

# ENFORCING SUSTAINABLE DEVELOPMENT BY LEGISLATION: ENTREPRENEURIAL CONSEQUENCES OF THE NEW GERMAN WASTE MANAGEMENT ACT



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The new German Closed Substance Cycle and Waste Management Act can be regarded as an effort on the part of the Federal Government to implement the concept of sustainable development in the business sphere. The Act introduces new regulations to substantial areas of entrepreneurial waste management activities by broadening the entire national waste concept, setting new priorities with regard to the avoidance of and the duty to utilize waste, extending specific duties for companies to provide information and, above all, by legally codifying manufacturers' product responsibility (product stewardship). This last point gives rise to serious consequences for entrepreneurial management. Generally speaking, the numerous forthcoming governmental ordinances based on this Act may be expected to cause a shift in companies' perspectives from environmental management towards entrepreneurial risk management. Serious consequences for product planning and management can also be expected.

## INTRODUCTION

On 8 July 1994 the Closed Substance Cycle and Waste Management Act (CSCWMA; German: Kreislaufwirtschafts- und Abfallgesetz) was adopted by the German legislative institutions. It took considerable debate between the Bundestag and the Bundesrat (the two houses of parliament in Germany) before the Act was finally agreed by the parliamentary mediation committee. In addition, it was accompanied by intensive lobbying by the interested circles of German industry before it could be adopted at the close of the 12th parliamentary session of the Federal Republic of Germany. The delicate process of adoption (for details, see the 1054 page (!) documentation: *Deutscher Bundestag*, 1994) already reveals much of the explosive content of the law.

The Act represents a new dimension in waste management policy – closed substance cycles instead of waste disposal: This is the central message of the new CSCWMA (Art. 1) and, with this, the Act actually focuses on the whole of the economic system instead of regulating only an isolated part of it (e.g. waste management) (Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, 1994: 1–3). Nevertheless, the result is a law which is still full of gaps and vague formulations (Bogler, 1996), leaving many regulations up to the authorities at a lower level and up to statutory ordinances yet to be issued by the Federal Government (Versteyl and Wendenburg, 1994). The law was enforced on 7 October 1996.

The new Act takes up the plans of the European Union Directive on Waste 91/156/EEC, the OECD and the United Nations and, thus, may foreshadow



what will happen in other countries of the EU within the next few years.

## **BASIC PRINCIPLES OF SUSTAINABLE DEVELOPMENT IN A BUSINESS CONTEXT**

### **Responsibility**

The first keyword for transposing sustainable development into a business context is 'responsibility' (Kirchgeorg, 1995: 232). This applies to the notion of intragenerative (with regard to all people living on the earth at the moment) and inter-generative (with regard to future generations) equity. The responsibility of the present generation consists of not using the natural capital stock in such a way that the next generation could not draw the same benefit or 'utility' from it.

According to this, sustainable development is, basically, a philosophical concept (Kneese and Schulze, 1985). It is very much characterized by Kant's 'categorical imperative' and by utilitarian thought, as found in Jeremy Bentham and John Steward Mill. Furthermore, the idea of justice in the concept is very much argued in the terms of John Rawls' 'theory of justice'. The central idea is that the generations to follow should have the same living conditions in terms of utility as we have now (Matten, 1995c).

### **Circularity**

To implement the first principle of responsibility it is important to introduce what we will refer to as a 'circular structure' or 'circularity' of the management of resources (Kirchgeorg, 1995: 232). This applies not only to renewable resources, where 'circularity' would imply the integration of economic activities into the natural circular (i.e. cyclical) structure of ecosystems, but also to non-renewable resources which have to be cycled in an economy, so that the total amount of non-renewable resources used remains constant. Thus circulation would safeguard sustainability from two points of view. Firstly, it would leave the natural capital stock constant and thus leave it over for the next generation. Secondly, the principle of circulation would make it possible to draw a constant measure of benefit, i.e. utility, out of the natural capital stock because ecosystems would not be exhausted beyond their natural capacity of assimilation.

### **Co-operation**

To implement circular structures in our present day

specialized economy there is a need for single economic institutions to co-operate with others (Kirchgeorg, 1995: 232). Producers have to co-operate with users, who have to co-operate with recyclers, who have to co-operate with suppliers, and so on. However, this proves to be the most problematic aspect when putting sustainable development principles into practice.

