

Annual Report 2010

ISIS

Institute for Systems Science, Innovation and Sustainability Research



URBi Faculty/ University of Graz
Merangasse 18/1, A-8010 Graz
Tel: 0043(0) 316-380 3238 / Fax: 0043(0) 316-380 9585
www.uni-graz.at/isis / isis@uni-graz.at

Editorial

It is a pleasure for us to present the first annual report of ISIS, the Institute for Systems Science, Innovation and Sustainability Research! Although ISIS is a rather young institute, 2010 was a year of considerable achievement by the ISIS and its highly motivated staff – in the fields of research and teaching. We have been highly successful in third party funded research, ranging from regional, national and international funding agencies. This shows the high scientific quality and moreover the breadth and the strengths of our team.

At the ISIS, various activities have enhanced the international profile. It is an honour for us to cooperate closely with Nobel Prize Laureate Prof. Elinor Ostrom and be able to send our PhD students as visiting researchers to Bloomington. The new publication strategy and further growth in the size of ISIS led to a significant increase in the number of quality journal paper outputs. Increased attendance at major international conferences demonstrates the growing reputation of ISIS; especially fruitful intra- and inter-university research cooperation takes place within the research core area EGC (Environment and Global Change).

Our research efforts and our networks have also reflected themselves in excellent teaching performance. Environmental Systems Sciences is no longer a small niche study program. Instead, with more than 1,300 students enrolled in the bachelor and master programs, ISIS is now the focal institute of a quite recognizable field of studies at the University of Graz. Moreover, our application for the ERASMUS MUNDUS program in Industrial Ecology (MIND) was accepted. Beside the International Joint Master's Program in Sustainable Development, this is already the second Joint Master Program, where ISIS is the coordination institution. These programs will bring excellent students to the University of Graz and to our research unit and we expect this to further foster our excellent research capabilities.

Finally, we have to mention the success of our staff. Prof. Stefan Vorbach obtained a full professorship at the Technical University of Graz (General Management and Organisation), Prof. Binder just accepted an offer from the University of Munich (Chair of Human-Environment Interactions), and Prof. Steiner received a Schumpeter Professorship to spend one year at Harvard University.

Claudia Binder

Alfred Posch

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1 The institute

1.1 History

In October 2007, the Faculty of Environmental and Regional Sciences and Education (URBI), was established, bringing together four branches of science: Environmental System Sciences, Geography, Sports Science, and Educational Sciences. This was also the starting point of the Institute of Systems Sciences, Innovation and Sustainability Research (ISIS). Besides the Wegener Centre for Environmental and Global Change (WegC), ISIS is the focal institute in the field of Environmental System Sciences and also responsible for the corresponding bachelor and master programmes in Environmental System Sciences.

In the beginning, the ISIS team consisted of four academic and one administrative staff members of the former Institute of Innovation and Environmental Management. Additionally, the coordination office for the study programmes in Environmental System Sciences was appended to the ISIS. There has always been a strong commitment to internationally renowned research for sustainable development, and to providing international, research-driven, and multifaceted education at ISIS. Thus, in 2008 the Austrian Federal Ministry of Science and Research and the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management awarded ISIS with the Austrian Sustainability Award in the two categories of research and teaching/ curricula.



Figure 1: Sustainability Award 2008



In October 2009, ISIS was again awarded, this time as an Austrian UNESCO decade project (*UN-Decade of Education for Sustainable Development 2005 – 2014*). The criteria comprised the integration of three sustainability dimensions, and the relevance for education and every-day life, including participatory elements. The jury especially emphasized the institutional embeddedness and the broad variety of topics covered at ISIS. Further, the planned professorships in Systems Sciences and Sustainable Development were considered positively. With this award, ISIS is allowed to use the UN-decade logo until 2014.

In October 2009, the professorship for system sciences was filled by Prof. Claudia Binder; and one year later in October 2010, the interim professorship for sustainability management was filled by Prof. Rupert Baumgartner. Now, four professors, three senior scientists, one lecturer, 8 junior scientists (out of them 5 project staff), two administrative staff, and 6 student research assistants belong to ISIS.

1.2 Mission statement

The Institute for Systems Science, Innovation and Sustainability Research investigates the transition towards sustainability. Therefore, we study transition, innovation, and adaptation processes within human-environment systems, with a focus on firms and regions. We base our research on systems science, innovation and transition sciences as well as sustainability science, and develop inter- and transdisciplinary methods to analyze and model human-environment systems, develop scenarios and transition pathways, and assess regulatory strategies.

ISIS is composed of a highly motivated interdisciplinary group of researchers from fields including natural sciences, geography, and business administration. ISIS is a special institute in several ways:

- It combines the three science fields: systems science, innovation and transition sciences and sustainability science
- It is an interface institute and as such it has high collaboration potential with scientists from social and natural sciences.
- Given its transdisciplinary research focus it has strong collaborations with enterprises and within regions, allowing for high quality applied research.
- It combines qualitative and quantitative methods in its research projects.
- Being the coordinating institute of two international joint masters programs, it is well embedded in international networks in both fields, teaching and research.

Within the URBI faculty, ISIS has a very special position, as it provides the interface to the different institutes within the faculty as well as to almost all faculties within the University of Graz. As such, together with the Wegener Center, ISIS is part of the scientific field environmental systems science, and plays a central role within the research core area “Environment and Global Change”

1.3 Faculty and Staff members

Professors



Univ.-Prof. Dr. **Rupert J. Baumgartner**
 Phone: 3237 Email: rupert.baumgartner@uni-graz.at

Professor for Sustainability Management

Research interests: (corporate) sustainability management, CSR, Sustainability assessment, LCA, Industrial Ecology, Interorganizational Management



Univ.-Prof. Dr. **Claudia R. Binder**
 Phone: 7340 Email: claudia.binder@uni-graz.at

Professor for Systems Sciences
 Head of ISIS

Programme director of the Erasmus Mundus Master programme in Industrial Ecology

Research interests: Interdisciplinary integration of environmental models with decision-making models, Multi-agent simulation of transition processes, Integrative sustainability assessment methods, Qualitative and quantitative methods for system and scenario analysis, Ontology development for Socio-Ecological Systems



