

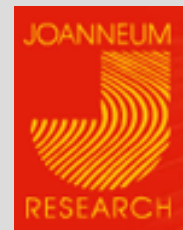
Second international SusProNet conference
Sustainable Product-Service-Systems: 'Value in Practice'
3-4 June 2004, Brussels



Sustainable PSS

A Tool for evaluation and defining success and failure factors

Mark Hammer
Sustainable Europe Research Institute (SERI)
mark.hammer@seri.at
www.serviceinnovation.at



Overview

Eco-efficient PSS project

INES tool (*Improving new services*)

Analysing sustainability effects of PSS

Outlook: PSS landmarks project

Success and failure criteria for implementation of PSS
Implications for further research

Project funding

**Austrian Federal Ministry of Transport,
Innovation, and Technology**



**Research programme “Factory of tomorrow”
(www.fabrikderzukunft.at)**



**Eco-efficient PSS: 2001-2003
PSS Landmarks: Feb-Oct 2004**

Eco-efficient PSS - Project Partners

Joanneum Research



Sustainable Europe Research Institute (SERI)



Karl Franzens University Graz – Institute for Innovations and Environmental Management



Stenum GmbH



Technical University Graz - Institut für Grundlagen der Verfahrenstechnik und Anlagentechnik



Verein Faktor 4+



Institut für Höhere Studien (IHS) – Department for sociology

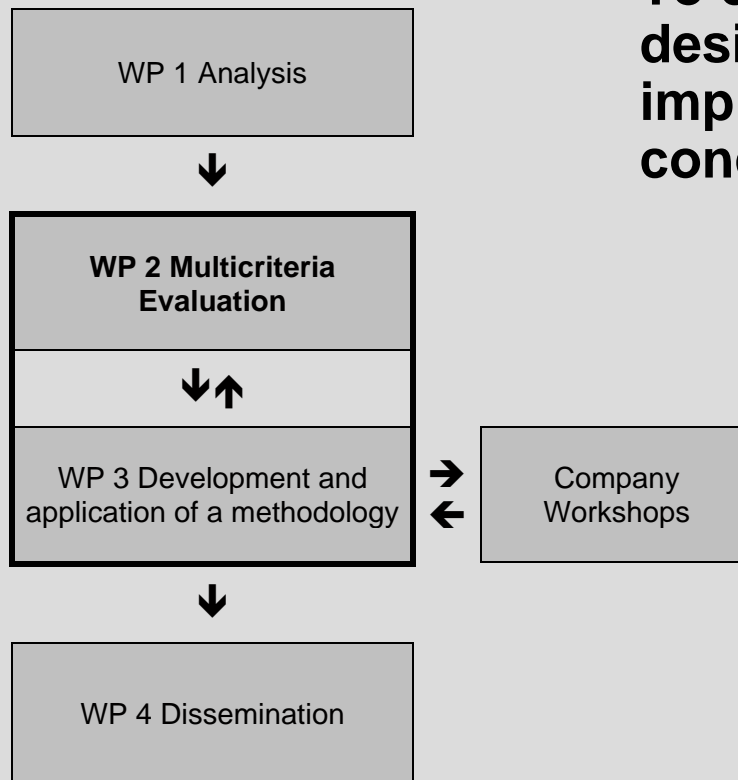


Institute for Environmental Management and Economics (IÖW)



Aim of the project

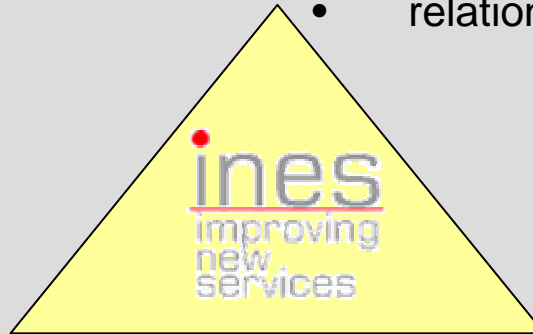
To contribute to the initiation, design, development, and implementation of innovative user concepts for sustainable PSS.



