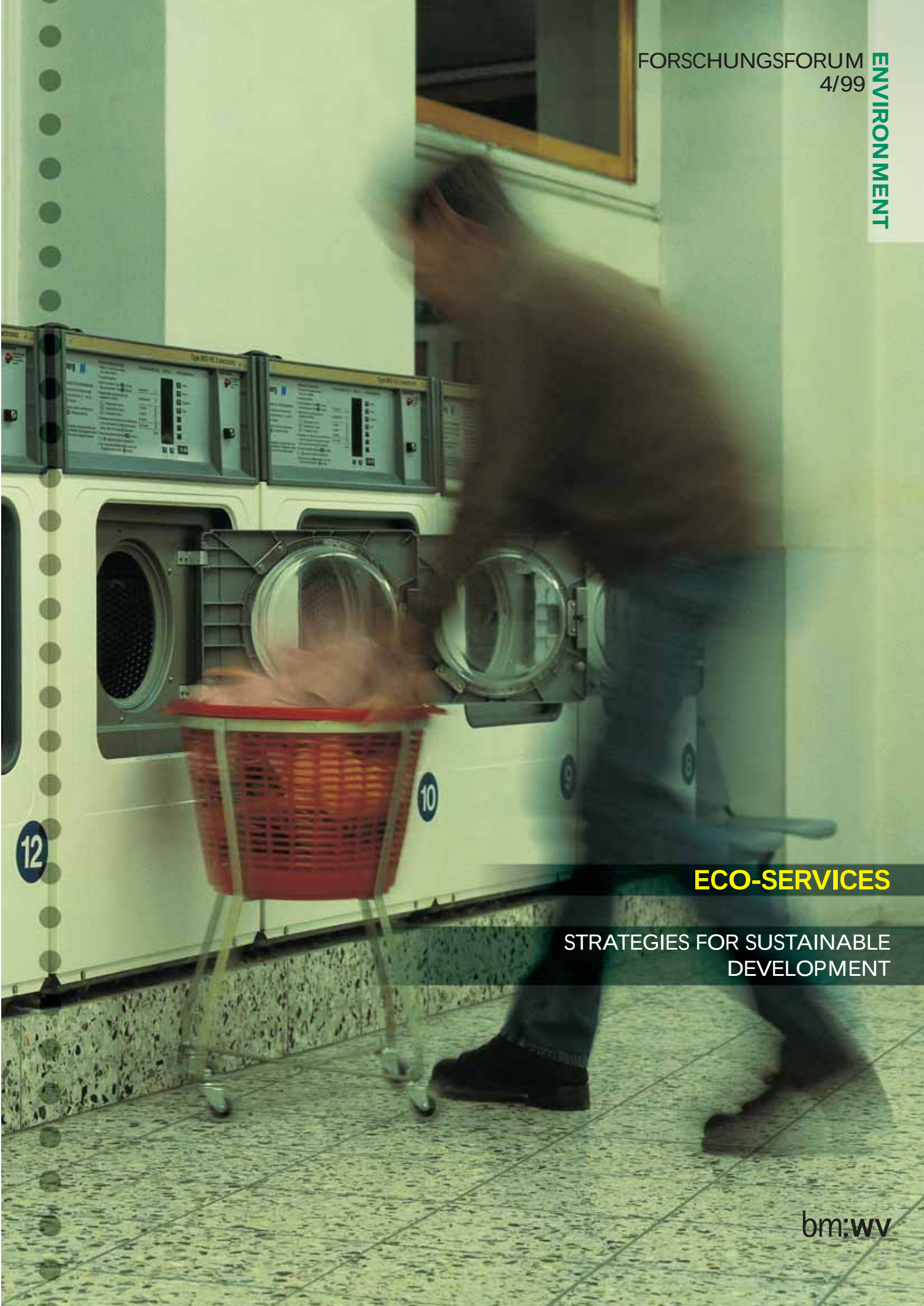


FORSCHUNGSFORUM
4/99

ENVIRONMENT

ECO-SERVICES

STRATEGIES FOR SUSTAINABLE DEVELOPMENT

bm:wv

P R O J E C T

SOCIAL INNOVATION FOR SUSTAINABLE DEVELOPMENT

■ Concrete strategies for the implementation of sustainable development in Austria have been discussed predominantly in connection with the development and the use of new technologies. However, the transition towards sustainability will involve not only the diffusion of these alternative technologies but also ***social innovation*** and structural change in the economic system.