Ao.Univ.-Prof. Dr. **Alfred Posch**
 Phone: 3234 Email: alfred.posch@uni-graz.at

Dean for studies at the URBI-Faculty
 Vice head of ISIS

Academic coordinator of the International Joint Master programme in Sustainable Development

Research interests: Sustainability learning and management, Industrial Ecology, Environmental decision making, Sustainable Innovation



Assoz. Univ.-Prof. Dr. **Gerald Steiner**
 Phone: 7331 Email: gerald.steiner@uni-graz.at

Research interests: Methodology of systems analysis and scenario planning, sustainable innovation, collaborative creative problem solving, stakeholder management, sustainability learning & entrepreneurship, industrial design

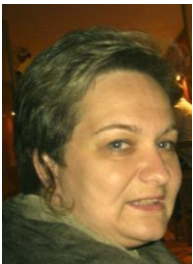


Ao.Univ.-Prof. Dr. **Stefan Vorbach**
Email: stefan.vorbach@tu-graz.at

Since November 2010 Professor at TU Graz

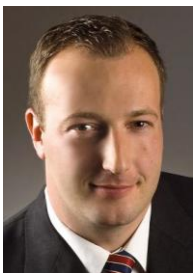
Research interests: Sustainability Management and Learning, Innovation Management and Transformation, (Sustainable) Technology Management

Senior Scientists



Mag. Dr. **Ulrike Gelbmann**
Phone: 7333 Email: ulrike.gelbmann@uni-graz.at

Research interests: Strategic sustainability management, Corporate Social Responsibility, stakeholder management, sustainability reporting, social sustainability, resilience, waste management



M.Sc. Dr. **Maximilian Mrotzek**
Phone: 7342 Email: maximilian.mrotzek@uni-graz.at

Research interests: System Dynamics, Disaster, Resource Scarcity, Silver



MMag. Dr. **Elke Peri-Vorbach**
Email: elke.perl@uni-graz.at

currently on maternity leave

Lecturer



Dipl.-Ing. Dr. **Ralf Aschemann**
Phone: 3232 Email: ralf.aschemann@uni-graz.at

Academic coordinator of the Erasmus Mundus Master programme in Industrial Ecology
Academic coordinator of transdisciplinary case-study teaching at ISIS

Research interests: Environmental assessment, environmental effects of transport, industrial ecology, higher education and environmental issues

Junior Scientists



Mag. Katja Bedenik

Phone: 7337 Email: katja.bedenik@uni-graz.at

Research interests: Energy & Environment, Renewable energy and energy self-sufficiency, system science, transdisciplinary research, agent-based modeling



M.Ph. M.Sc. Porfirio Guevara

Phone: 7345 Email: porfirio.guevara-chaves@uni-graz.at

Research interests: Poverty and education analysis, innovation, economic growth, international trade, environmental economics, System Dynamics modeling



Mag. Corinne Von der Hellen

Phone: 7336 Email: corinne.vonderhellen@uni-graz.at

Research Interests: Higher Education for Sustainable Development, Sustainability Learning, University Research

Project staff



MA (UZH) Ivo Baur

Phone: 7344 Email: ivo.baur@uni-graz.at

Research interests: New Institutional Economics and Social-Ecological Systems, Agricultural Economics and Policies, Sustainable Development and Development Theories



Mag. Nina Braschel

Phone: 1524 Email: nina.braschel@uni-graz.at

Research interests: Emissions Trading, Waste Management



Mag. Elvis Kenik

Phone: 7332 Email: elvis.kenik@uni-graz.at

Research interests: Sustainability and Civic Entrepreneurship, Creativity and Innovation Management, Biomimicry



MMMag. Holger Klier

Phone: 3236 Email: holger_klier@hotmail.com

Research interests: Strategic Management (Focus on Strategy Implementation), Environmental Management (Focus on Greenhouse Gas Management), Environmental Psychology (Focus on Pro-Environmental Behavior)



M.Sc. Camilo Lesmes-Fabian

Phone: 7343 E-mail: camilolesmes@live.com

Research interests: Sustainable Development, Material Flow Analysis, Life Cycle Assessment, Risk Assessment, Human Ecology, Agroecology, Soil Sciences



Mag. Romana Rauter

Email: romana.rauter@uni-graz.at

Research interests: Innovation and Technology Management, Knowledge and Technology Transfer, Knowledge Management

Administration



MBA Sabina Grobbauer

Phone: 3238 Email: sabina.grobbauer@uni-graz.at



Mag. Regina Hasiba

Phone: 1037 Email: regina.hasiba@uni-graz.at

Student Assistants



Angelika Brandl

Phone: 1037 Email: angelika.brandl@uni-graz.at



Julian Fink

Email: julian.fink@uni-graz.at



Florian Hold

Email: florian.hold@uni-graz.at



Nina Jentl

Phone: 1037 Email: nina.jentl@uni-graz.at



Andreas Kreuzeder

Email: andreas.kreuzeder@uni-graz.at



Anita Orthofer

Email: anita.orthofer@uni-graz.at



Mario Perner

Phone: 1037 Email: mario.perner@uni-graz.at

2 Research projects and activities

2.1 Research profile

Research at ISIS focuses on the areas of resource management, technology management and sustainability learning. In each area, we seek to enhance the ability of human-environment systems to deal with global change.

Resource management. Sustainable management of renewable and non-renewable resources requires the analysis of processes all along the value chain including, for example, mining, processing, consumption and waste management. We develop environmental process models, behavioral models, and transdisciplinary approaches to analyze these processes and develop concepts and strategies for their sustainable management. Key aspects include assessing of the sustainability potentials within the value chain and considering agency - the ability to act - in the development and implementation of measures.

Sustainability learning. Sustainability learning means the development of competences that are needed for appropriate human behavior at different levels according to the norms of sustainable development. Therefore, it is necessary to generate an understanding of processes and patterns of human decision making and action. On this basis, we can develop inter- and transdisciplinary concepts for supporting important decisions that influence sustainability, and we can help initiate sustainability-oriented transition, innovation and adaptation processes in a variety of human-environment systems.

Technology management. We see the transition to sustainable technologies as a significant challenge for the future. It is our goal to initiate the development of new and improved processes, products and services to enable and promote sustainable development. Moreover, to gain sustainable solutions for the future, transformation processes in society, business and the environmental in general, will be necessary. We thus deal with research and teaching in innovation and transition processes and sustainable technology systems.