Evaluating Sustainability of PSS

Economic Dimension

- Company key figures
- product related figures
- macroeconomic figures
- relation to stakeholder



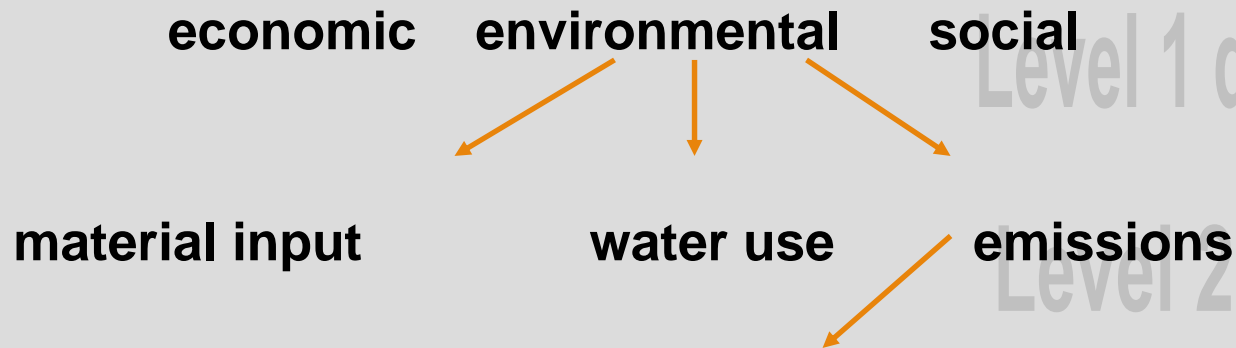
Social Dimension

- Structure of employees
- Social management
- (Working)safety and health
- Social justice
- Equal chances
- Gender issues
- Human dignity
- International justice
- Customers

Environmental Dimension

- Material input
- Energy use
- Water use
- Land use
- Transport
- Waste
- Sewage water
- Emissions
- Environmental management

Hierarchical structure of criteria



How is the amount of greenhouse gas emissions changing with the new PSS?

Criteria: qualitative, quantitative (percentage change, value)

General features of the model

Based on Excel (Visual Basic)

Aggregation split into two steps:

1. within the categories over the criteria
2. within the dimensions over the categories

Between 2 and 5 answer possibilities per question

Not relevant criteria need not to be answered

INES tool



File Edit View Insert Format Extras Data Window ?

Evaluation and Weights of the categories

	Evaluation	Weights
Economic dimension		
Product related figures	1,5	15,0
Company key figures	4,0	35,0
Macroeconomic figures	3,3	15,0
Relation to stakeholders	1,0	35,0
Result Economic Dimension	2,5	100,0
Environmental Dimension		
Resource and material input	2,4	5,0
Energy use	3,3	25,0
Water use	2,7	0,0
Land use	4,0	0,0
Transport	4,0	20,0
Waste	2,0	0,0
Sewage water	5,0	5,0
Emissions	no question answered or not relevant	0,0
Environmental management	3,7	45,0
Result Environmental Dimension	3,7	100,0
Social dimension		
Structure of employees	4,0	5,0
Social Management	3,0	5,0
Working safety and health	3,0	5,0
Social justice	2,0	5,0
Equal chances	4,0	5,0
Gender equity	2,8	5,0
Human dignity	3,0	5,0
International justice	4,0	5,0
Customers	1,7	60,0
Result Social Dimension	2,3	100,0

< **Reset all values** **Check** >>

Ann.: Please consider that the sum within one dimension adds up to 100%. The number is shown in pink, if this is not the case. Additionally you can test your result by pressing the button "Check". If you want to give new weights, press "Reset all values". When you are ready press the arrow button ">>" to come to the overall results.

INES tool



File Bearbeiten Ansicht Einfügen Format Extras Daten Fenster ?

Overall result

Company name: Pa-Re
Previous product: Sale of carpet and self-cleaning
New PSS: Carpet and more - sale of carpet including cleaning and repairing service contract
Time frame: One year; already startet
Service Unit: 1 m² carpet, medium quality

	Evaluation
Economic dimension	2,5
Environmental dimension	3,7
Social dimension	2,3

Number of questions you have not answered:	1
Number of questions, that you have marked as not relevant:	12

<<

Print

Back to the Start

Economic/ Environmental / Social - Dimension

Note: Please consider, that a 4 means that the new PSS is equivalent to the previous product; a 5 means an aggravation and the results from 1 to 3 means improvements.

Environmental goals

- decoupling economic growth from material input (dematerialisation)
- increasing resource productivity instead of labour productivity
- alternative schemes of consumption
- stronger use of regional and renewable resources

Goals and trade offs

Trade-offs

Social goals

- stronger consciousness about producer's responsibility
- stakeholder relations improved
- new jobs
- better quality of service
- positive regional impact

Economic goals

- new market opportunities
- increased competitiveness (innovative company)
- financial benefits (medium to long term)

Problems of PSS implementation

risks for the company

time-frame (success given in medium to long term)

rebound effects

stakeholder involvement time-consuming and expensive

change in property rights for consumers

How can the tool help the companies?

Decision Support if uncertain which idea shall be pursued.