Solutions aiming at new lifestyles, at building social networks and new forms of organization or the supply of novel services are suitable means to reduce the consumption of natural resources, to promote the diffusion of environmentally sound technologies, to secure jobs in regional economies on a long-term basis, and, to some extent, also to improve the opportunities of underprivileged segments of the population.

The Austrian Ministry of Science and Transport has commissioned a number of research projects dealing with these issues. A study entitled "Social innovation for sustainable development" (SINE) conducted by the "Zentrum für Soziale Innovation" concludes that, while there are a number of activities in this field, the potential for social innovation for sustainable development has not been fully understood or implemented as yet. The study identified 230 initiatives and projects in German-speaking countries, all of them aiming at sustainable development, mostly on the basis of innovative social solutions. The spectrum covered **new forms of organization** ("Climate Alliance"), **new concepts in the field of politics** (such as patent rights for intellectual property), **new services** ("sharing, not buying"), and **research strategies** ("combined counseling and research for a sustainable lifestyle"), as well as alternative **decision making processes** (Local Agenda 21 initiatives).

122 of these 230 projects have been studied in greater detail by means of standardized questionnaires. In addition, representatives of fourteen particularly interesting projects have been invited for interviews. The analysis of the projects under study identified **five categories** of innovative social approaches involved in the projects:

- **Citizen involvement**
- **Services**
- **Lifestyles**
- **Forms of organization**
- **Networking**

In addition to the documentation of the various projects the study also undertook to analyze the most interesting initiatives with a view to various dimensions (history of the initiative, organizational structure, factors for success, obstacles, potential for institutionalization, and effects) by means of methods provided by social science.

A first result has shown that social and technological innovations are not mutually exclusive. On the contrary, the projects under study, have demonstrated that, from the viewpoint of sustainable development, existing technologies may be the starting point for innovative social projects. On the other hand, social innovations require technological solutions (car-sharing, car-pooling, contracting plans, corporate mobility management).

The most promising approaches have been published in the final report; a follow-up project presents additional examples in the internet **www.municipia.at/sine/** (Municipia: network for the integration of municipal and regional development).

Two other studies commissioned by the Austrian Ministry of Science and Transport deal with innovative, eco-efficient services and an economy that is focusing on benefit rather than on products: The research project **"Eco-services for sustainable development in the European Union"** (Report on Austria, authored by the IÖW), supported by the European Commission and the Austrian Ministry of Science and Transport deals with eco-services on the basis of leasing, rental, pooling, and sharing systems.

The project **"Products for suppliers of services"** (Gruppe Angepaßte Technologie, GrAT, Institut für Höhere Studien, IHS) analyzes service concepts in order to develop products meeting the requirements of ecodesign.

Social Innovation

means "to open new roads towards the realization of essential goals, in particular, to find new forms of organization, new regulations and lifestyles that are capable of redirecting social change and thus will offer better solutions to problems than conventional approaches, thus, examples that are worthy of imitation and institutionalization".

(W. Zapf, 1989)

P R O J E C T

PRODUCTS FOR SUPPLIERS OF SERVICES

This research project was commissioned by the Austrian Ministry of Science and Transport and realized by the "Gruppe Angepaßte Technologie" (GrAT) in cooperation with the "Institut für Höhere Studien" (IHS); it aimed at identifying the determining factors for success of service concepts with consumers and to elaborate recommendations for the development of products used in service systems.

These objectives are based on the hypothesis that the development and the diffusion of adequate service concepts such as the intelligent use of products or measures aiming at the prolongation of the service life of products have a much greater potential for the efficient use of resources than a merely technological optimization of products. The point is not to ignore or replace technological achievements but rather to find approaches that take into account all aspects of the complex system of services - technological, organizational, and social - and which aim at an optimization on all ***three levels.***
An important question will be how to deduce general guidelines for the design of products for the use in sustainable service systems from the benefit products offer in the process of consumption.

The project examined the **following questions:**

- **What service concepts are there in Vienna and in Austria?**
- **What are the factors determining the attractiveness of given services?**
- **What are the characteristics of the products involved in the services offered?**
- **What are, therefore, the requirements for upstream fields of activity such as product development, design, and marketing?**

The present study focuses on commercially supplied services. The field of informal services (neighborly help etc.) has not been investigated.

APPROACHES TO THE CLASSIFICATION OF SERVICES IN THE PROCESS OF CONSUMPTION

The study discusses different services offered in Vienna and some other parts of Austria with a view to different parameters in order to identify different types of eco-efficient services. Three factors have been identified as essential: The **material product** (appliances, machines), **knowhow necessary for the use** of the product (knowledge, skills), and, finally, the **work that has to be invested to accomplish the service.** Services usually involve a combination of all three aspects. Depending on which of these three parameters is in the foreground different types of service can be identified:

Product-oriented services
The material product is in the foreground and constitutes an essential prerequisite for the service; know-how and implementation do not depend on trained personnel.