An example of the implication of this principle due to current German legislation is shown in Figure 1 (adapted from Wagner and Vogel, 1992: 228). It shows the co-operation and co-ordination links between all institutions participating in the 'Duales System Deutschland'. This concept of a dual waste management system, which consists of the privately run 'Green Dot' system and the conventional system run by the public authorities, was created by the Packaging Ordinance in 1991 and can be regarded as an early effort to realize sustainable development in one part of German economic life. Without going into any detail, this figure shows clearly that such a recycling system, although it only pertains to one sort of waste, namely packaging, entails the co-operation of nearly every body in an economy: consumers, public authorities (body assuming 'duty of care'), manufacturing companies, retailers, recycling companies and suppliers. Though the 'Duales System' was only a first and half-hearted approach (Wagner and Vogel, 1992: 234-237) to introduce the principle of responsibility, especially in the sense of product responsibility to economic life, Figure 1 shows the complexity of the ensuing co-ordination mechanisms on both the contractual and the material level.

## **THE CLOSED SUBSTANCE CYCLE AND WASTE MANAGEMENT ACT AS AN IMPLEMENTATION OF SUSTAINABLE DEVELOPMENT**

The new CSCWMA can be regarded as a fairly rigid effort to implement sustainable development in economic life in Germany. Though much of the original intention of the Federal Government was watered down in the process of adoption, as described earlier, four aspects of the Act can, in the main, be considered in terms of sustainability.

### **The new term 'waste' (Art. 3)**

The Act assigns a totally new concept to the term 'waste'. Waste is regarded as a property which occurs in the course of a production process 'although such occurrence is not the purpose of