2.2 Research Projects

The specific research projects are given through the combination of the science field we draw upon and the research areas. As such we are currently developing projects in regional and organizational energy systems, resources and waste, the commons, and sustainability management and assessment.

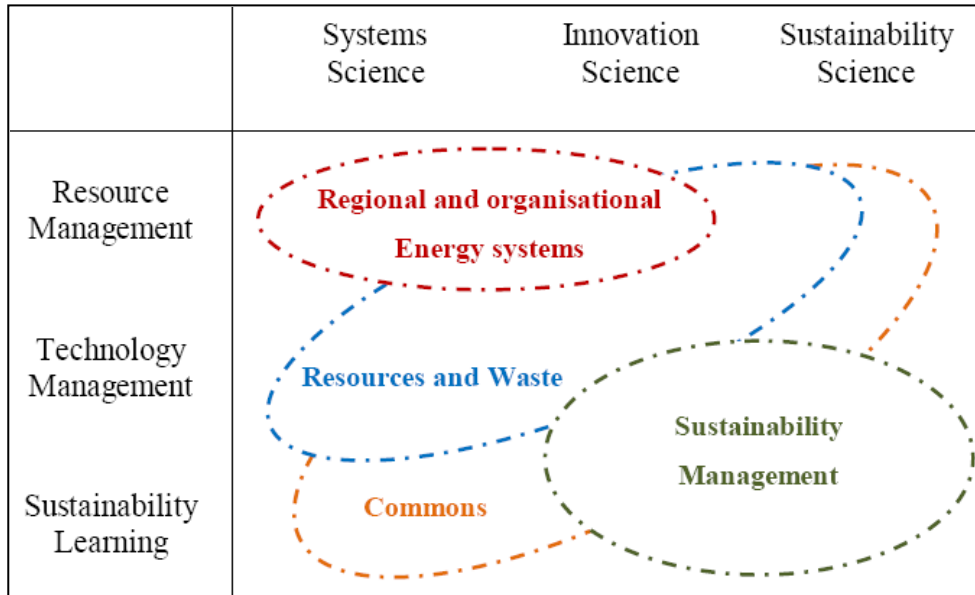


Figure 2: Research fields of ISIS

The research field **Regional and Organisational Energy Systems** deals with the following questions: Which actors and what factors support or prevent the development of energy regions or the innovation and adoption of energy efficient technologies? How can these development processes be simulated? What policies support the creation of new and successful advancement of energy regions or the innovation and implementation of new technologies?

The research field **Resources and Waste** deals with the following questions: Which parameters lead to sustainable management of resources and waste? Which control mechanisms play a role? How can resource-waste systems be optimized from an environmental, social and economic point of view?

The research field **Commons** deals with the following questions: How are commonly owned lands and resources managed? How has this been done in the past and what are the implications for the future? How can the development of rules be supported from a scientific point of view?

The research field **Sustainability Management and Assessment** deals with the following questions: How can measures for the implementation of sustainable strategies in cooperation with stakeholders, be developed and evaluated? How can sustainability aspects be integrated into corporate leadership? What management tools are appropriate for (corporate) sustainability management? How can sustainability performance of organizations be evaluated?

2.3 Research projects - Regional and Organizational Energy Systems

2.3.1 TERIM: Transition Dynamics in Energy Regions: An Integrated Model for Sustainable Policies

Energy regions are regional initiatives, which usually envision energy self-sufficiency by using regional renewable energy sources and building a decentralized energy infrastructure. Studies on energy regions have mostly looked at the technical-operational characteristics and informed policy-makers on how to improve energy infrastructure. However, they have missed out in providing and understanding the dynamics of the transition process, in particular the role of policies, social norm, and culture in stakeholders' decision-making and thus, on the transition process itself.

The main objectives of this project are (i) to simulate the transition dynamics of energy regions and (ii) to derive policy recommendations. Specifically, we will:

1. Analyze the transition dynamics in two Austrian energy regions, beginning from their establishment until today.
2. Develop an integrated simulation model for studying transition dynamics in energy regions including interrelations and feedbacks between the social system and the energy infrastructure, as well as the impact of policies on individual human behaviour and the transition process.
3. Derive policy recommendations for Austrian policy makers.

The conceptual approach combines elements of transition theory, policy design and improvement, and human-environmental systems research and modelling. One key element of our conceptual framework is the in-depth characterization of stakeholders' decision-making, where we will consider (i) the goals and interests of individuals; (ii) regional factors and local environmental conditions, as well as (iii) external factors.

Study regions:

ÖkoEnergieLand Güssing,
Energy Region Weiz-Gleisdorf

Project team at ISIS:

Prof. Dr. C. R. Binder (project leader)
Dr. U. Villsmaier
Mag. K. Bedenik
P. Guevara, Msc.

Project partner:

ISIS, University of Graz
TU Delft, Holland
Energy Güssing (EEE)
Energy Region Weiz-Gleisdorf,
European Centre for Renewable

Duration: 2011 – 2013

Funding: Austrian Energy and Climate fund

Website: <http://www.uni-graz.at/terim>

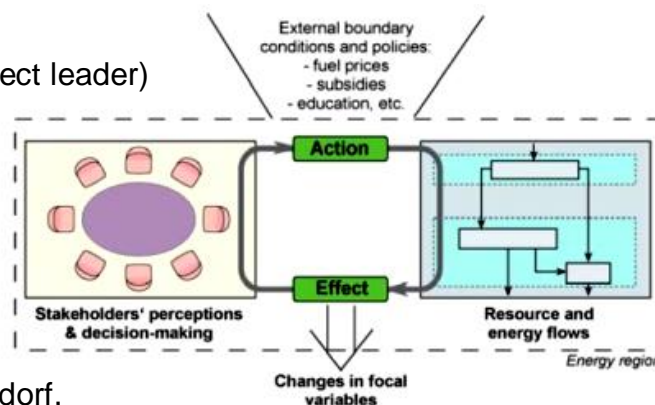


Figure 3: Conceptual framework of TERIM

2.4 Research projects - Resources and Waste

2.4.1 RISK: Life cycle human exposure and risk assessment of pesticide application on agricultural products in Colombia

Although the human health effects of pesticides have decreased significantly in industrialized countries, misuse of pesticides in developing countries is still problematic. Chronic health problems and environmental impacts have not been well investigated and are likely to be significant. Possible factors contributing to these impacts include the application of old products with high persistence and toxicity and missing or insufficient protection of workers during pesticide application and use. Because a significant portion of the crops imported into Europe come from developing countries, responsible consumers and authorities in the exporting and importing countries are interested in understanding and ultimately mitigating the life-cycle environmental and health impacts of these products.