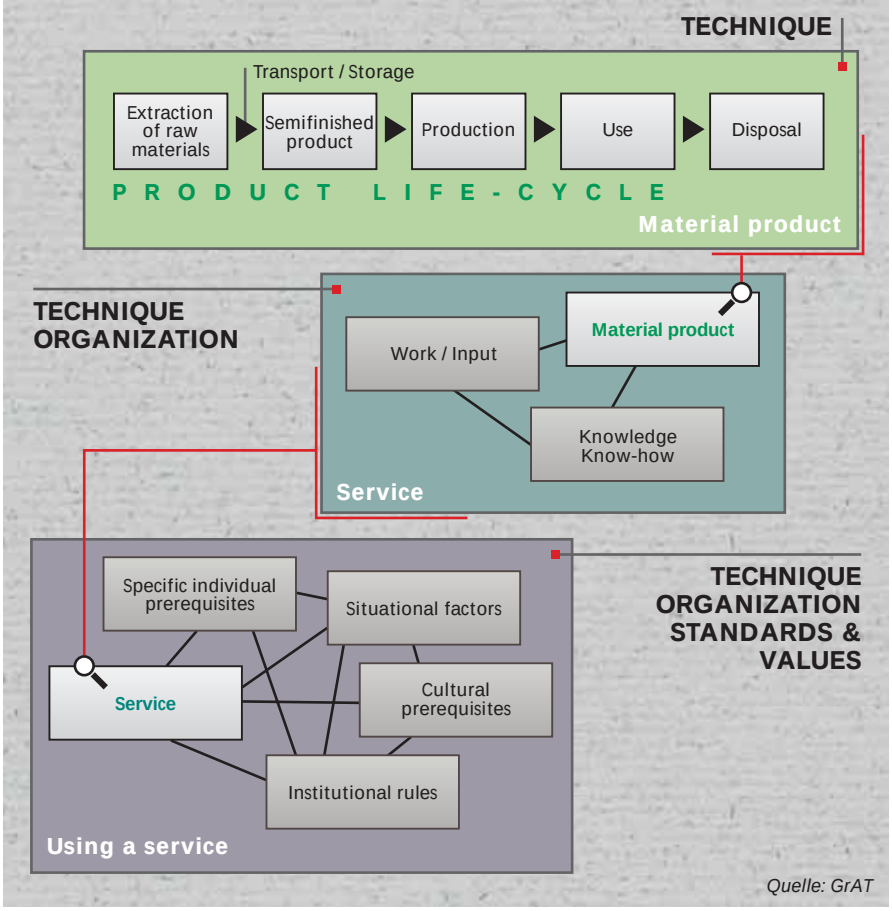
Information-oriented services
Here, the focus lies on know-how and skills; the service can not be supplied without specialized knowledge necessary to use the product (appliance, machine) involved.

Work-oriented services
The service comprises above all the accomplishment of a certain task.
In most cases, the consumer lacks time and motivation.

Eco-efficient services try to meet the customer's requirements with a minimum of material and energy input.

The present study investigated product-oriented services, as well as services that constitute an alternative to the purchase of a product. The two systems differ as to the location where the service is accomplished (where the benefit

Service Systems in the Sustainable Product Development Process



Quelle: GrAT

is realized), on the one hand, and as to who is responsible for the different parts involved in the process (servicing, maintenance, repair, transport, application, etc.).

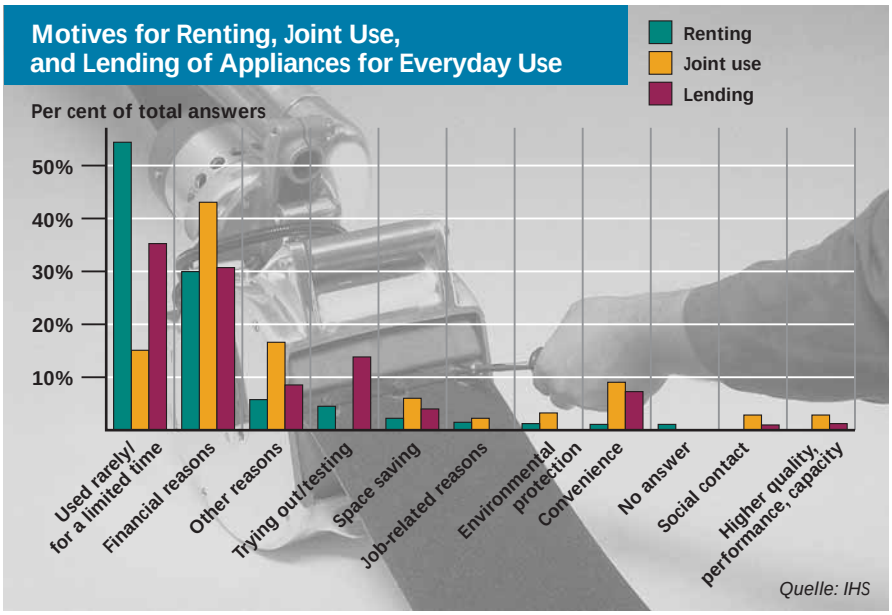
The more comprehensive a service package is the easier it will be to plan the processes involved. A comprehensive service package also permits to intensify the use and to prolong the service-life of a product as the responsibility for technology, maintenance and repair rests with the supplier.