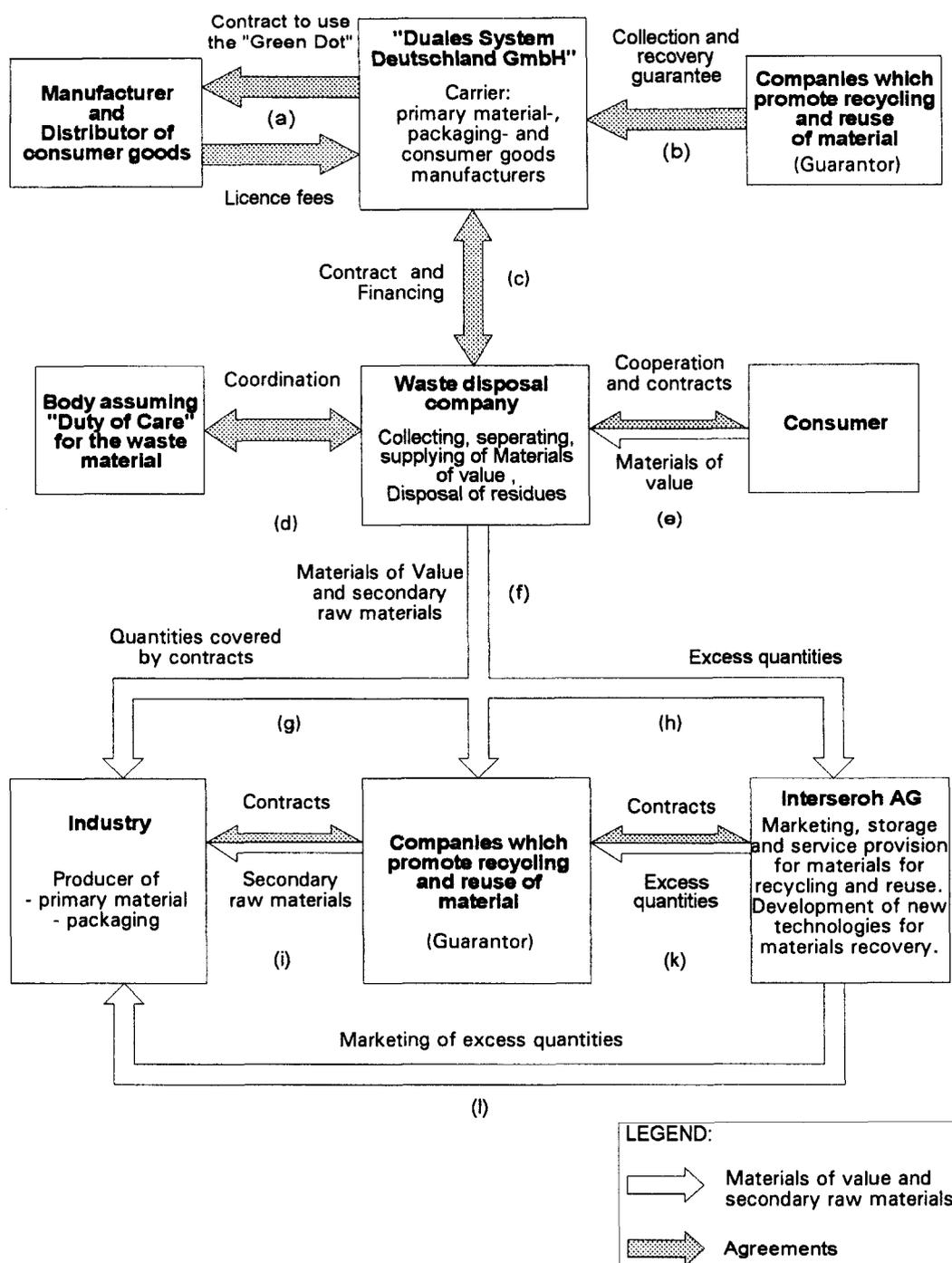


Figure 1. Co-operation and co-ordination within the 'Duales System Deutschland'.

the relevant action'. This is the first part of the definition, which is fairly trivial. The innovation lies in the second part of the definition, where waste is also defined as being a property 'whose original purpose no longer exists or is given up, without being directly replaced by a new purpose'. With this, the law separates all goods circulating in an economy into only two categories: on the one hand products and on the other hand waste. Consequently, the Act applies to the whole of economic life and it is a radical abolition

of loopholes and ambiguities in older legislative works. This is a clear manifestation of the principle of responsibility, as this definition puts the responsibility for waste right at the beginning of the lifecycle of a product.

**New priorities: avoidance > recovery > disposal (Art. 4)**

The law codifies the priority of waste avoidance unmistakably. This is done in a very concrete way,



by codifying the use of low waste product design and the closed circle waste management of substances, in addition to the implementation of consumer behaviour oriented towards the acquisition of low waste and low pollution products. Above all, much attention is given to the point of recovery, where there are regulations which give priority to substance recycling before energy recovery. Even more interestingly, there are less tight regulations for renewable resources. Using these priorities, the basis for the implementation and profitability of circular material flows is put into practice.

#### **Institutional transparency (Art. 53-54)**

Producers of waste may relinquish their duties by commissioning third parties with waste management activities. The problem here is to ensure a law-abiding treatment of waste. For this reason there are several articles in the law which guarantee institutional transparency. For example, recognition and certification of waste management companies, comparable with that stipulated in the ISO 900x system and the EMAS regulations of the EU (Janzen, 1996: 133–227), is required. Furthermore, proof of specialized knowledge and personal reliability is required of workers in waste management companies. Apart from that, there is the obligation to provide information pertinent to company organization, to employ a waste management officer, to publish a waste management concept, and to apply waste lifecycle analyses to the products.

Institutional transparency strongly reflects the idea that sustainable development is only possible in a sustainable society and therefore society has to be informed and integrated into the activities of the economic sector. Furthermore, it clearly entails the principle of co-operation as trust in institutions which deal with waste problems is a basic condition for co-operation.

#### **Product responsibility (Art. 22-26)**

In Article 22 the law codifies product responsibility for 'parties who develop, manufacture, process, and treat or sell products'. This is a very radical implementation of the 'polluter pays principle', in addition to the concept of product stewardship as it is discussed in academic publications on sustainable development (Dillon and Baram, 1993; Welford, 1994). This product responsibility encompasses the whole product lifecycle (i.e. its time span) and all features, materials used, functions, etc. of the product (i.e. its scope). Though the formulation of the Act is still vague, there are

numerous statutory ordinances announced in the law which will give product responsibility a concrete form for tangible objects, products and materials in real life.

#### **ENTREPRENEURIAL RISK AS THE MAJOR CONSEQUENCE OF THE CLOSED SUBSTANCE CYCLE AND WASTE MANAGEMENT ACT**

The CSCWMA clearly reflects the dilemma of putting sustainable development into practice. Firstly, there is the question of whether sustainable development is enforceable at all in democratic societies. The rather long process of debate between the two houses of parliament and considerable lobbying activities clearly indicate a problem of acceptance.

On the one hand the law is very vague and reflects the problem that sustainable development would require very severe restrictions for society. As the consequences are unpopular, many things which are labelled 'sustainable development' are only hot air. This clearly applies to many Articles in the Act: a striking example is Article 4, Para. 3: The obligation to recycle substances is a basic element of 'Basic Principles of Closed Substance Cycle Waste Management' (the title of Article 4). However, it has only to be applied when substance recycling is 'in keeping with an economic perspective', which in the end allows all kinds of interpretations!