The objectives of this project are:

1. Quantifying the direct and indirect exposure of pesticide applications along the whole value chain.
2. Identifying the most relevant exposure pathways within various case studies (i.e. potato, flowers and banana farming systems) to better understand the overall toxic effects of pesticides applied in Colombia.
3. To build a model for human exposure and risk assessment that could be extended also in other South and Central American Countries with similar production systems.

The conceptual model approach considers all the pathways followed by the pesticides after the application and its distribution in the different environmental compartments with special emphasis in the human exposure. The further development of the model will use two methods: material flow analysis and system dynamics.

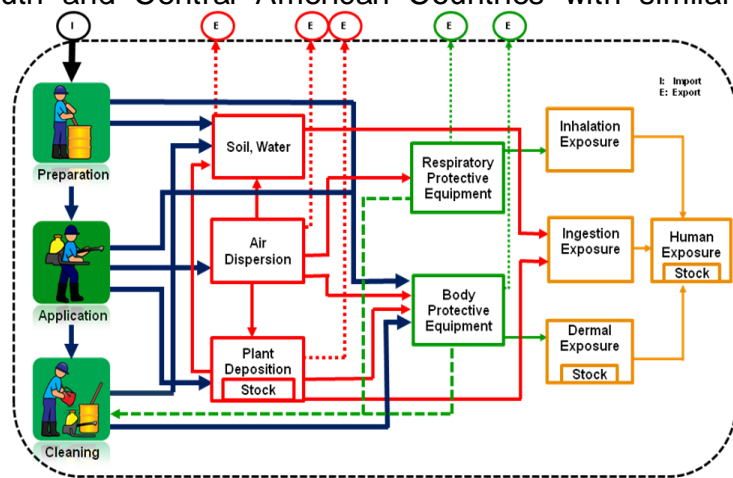


Figure 4: Material flow analysis of pesticide application

Case Studies in Colombia:

Vereda La Hoya, Sabana de Bogotá,
Urabá Antioqueño

Project team at ISIS:

Prof. Dr. Claudia. R. Binder (project leader)
Camilo Lesmes-Fabian, M.Sc.

Project Partners:

ETH Zürich, University of Zürich,
Universidad Nacional de Colombia and Uniboyacá.

Duration:

May 2010 – April 2012

Funding:

Swiss Science National Foundation

Website:

http://www.uni-graz.at/risk_pesticide

2.4.2 CEA – CO₂ Emissions trading and the waste industry

In order to reach the Austrian greenhouse gas reduction targets, a comprehensive set of policy measures and incentives needs to be implemented. This project examines the potential impact of applying the EU emission trading system in the Austrian waste sector, and its relevance for the economic situation of the waste industry as well as for the Austrian climate policy. Taking the present situation of the Austrian waste sector as a starting point, an attempt is made to identify the possibilities for integrating the Austrian waste sector into the trading system and the expected impact on various stakeholders. A systems approach is used to develop and compare several models and scenarios.

The three main research questions are:

- What is the initial situation in the waste industry concerning the aims of climate policy?
- How, and in what areas, might the Austrian waste industry be integrated into the EU emission trading system?
- What are the likely micro and macroeconomic impacts of such a move on the various stakeholders involved?

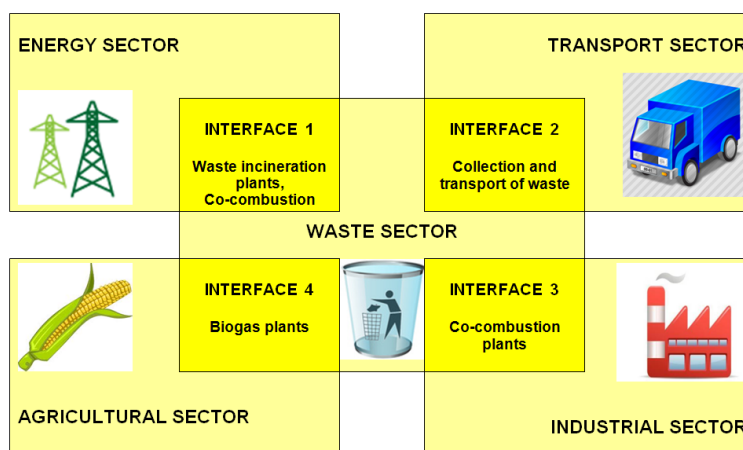


Figure 5: Interfaces of the waste sector

The results of the analysis will be of relevance in the structuring of Austrian waste and climate policy, and will also be significant for stakeholders and others interested in developing business models.

Project team at ISIS:

Prof. Alfred Posch (project leader)
Mag. Nina Braschel

Duration:

May 2010 – December 2011

Funding:

ARA Altstoff Recycling Austria AG
Saubermacher Dienstleistungs AG

Website:

<http://www.uni-graz.at/cea>

ARA 
Altstoff Recycling Austria

Saubermacher 
für eine lebenswerte Umwelt

2.4.3 Options for Disposing Diapers

Disposable nappies are usually delivered within the residual waste to a residual waste incineration plant. Contrary to common practice, the Waste Management Association Hartberg operates a special collecting system that allows nappies to be separated from residual waste. The innovative procedure enables the use of other treatment options and makes further recovery possible. It allows for an expansion of the existing mechanical treatment plant into a biological processing system facility. The biological treatment envisages a mixed processing of disposable nappies and the screenings of residual waste.

The objective of the whole working process is to find more accurate assessments on the planned nappy treatment. The results facilitate new opportunities in economic and environmental considerations for the Waste Management Association Hartberg.

The conceptual framework of the case study is the Austrian Landfill Ordinance which came into force in 2004. All waste has to be subjected to a special treatment before being landfilled. The method applied includes a special approach of sensitivity analysis.



