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## **Of the Products and the Production of Tomorrow**

The article presents views on how to adapt the products and their development into the concept of sustainable development. Environmental assessment of products is discussed from a methodological point of view and practical experiences of organisational aspects in product development are presented.

The question of what the nominator in assessing the environmental loads of products should be is addressed. Examples of using the material outcome, functional unit as well as employment are used. A connection to a defined target-level of material well-being is pointed out and the value of employment is discussed.

The concept of sustainable development is considered from the point of view of ecology. Criteria for weak and strong sustainability are presented as well as principles of interpretations derived from the concept. The principles are used to describe the criteria the future product systems should fulfil. Attention is given to the problem of taking sufficiently into account the growth of entropy in the studied product systems.

The latter part of the article presents practical experiences concerning critical managerial and organisational aspects of establishing a product development organisation capable and willing to manage the environmental aspects in a consistent manner.

The phases of requirement specification and implementation in product development are discussed and the roles of higher management, project management and environmental specialists are treated. As product development process is a sequence of compromises, the need for clear target setting and communication is emphasized. Product evaluation criteria may include simple compliance and customer requirements, target setting for single emission or impact category, and full scale Life Cycle Assessment (LCA). LCA is shown to have its applications also in commercial R&D work. The target values can be derived from the course of incremental development or from the principles of sustainable development.

The production process is regarded as an integral part of the product. Only few specific requirements for production have been defined, however. Firstly, all environmental loads should be allocated to the products of a company instead of regarding them as overheads. Secondly, there is good reason to expect that the environmental load of a product will grow rapidly as a cost factor, and thus the reduction of the load will be an essential factor of competitiveness.

Finally the article considers the role of consumers as catalysts of company efforts. The various eco-labelling schemes are presented. Product declarations are pointed out as means to shift the responsibility of judgement to the consumers and simultaneously to deliver the information to the market more rapidly.