On the other hand, it has been argued that if sustainable development is enforced, it will result in some kind of 'eco-dictatorship'. This is also reflected by the Act. It can be called 'authorization act' (Versteijl and Wendenburg, 1994) because it forces the Federal Government to make the implementation of the Act mandatory through statutory ordinances, which only partly need further parliamentary consent (Art. 48 and 59). A few ordinances have already been issued by 14 August 1996 but most of them are still to come. As nobody knows when, in what amount, and with regard to which objects those statutory ordinances will come, the Act is a major source of risk for companies (Anon., 1996).

This is visualized by Figure 2, in which the risks resulting from the CSCWMA are structured. On the one hand, there are four major target areas of potential statutory ordinances: product responsibility, the duty of waste recovery, the duty of waste disposal and the duty of providing institutional transparency. Apart from uncertainty about the target area of future ordinances there is furthermore uncertainty about the scope of those regulations. In Figure 2 this is illustrated using the

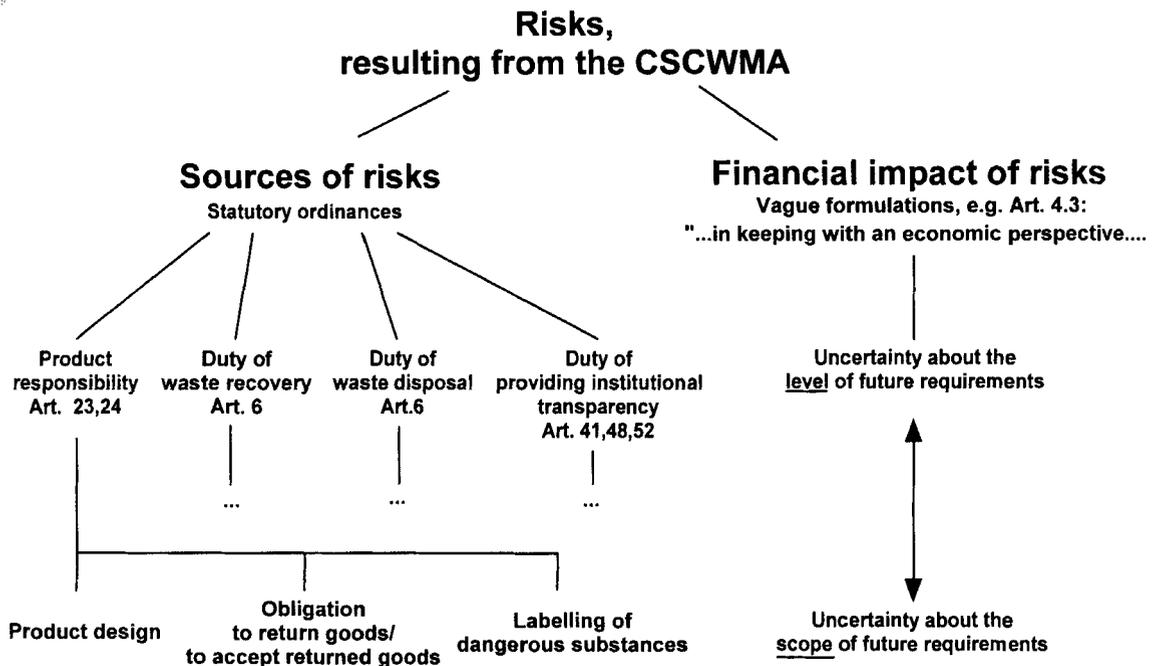


Figure 2. Risks resulting from the Closed Substance Cycle and Waste Management Act (CSCWMA).

case of product responsibility as an example. The single manufacturer of a washing machine, for instance, still does not know whether he or she will only be obliged to alter the product design or whether he or she will be forced to build up an entire system of redistribution for the used washing machines. There are also the financial impacts of those risks which are uncertain. This is due to many vague formulations in the law which result in the fact that the *level* as well as the *scope* of future requirements resulting from those ordinances are still uncertain.

Secondly, the law also has a deregulating function (Wagner, 1996: 130–133). As there is a threat of statutory ordinances, many companies and branches anticipate those ordinances by realizing circular economic principles in their respective fields. This trend can be identified clearly in many branches in Germany at the moment. So, for example, on 14 October 1994 – as an early reaction to the Act – the German paper industry committed itself to achieve a 60% recovery rate for paper by the year 2000. Another example was set by the automotive industry which, on 21 February 1996, committed itself to voluntarily take back and recycle used cars. In both cases the relevant branches anticipated an impending statutory ordinance to regulate waste management activities in their respective sectors.