Figure 6: Search of innovative waste treatment

Project team at ISIS: Dr. Ulrike Gelbmann (project leader)
Mag. Jasmin Pichler

Duration: December 2009 – September 2010

Funded: Waste Management Association of Hartberg, funded by Steirische Förderungsgesellschaft

Homepage: http://www.uni-graz.at/disposing_diapers

2.4.4 Value and Benefits of Commercial Waste Management Solutions

In Austria, the last decades in the waste management industry has changed from a young evolving sector with high rates of innovation and growth into a now mature industry with technically and environmentally sophisticated services. In the opinion of private waste management enterprises decision makers on the local level no longer appreciate the value and benefits of the sophisticated waste management system. Instead, price seems to be the most relevant decision criterion for choosing waste disposal services.

The objective of the project was to investigate the differences in perceptions of value and benefits of waste management solutions.

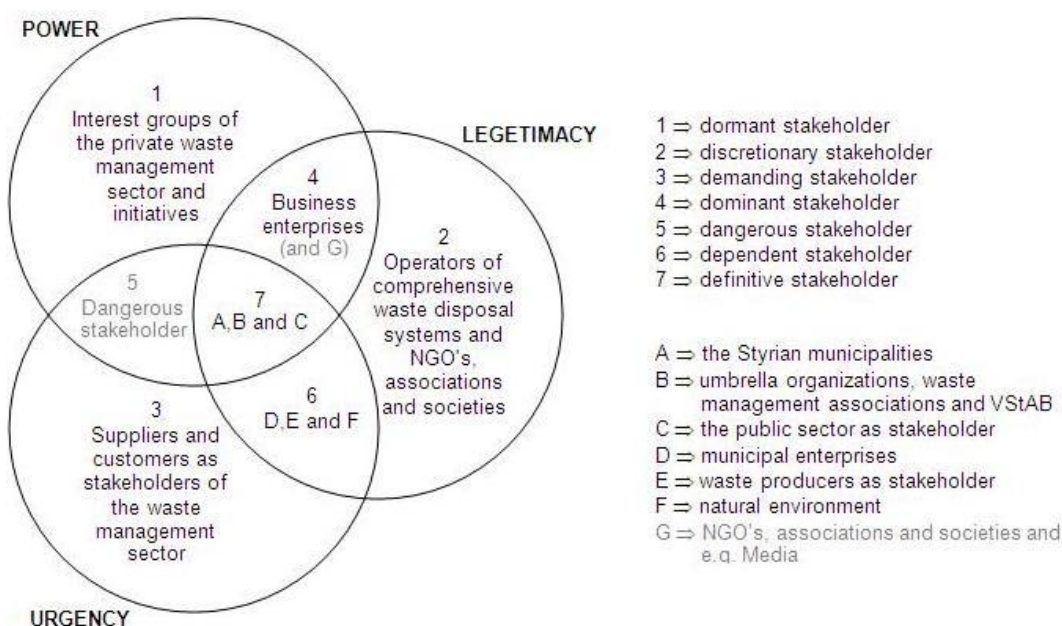


Figure 7: Stakeholders in Waste Management, according to Mitchell et al., 1997

The conceptual framework of the project considers decision making behavior and criteria as well as stakeholder processes in municipal waste management in Styria, based on models like Freeman's stakeholder theory and Kano's model of customer satisfaction. The methods involved personal interviews with members of local waste management associations and an online survey of Styrian communities. Finally we devised three possible scenarios.

Project team at ISIS: Dr. Ulrike Gelbmann (project leader)
 Prof. Dr. Karl Steininger
 Prof. Dr. Stefan Vorbach
 Mag. Andrea Damm
 Mag. Hannes Klampfl-Pernold

Project partners: Saubermacher Dienstleistungs AG, Graz

Duration: November 2009 – September 2010

Funded: Economic Chamber of Styria
 Section for Waste and Waste Water Management

Homepage: http://www.uni-graz.at/commercial_waste_management

2.4.5 MaRingA

The Austrian Machinery Ring Association is an initiative driven by agricultural actors, usually organized as not-for-private-profit associations or farmers' cooperatives integrated under a common umbrella and initially directed at optimizing the use of agricultural equipment and at providing organized neighborhood help for farmers. Over time, the Machinery Rings also engaged in providing their members, farmers, with part-time freelance jobs in order to increase their income. But the operative scope was rather small, as services are only allowed among farmers. Servicing others like municipalities, private households or enterprises requires a trade license, whereas working for an enterprise disposing of a trade license, this is within the law. Thus, the Machinery Ring founded "Machinery Ring Service Cooperative" which is increasingly becoming seen as a competitor by commercial enterprises especially in the sectors of waste management (particularly in winter road service) and transport.

The objective of this project is to report on the stakeholder and organizational structure of Machinery Rings in order to find advantages and drawbacks of both groups services provided by lump-sum farmers and machinery rings on one side and those of commercial enterprises on the other.

The conceptual framework applied covers business, economic and legal aspects. The expertise of the University of Graz and BOKU Vienna concludes that there are no general or structural differences as to market or legal requirements for either group.

Project team at ISIS:	Dr. Ulrike Gelbmann (project leader) Prof. Dr. Stefan Vorbach Mag. Roman Lind
Project partners:	BOKU University of Natural Resources and Life Sciences Institute of Law
Duration:	November 2009 – September 2010
Funded:	Austrian Federal Economic Chamber, Section for Waste and Waste Water Management and Section for Transport and Shipping
Homepage:	http://www.uni-graz.at/maringa

2.5 Research projects - Commons

2.5.1 Alps: Analyzing and Modeling Transitions of Common Property Pastures in the Swiss Alps

The common property pastures in the Swiss Alps provide significant services to the mountainous regions, such as income sources for farmers and tourism industry, protection from soil erosion, water-run-off, landslides, and high biodiversity. These services are highly dependent on continuous management of the alpine pastures. In Switzerland, most alpine summer pastures are common property and have been managed by local governance systems since the Middle Ages in order to avoid over-use of the scarce resources. Societal changes, like industrialization, rapid economic growth, and new agricultural policies, induced major transitions of the pasture management system, which led to abandonment of marginal land or intensification of productive areas ensuing reduction of biodiversity on the long-term.