Learning tool: about the idea of sustainability on company level;
about impacts of PSS idea

Increasing Creativity: to generate new ideas and to adapt
existing ones

Application is **one step** on the way to a sustainable PSS

It helps to **recognise weak points** in the area of sustainability in
the company

Linked to **Multicriteria Decision Analysis (MCDA)**



PSS Landmarks – Project Partners

Sustainable Europe Research Institute (SERI)



Institute for Environmental Management and Economics (IÖW)



JOANNEUM RESEARCH, Institute of Sustainable Techniques and Systems



Vienna University of Technology, Institute for Engineering Design, ECODESIGN Research Group



Targets of the project

Strengthening the market for sustainable Product-Service-Systems (PSS)

Identifying success and failure factors for implementing PSS



Analysing the contribution of PSS to sustainable development

Strategic recommendations for action planning (for political decision makers)

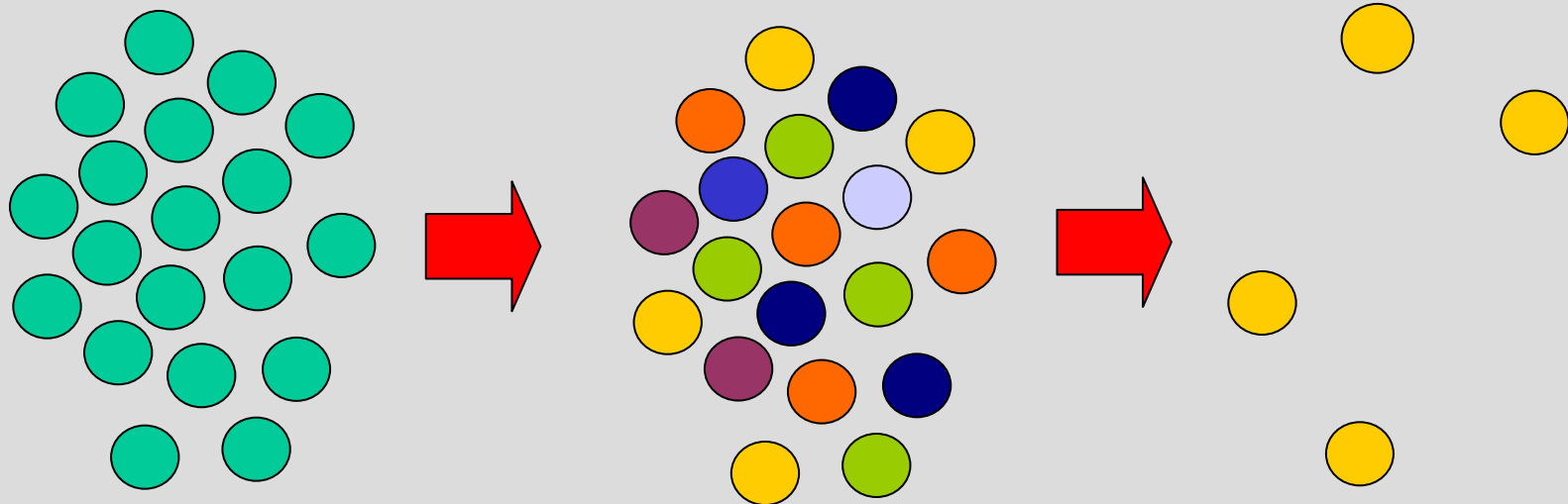
Research questions



1. Do PSS contribute to sustainability?
2. What are the criteria for sustainable PSS?
3. What are the differences between industry sectors?
4. Can PSS contribute to saving natural resources?
5. How can we deal with the fear of loosing competence?
6. What is the relationship between product design and PSS?
7. How do legal conditions influence the implementation of PSS?
8. Which success and failure factors can be found?
9. What are the strategic recommendations for future research?

What we do

- Collection of international PSS case studies
- Evaluation with analysis matrix INES
- Identification of best (good) practice examples