However, transferring the greater part of responsibility to the supplier reduces the consumer's possibilities of self-determination and participation in the process. Consumers, of course, play an important part as far as a positive change in user behavior is concerned, which, in turn has a decisive influence on the environmental aspects of a given concept of use. Informal variants of joint-use concepts, in particular are characterized by a high degree of self-management.
Both approaches (responsibility of the supplier - self-determination of the user) play an important role in various applications and have to betaken into account in the development of innovative services.

USER MOTIVES

The present research project concentrated on the intersection between service offered and the benefit perceived by the customer. Sustainable product development processes predominantly aim at customer satisfaction. The purchase of a product or service involves not only considerations of functional requirements but also social aspects. The decision to buy a certain product or service is determined by a complex context of communication, by issues referring to taste and image and the consumer's possibilities of identification and self-expression associated with the product.

The research project used an interdisciplinary approach to analyze these aspects. In a standardized telephone poll conducted by the IHS 500 randomly selected persons were interviewed about their motives for the joint use of appliances for everyday use. Different forms of joint purchase and use, commercial rental and private lending of such products have been addressed. Commercial rental proved to be the most frequent form of joint use, and DIY tools, vehicles and household appliances constitute the majority of products rented. Three concrete examples were selected and analyzed from the point of view of social science (user motives, organizational prerequisites) but also as to technological criteria (product characteristics, energy consumption, overall costs).



Cool storage of food

This hypothetical service arose from the idea to install cooling cabinets in apartments that would be cooled by a central cooling unit (following the model of a central heating system); a group of experts discussed and elaborated a concept for this service using additional data from interviews.

Tool rental

This product-oriented service is used relatively often. The example studied here involved a floor sanding machine, a tool characterized by a high purchase price and designed for very specific applications, thus, it fulfills all the prerequisites typical of a rental product.

Washing

This service, which involves a material product is supplied in the form of a work-oriented service (laundry) as well as in the form of a product-oriented service (launderette). The joint use of washing-machines in a central wash-room and new service concepts, such as the "Wash Bar" constitute additional alternatives to "Washing in the household". These examples are particularly suitable for systematic comparisons.

P R O J E C T

ECO-SERVICES FOR SUSTAINABLE DEVELOPMENT IN THE EUROPEAN UNION

Report on Austria

The high potential for sustainable development, which lies in "using without owning" can be implemented only if adequate organizational and social prerequisites for widespread acceptance will be developed and introduced into the market.

■ Sustainable development will not be possible without changing our economies. In addition to the ecological design of products we need new forms of marketing and new patterns of use of products in order to satisfy needs in an environmentally sound manner.

Eco-services are services aiming at an ecological and efficient use of natural ressources. The consumer - until now also owner of the material product - becomes a user of the product. In the new system, the commercial supplier remains owner of the product and is responsible for maintenance and servicing. Therefore, he or she will be interested in longevity, ease of repair and optimized use of the product (multiple use, joint use). This concept, which does not aim at selling a material product but rather its benefit shows a high potential for innovation and conservation of the environment. The overall goal is to minimize the input of material and energy, to reduce the amount of waste and to develop concepts for maintenance which prolong the service-life of products or which facilitate re-use or recycling.

At the production level this approach could help to establish completely closed product cycles. In addition to environmental advantages this would also create new economic opportunities. Innovative service concepts will pave the way for new spheres of value-creating business activity exceeding the mere production and marketing of products, which, in turn, will create new jobs.