The objectives of this project are:

1. To characterize, analyze, the transitions of the management system of common property pastures in the Swiss Alps, with special focus on institutional development, farmers decision making, and land use change.
2. To dynamically model the transitions of the social-ecological system (SES) using a systems dynamics approach.
3. To develop scenarios and strategies for coping with upcoming challenges such as market liberalization.

The conceptual model is based on Ostrom's general framework for analyzing social-ecological systems (Ostrom 2009). It shows the social subsystems (blue) interacting (red) with the ecological subsystems (green).

This conceptual model is quantified based on survey data (farmer's decision making), and federal statistics (farm structure, land use, and land cover). The data of the SES are modelled using a systems dynamics approach.

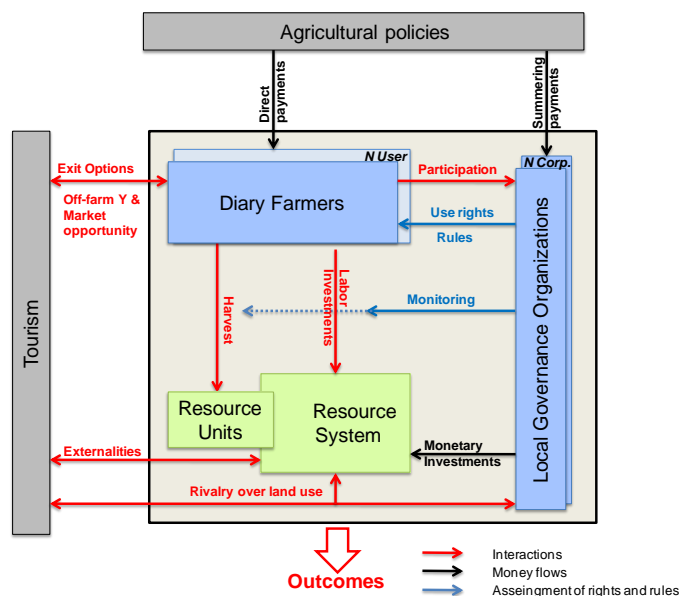


Figure 8: Conceptual model of Alps

Study regions:	Grindelwald (canton of Bern), Törbel (canton of Valais)
Project team at ISIS:	Prof. Dr. Claudia. R. Binder (project leader), Ivo Baur, M.A.
Project Partners:	University of Bern (CDE), Indiana University Bloomington ETH Zürich
Duration:	October 2009 – October 2012
Funding:	Swiss Science National Foundation
Website:	http://www.uni-graz.at/alp

2.5.2 Shared Space

During the last decades the faces of cities and towns have changed dramatically as motorized traffic has become increasingly dominant. In addition, a technological progress-oriented planning philosophy supported this development by installing larger streets for cars and heavy traffic. This caused people to begin withdrawing from these spaces, reducing their activities to the necessary.

In this study, this dynamic development will be described by a system dynamics approach, with a focus on the quality of sojourn of the public street space in a small town in south-eastern Austria (Gleinstätten, Styria). In a final step, the policy phase, the effects of Shared Space will be included into the model, and thereby discussed for policy relevance.

The research questions of this project are:

1. How can the multidimensional construct of quality of public space be defined?
2. What are its main factors and how can the system be modeled dynamically?
3. What are the effects of Shared Space on the modeled system?

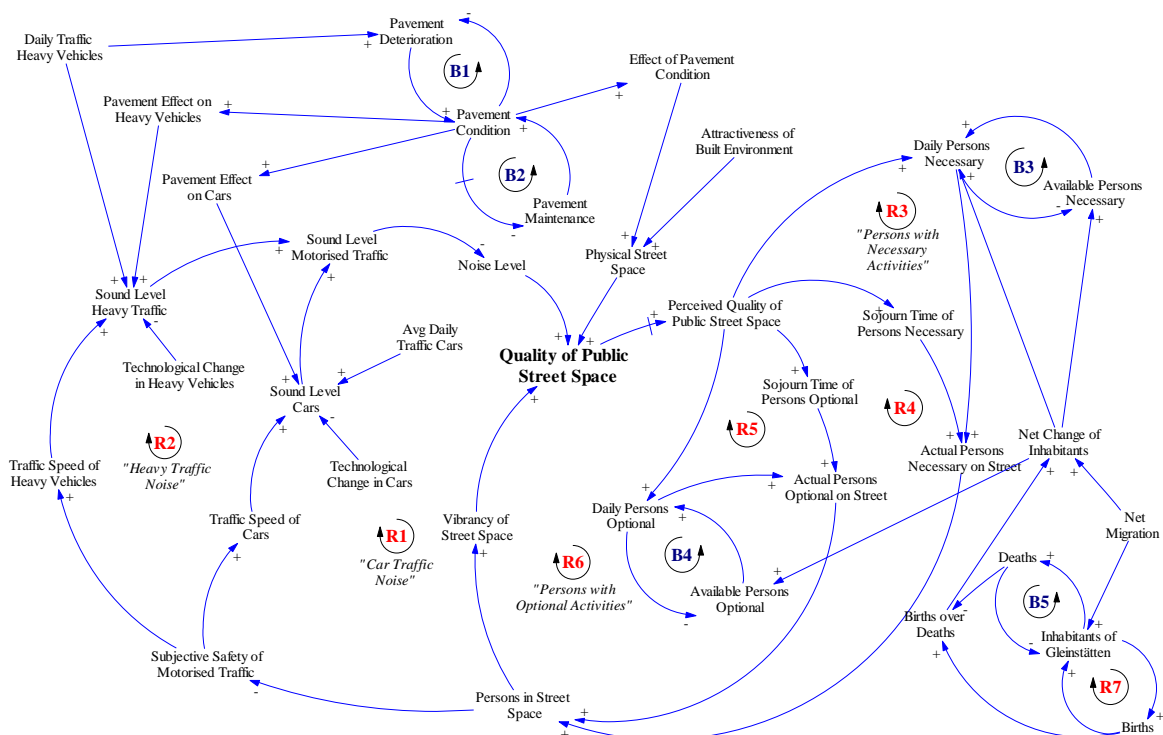


Figure 9: Causal Loop Diagram

Project team at ISIS:	Prof. Gerald Steiner (project leader) Mag. Corinne Von der Hellen Martin Kislinger Prof. Alfred Posch Mag. Hannes Klampfl-Pernold
Duration:	July 2008 – March 2011
Funding:	Land Steiermark, Fachabteilung 18A – Gesamtverkehr und Projektierung
Website:	http://www.uni-graz.at/shared_space

2.6 Research projects - Sustainability Management and Assessment

2.6.1 FoSentHE - Fostering Entrepreneurship in Higher Education

The increasing global integration and rise of global market have created a tremendous need to strengthen and build teaching programs focused on enterprise and entrepreneurship. Indeed, the EU is determined to foster entrepreneurial mindsets among young people. At the 2006 Spring European Council, the Commission clearly stated that Member States should reinforce entrepreneurship education at all levels. The need to create a positive entrepreneurial climate and an appropriate framework facilitating entrepreneurship as well as to promote entrepreneurship education was also emphasised.