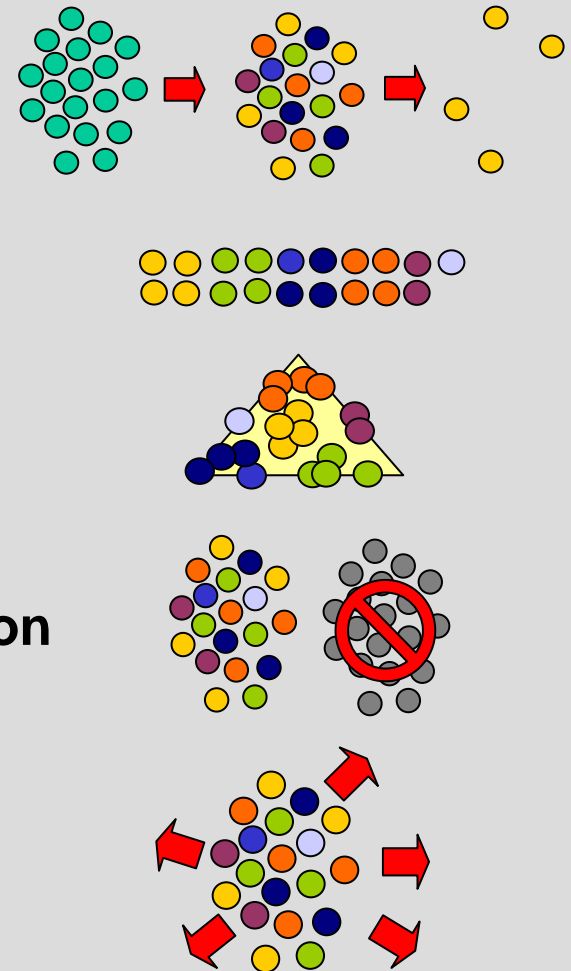


Key topics

- **Methodological strategies for implementation of PSS**
 - including tools and instruments
- **Criteria for the evaluation of the sustainability of PSS**
- **Cost factors, price policy**
- **Legal conditions for PSS contracts**
- **Connection of product services and product design**
- **Aspects of use and arguments for the benefits of PSS**

Outcomes of the project

- Structured analysis of case studies
- Online Database
- Strength and weaknesses of PSS
- Sustainability relevance of PSS
- Possibilities and obstacles for implementation
- Recommendations for further research



Related PSS initiatives and projects

SUSPRONET

Product/service design network
www.suspronet.org



Sustainable homeservices
www.sustainable-homeservices.com

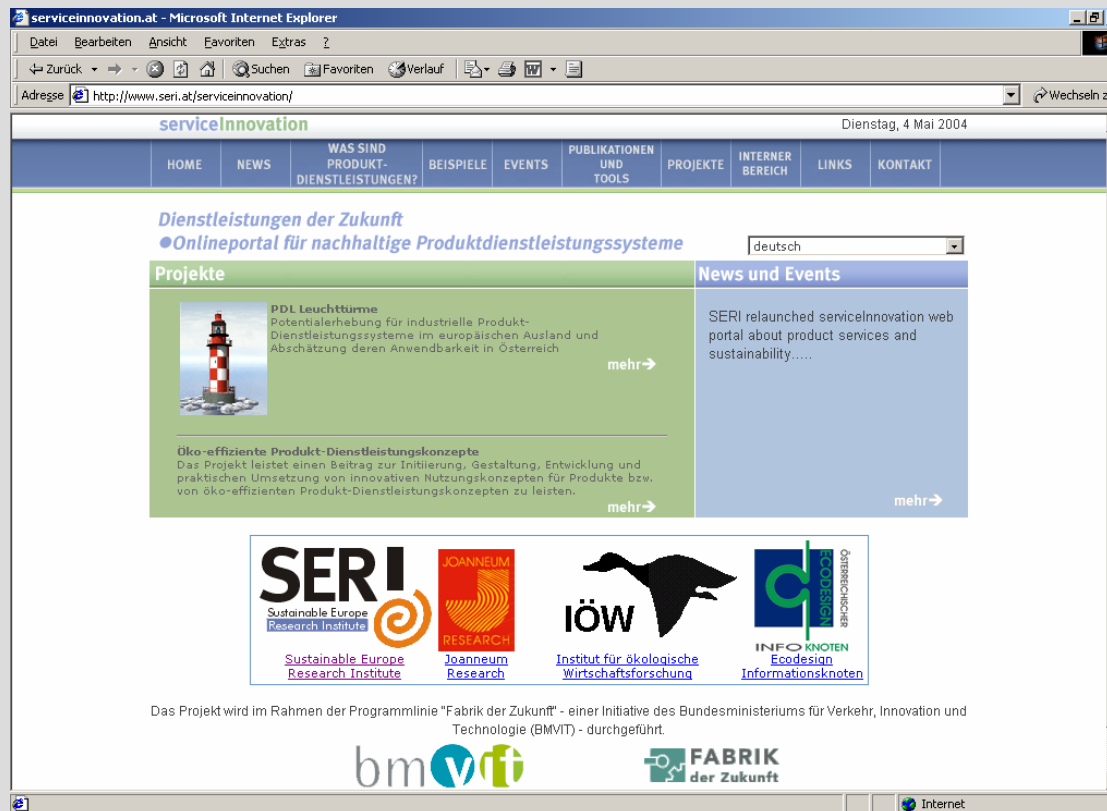


SITE – Sustainable ICT-solutions in the health care sector
www.joanneum.at/nts

www.serviceinnovation.at

serviceInnovation

Austrian online portal for sustainable PSS



THANK YOU!

Further information:

serviceInnovation

www.serviceinnovation.at

mark.hammer@seri.at