The EU research project "Ecoservices for sustainable development in the European Union" deals with concepts and implementation of ecoservices for consumers. The project focuses on the analysis of selected fields of need and highlights the potential for optimization and perspectives for development in these areas. The study identified the **following fields of need** as particularly suitable for the application of ecoservices:

- **Mobility**
- **Information and communication**
- **Energy and heating**
- **Leisure and sports**
- **Washing and cleaning**
- **DIY, personal contribution in construction work, gardening**

The report on Austria (IÖW, Institut für Ökologische Wirtschaftsforschung) gives an overview subdivided along types of service - product-, benefit- or result-oriented; benefit-oriented services are further subdivided into the categories renting, leasing, sharing and pooling. Important questions of the research project deal with the consequences the transition from the sale of products to the sale of benefit will have for suppliers, with the various options for actors in the market, with obstacles in the process of implementation, and with appropriate instruments for the promotion of these innovative concepts of use.

The transition from the sale of material goods to the sale of services will confront manufacturers and consumers alike with far-reaching changes in the organization and marketing structures. Manufacturers will have to abandon conventional marketing concepts; short-term realization of profit at the "point of sale" will have to give way to an economy focusing on medium- and long-term pay-off times. More often than not, this necessary re-orientation meets with mental barriers within the companies. Consumers, too, show psychological barriers against the transition from the concept of owning a products to a concept of using material goods. Apart from price, quality, function, and design of a product, permanent availability and the psycho-social factors of ownership still play an important role. The fundamental approach to the implementation and promotion of new service concepts will consist in raising public and private awareness of the fact that sharing the benefit of a product contributes to the conservation of the environment and also opens potential fields of new business activity. The implementation and successful diffusion of these concepts requires a professional and user-friendly organization, offensive marketing, and, at the political level, support by means of intensive opinion forming processes.

C O M M U N I C A T I O N

ECODESIGN-INFORMATIONPOINT

http://www.ecodesign.at

■ The ECODESIGN infopoint was initiated by the TU Vienna in cooperation with the Ministry of Science and Transport and is to serve as a swap shop for information in the field of environmentally sound product design and addresses researchers, product developers, manufacturers and other persons interested in this field. The infopoint offers comprehensive via www-pages, which have been restructured recently as to their appearance and are now even more user-friendly.

The information contained in the ECODESIGN infopoint is presented in a way that each user will find a compilation which meets his individual requirements. In addition to a general introduction to the topic there is a more specific part, which covers the following aspects of ECODESIGN:

■ **Research:**
The latest findings and information from the field of research for researchers

■ **Practice:**
Implementation-oriented information for companies

■ **Programs:**
Framework conditions and institutions provided by politics for the information of political decision-makers

■ **Products:**
Information about different products for users/consumers

In addition, there is a Discussion Board for questions/contributions concerning ECODESIGN and a calendar where users may announce events. The Discussion Board can be accessed from the homepage, each user can post a message there, which will appear as www-page, others can post their responses on this page.

You may also subscribe to the Discussion Board to get the latest news by email. Literature related to the topic may be accessed via journals, new and efficient methods facilitate the search for literature. The new ECODESIGN informationpoint is also available in English.

F I G U R E S / D A T A / F A C T S

PROJECT SPONSORS

These studies were commissioned by the Ministry of Science and Transport (BMWV):

"Social innovation for sustainable development" (SINE)
ZSI (Zentrum für Soziale Innovation, M. Ornetzeder, B. Buchegger)
SINE in the Internet:
http://www.municipia.at/sine/

"Products for suppliers of services"
GrAT (Gruppe Angepaßte Technologie, M. Hübner, R. Rastl, L. Rehse, R. Wimmer, W. Wimmer) in cooperation with the IHS (Institut für Höhere Studien, B. Littig, I. Machold, E. Scheiblhofer)
GrAT in the Internet:
http://www.grat.tuwien.ac.at

The project *"Eco-services for sustainable development in the European Union"* has been supported by the European Commission, DG XII, Research and Development and by the Austrian Ministry of Science and Transport (BMWV).
The report on Austria was drawn up by the IÖW (Institut für ökologische Wirtschaftsforschung, Österreich, CH. Jasch, G. Hrauda).

PUBLICATIONS

The final reports on all studies have been published in the series *"Berichte aus Energie- und Umweltforschung"* (Reports on Energy and Environment Research) by the Austrian Ministry of Science and Transport and is available from:
PROJEKTFABRIK,
Nedergasse 23, A-1190 Vienna, Austria.

A complete list of the series can be found on the FORSCHUNGSFORUM HOMEPAGE.

FORSCHUNGSFORUM in the Internet:
http://www.forschungsforum.at

BMWV in the Internet: http://www.bmwv.gv.at

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