As a result of this, the main task for companies will be to apply appropriate risk management strategies (Matten, 1995a; Matten, 1996; Janzen, 1995). In fact, it becomes clear that the introduction

of sustainable development to a business context – in a first approach – will lay the focus of environmental management on the management of environmental risks (Matten, 1994). Furthermore, as a consequence of product stewardship, product planning will encompass a much longer lifecycle and, thus, will give special concern to strategic planning activities (Janzen and Matten, 1995).

### CONSEQUENCES FOR ENTREPRENEURIAL ENVIRONMENTAL MANAGEMENT

The central focus of the consequences for entrepreneurial environmental management has to be set on the aspect of product responsibility. This will have the most severe consequences for companies and encompasses the regulation regarding the other three areas mentioned earlier. The most important aspects are the planning processes of the individual firm and inter-firm relationships.

As a consequence of the law two basic principles can be identified in a circular economy (Matten, 1995b). They consist, first of all, of a *circularity* of planning processes in place of the linearity of traditional planning processes (Figure 3). The new object of planning is the entire lifecycle of the product. This leads to the second focus, which is the *materialization* of planning processes. The main focus will not lie so much on the financial level, but planning processes will start on the material level. The basic aim will be to transfer ecologically

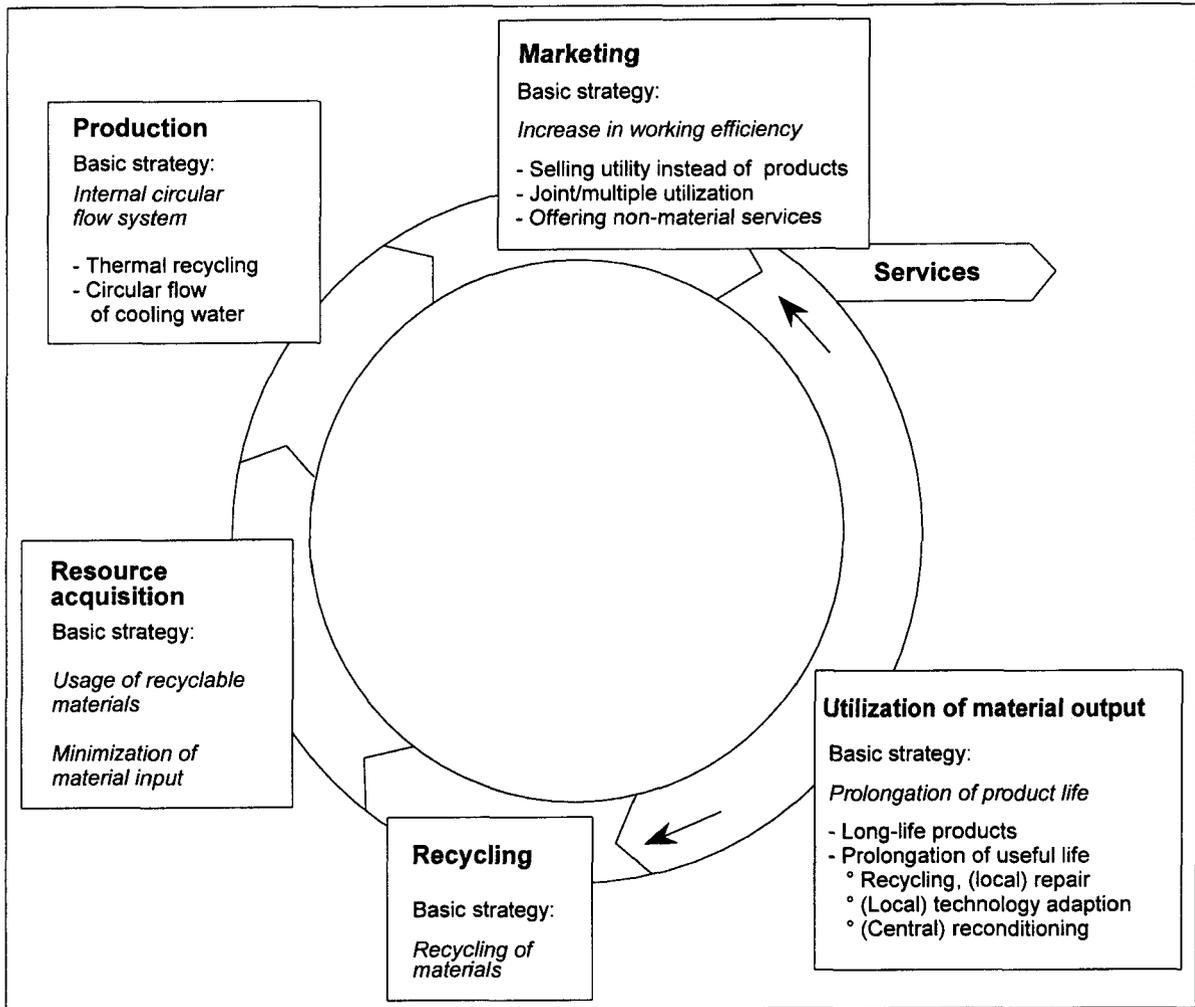


Figure 3. Idealized closed loop material flow of a product according to the CSCWMA.

effective material flows into economically profitable value chains.

Figure 3 (adapted from Meffert and Kirchgeorg, 1995: 993) unites both principles in showing the entire lifecycle of a product in a closed loop, based on the material flow which is induced by production, marketing, utilization, etc. Each phase of the lifecycle requires specific strategies, as indicated in Figure 3.

The most important changes have to be expected in the phase of marketing and utilization of products. During the use of the product two goals receive new relevance for product management. On one hand there is the aspect of *durability*; on the other the aspect of *efficiency of use*.

Under the aspect of durability, the basic strategy is the prolongation of product life. If the company is responsible for the product when the client no longer uses it, profitability could be enhanced by postponing the costs of recovery as far into the future as possible. To achieve this, it is necessary to use more durable materials and to sell a higher

quality of product. Furthermore, maintenance and service activities locally delivered to the user of the product arise as a new field for entrepreneurial activities. This is particularly interesting in the area of technological products, where a longer product life could result in hindering technological progress. Here, the modularization of products, such as computers, for example, could allow for single parts of the entire unit to be renewed due to technological progress while the whole product remained in use. All those activities in themselves are not new, the innovation lies in the application: Services and regular inspections are already common for automobiles, but are yet unusual in the field of consumer electronics or other products, presently still designed as 'throw away articles' should any defects come up.

