent problems related to the environment. The use of resources, global warming and the creation of waste and pollution need to be reduced as quickly as possible. Can the inventory community contribute to inventory decision making that will help to improve the environment? Can we identify and formalise what needs to be done?

Although it is clear that inventory decisions affect the environment in a range of ways, relatively little work has been done that focuses on making inventory decisions as environmentally friendly as possible. Inventory decisions affect travel, pollution and waste according to the location of stores and factories, the choice of suppliers, ordering quantities and ordering frequencies, and the treatment of obsolescent stock. It is important therefore to consider whether inventory researchers can do anything to improve inventory decision making so as to minimise bad environmental consequences. Specifically, how should we measure the performance of inventory systems so as to encourage good environmental decision making? More fundamentally, how can inventory decisions seriously reduce environmental problems unless there is closer integration of inventory decisions with design, manufacturing and the rest of the logistics chain? If so, will different management structures be required in order to be able to plan and operate the integrated system?

Possible 'Inventory and the Environment' topics

- Structural bases for representing the problems
- A survey of inventory problems that have environmental implications
- Metrics for inventory models. Cost is the usual economic measure for making environmental decisions. What metrics are appropriate for assessing environmental influences and suitable for inventory analysis? Is carbon footprint a useful measure? Could exergy be a more useful environmental measure? How will these new measures change objective functions? What will be the impact of environmental metrics on inventory modelling? For example, would environmental inventory models choose order quantities to minimise some environmental measure? By how much could inventory decisions improve environmental performance?
- What are the effects of the logistics chain, transport, and plant and stores locations have on the environment and how do these inter-relate with e.g. stores organisation, routing problems and delivery strategies? Will energy requirements for travel influence changes in the locations chosen for product production and stores? Could energy use have effects on globalisation?
- Can we determine priorities for the problems that need to be tackled? How much of the analysis can be general and how many of the investigations need to be done on an industry by industry basis?
- Production processes affect the release of carbon dioxide, methane and other greenhouse gases from fossil fuels. Will the effects that clean energy options and policies could have on energy usage and wastage encourage new technologies? Will such new technologies chosen for environmental reasons affect product life cycles?
- Environmental problems could encourage product simplification and standardisation of design. How will designing products for re-use, remanufacture and multiple recyclability affect decision making?
- What advantages could arise from integrating inventory, production and logistics? What is the potential for integrating these with design and with materials engineering so as to ease recyclability? Other areas of concern: management issues, economic issues, motivational issues, incentives and disincentives to encourage policy changes, etc.

If you are interested in joining this session, then please do the following:

- Submit your abstract via the web site for the ISIR conference: <http://www.isirsymposium2012.hu>.
Deadline: **March 31, 2012**. When you submit you can denote that you want to join the session on **Inventory and the Environment**

- By the end of April 2012 you will hear whether your abstract has been accepted and whether it is incorporated in the requested session.

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