Objectives

- System-based research on entrepreneurship and innovation under the umbrella of sustainability
- Improvement of the teaching practice regarding entrepreneurship in higher education at large, as well as facilitating entrepreneurship fostering in practice
- Creation of the new e-course curricula in entrepreneurship at all levels of higher education

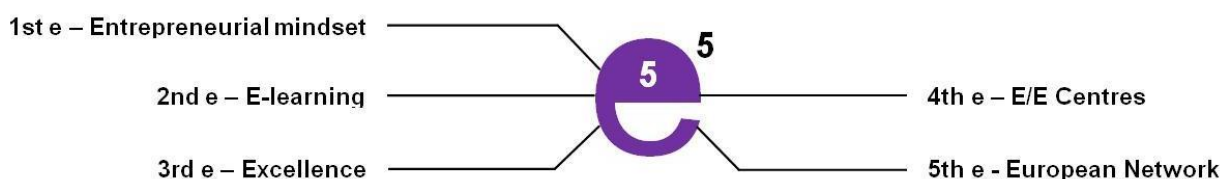


Figure 10: 5e5 outcome model

Project team at ISIS:

Assoc. Prof. Gerald Steiner (project leader)
Mag. Elvis Kenik

Project partners:

University of Zagreb (grant holder)
School of Business Administration, College of Management, Rishon Lezion
University of Nice-Sophia Antipolis (UNSA)
European Foundation for Management Development (EFMD)
University of Maribor, Faculty of Economics and Business (FEB)
Poznan University of Economics
Juraj Dobrila University of Pula, Department for Economics and Tourism
University in Split, Faculty of Economics

Duration:

February 2009 – January 2012

Funding:

European Commission: Education,
Audiovisual and Culture Executive Agency (EACEA)

Website:

<http://www.uni-graz.at/fosenthe>

2.6.2 TO-INNOEN - Innovation Module for Engineering Programmes

Global competition in industry dictates that the only way of staying in the market is to create new products and better services. This means a lot of pressure in today's engineering workforce in terms of 'innovation'. In other words, engineering graduates have to be creative problem solvers with good entrepreneurial and communication skills. The participating organizations become involved in a European cooperation in order to address this issue, and start an initiative for providing solutions.

The project aims at forming a network of academic partnership with the same goal of achievements to

- share and disseminate knowledge in the area of innovation
- raise awareness on the importance of teaching on innovation and
- to create a short course module for teaching 'innovation'.

A teaching module, comprising of teaching and learning materials, is developed for last-year undergraduate students and graduates working particularly in chemical processing and manufacturing industries; this will provide possibility of easy expansion and implementation in other engineering fields. The module includes theoretical aspects of the innovation systems approach and practical tools to promote effective innovation. It addresses the needs of engineers employed in industry and the need for innovation in technological products and processes. It is expected that the outcome of the project will be expanded, and trainees will make considerable impact in their industrial working environment by stimulating and contributing to innovative design and problem solving approaches.

Project team at ISIS:

Prof. Alfred Posch (project leader)
 Prof. Gerald Steiner
 Dr. Alexandra Sindler

Project partners:

Ankara University, Turkey
 Oxfords Brooks University, UK
 Liverpool John Moores University, UK
 Inonu University, Turkey

Duration: August 2008 – July 2010

Funding: European Union
 Leonardo da Vinci Partnership

Website: <http://www.uni-graz.at/to-innoen>



Figure 11: Course module in Ankara

2.6.3 FFG Innovationscheck

Projects encouraged by the FFG Innovationscheck focus on the specific support of SMEs and should give them the chance of starting co-operations with external (scientific) partners in limited fields like R&D or strategy.

Within the last two years we settled two projects with Styrian SMEs in which we worked mainly on topics referring to the companies' (innovation) strategy.

Questions these companies are interested in included:

1. What will be the most important changes in market and technology within the next five years?
2. How can we react accordingly?
3. Which strategy is most helpful in order to strengthen and enlarge our competitive advantages?
4. How can we successfully manage the changes within our organization due to the strategic reorientation?

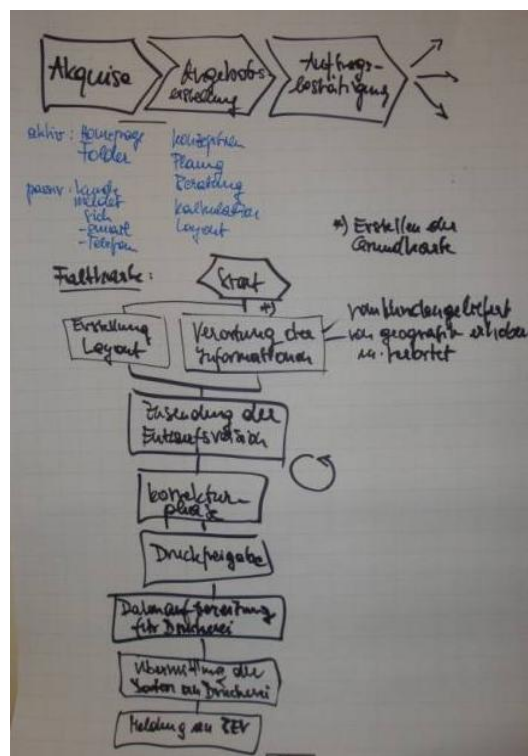


Figure 12: Developing innovation strategies

Project team at ISIS: Prof. Stefan Vorbach (project leader)
Mag. Romana Rauter

Duration: 6-12 months

Funding: FFG respectively the company

Website: http://www.uni-graz.at/ffg_innovationsscheck

2.6.4 KBB - Knowledge for Business in Border Regions

The KBB project has been developed to boost the activities of technology transfer in the regions and within the regions of Styria and Slovenia. KBB is a project within the SI-AT funding programme of the EU with Slovenian and Austrian partners.