Under the aspect of increasing working efficiency, the discussion about selling only services in the sense of 'utility' will also receive a new stimulus. As the producing company is responsible for the entire material flow during the lifecycle of



the product, it makes sense to no longer sell products, but rather to literally sell only utilities to clients. In this context the concept of 'eco-leasing' has been brought into the discussion (Leinkauf and Zundel, 1994). Thus the company remains the owner of the (material) product while the client simply obtains what he or she is really interested in: the (immaterial) utility of the product.

During the recycling process of the product, a new institution gets more and more relevant: the 'reduction company' ('reduction' in the sense of material recovery in contrast with the 'production' company which would be the traditional view of companies; Matten, 1997). The task of these companies is no longer to combine factors to produce new products, but to decombine or dismantle products to open up new possibilities of waste recovery and the use of materials as secondary raw materials for new production processes (Thomé-Kozmiensky, 1994; Price, 1996; Smosarski, 1996).

Here, the value of co-operation takes on new relevance. In Germany the tendency at the moment is for many branches to co-operate in the field of material recovery. Three strategic lines are visible. There are: *product-oriented co-operations* (automobile industry, electronic industry) and *material-oriented co-operations* (paper, glass, metals, plastic). Those networks open up the possibility of establishing closed material cycles, where the materials resulting from the lifecycle of one product can be reused in the lifecycle of another product. Another tendency is *regionally based recovery networks*, which combine and transfer the different material flows of single companies within a region into other material cycle systems (Schwarz, 1994). The main problem at the moment is that these networks encourage co-operation in the area of waste recovery among companies which are otherwise competitors on the market side of their businesses. Consequently, co-operation of this kind is presently widely restricted by German anti-trust legislation (Wagner and Matten, 1995: 56).

However, due to the laws of thermodynamics, closed cycles of material chains will always be an ideal rather than a reality. Furthermore, the energy needed to sustain such cycles has been ignored in this analysis: to recover materials and to link different stages through logistics, an enormous input of energy and, thus, the consumption of non-renewable fossil fuels is necessary. This, of course, puts the whole idea of sustainability into question. Nevertheless, cycles such as those shown in Figure 3 will be the future paradigm for product planning processes, even if those material flows cannot be transformed into closed substance cycles in all cases.

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