The main goals of the project are as follows:

1. Training of consultant officers (so-called technology transfer facilitators) who will be experts in particular fields and will work closely together with technology agencies and institutions involved in technology transfer (support schemes) and with knowledge suppliers (academia, PR institutes). The TTFs will provide selected and innovative companies with their services aiming at putting knowledge to market thus increasing competitive position of companies.
2. Establishment of bilateral connections between the regions and know-how transfer among R&D-institutions and industry (science to business).
3. Development of B2B-contacts in selected fields of operations (e.g. ICT, materials, chemistry, energy).

The long term objectives include changes in the innovation practice of Slovene and Styrian companies (mainly SMEs), increased R&D-activities in companies and increased industry related activities in Slovene and Styrian R&D-institutes. To foster technology transfer and innovation activities of the companies we use the following model.

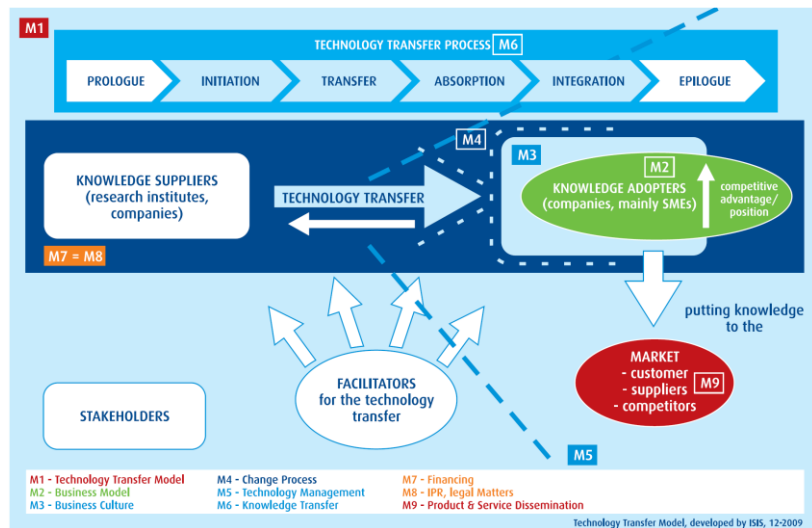


Figure 13: Technology transfer process

Project team at ISIS:

Prof. Stefan Vorbach (project leader)
Mag. Romana Rauter, MMag. Dr. Elke Perl-Vorbach

Project Partners:

TIA, AC Styria, Chamber of Commerce and Industry of Štajerska, University of Maribor, FH Kapfenberg, Pomurje Technology Park, SFG-Innofinanz

Duration:

June 2009 – March 2012

Funding:

European Union (EU-Programme“ ETZ – Europäische Territoriale Zusammenarbeit“, SI-AT, Austria-Slovenia)

Website:

<http://www.uni-graz.at/kbbregions>

2.6.5 Science Fit

The project Science Fit has been developed to support Styrian companies dealing with research institutions. Therefore, the goal of Science Fit is to foster cooperation between science and industry in Styria, in which the focus concentrates on knowledge transfer projects of SMEs.

The following figure shows the regional transfer system in a descriptive model, which serves as the underlying framework of the project:

For reaching the goal the project partners are actively contacting Styrian SMEs and if desired, arrange contacts to the appropriate experts in one of the Styrian universities. In addition, events such as road shows and workshops, are organized by the team. Furthermore ISIS acts as a “scientific partner” in doing research in the field of knowledge and technology transfer between research institutions and SMEs.

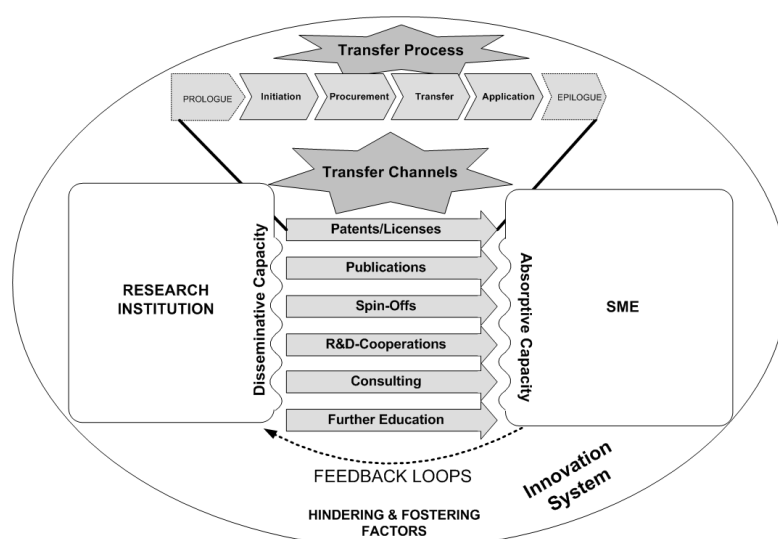


Figure 14: Cooperation between science and SME's

Project team at ISIS: Prof. Stefan Vorbach (project leader)
Mag. Romana Rauter
MMag. Dr. Elke Perl-Vorbach

Project partners: TU Graz, F&T-Haus (lead partner)
Montanuniversität Leoben
Joanneum Research
Karl-Franzens-Universität Graz

Duration: August 2008 – Dezember 2011

Funding: European Union (EFRE), Land Steiermark, Stadt Graz

Website: http://www.uni-graz.at/science_fit

2.7 PhD - projects

2.7.1 From Strategic Direction to Organizational Action: The Implementation of a Corporate Climate Change Strategy from a Subsidiary Perspective

Multinational corporations face increasing pressure from investors, customers, governments, and non-governmental organizations to take responsibility with regards to environmental issues. Incorporating environmental issues into corporate strategy beyond what is required by government regulation is a means to improve a corporation's alignment with these growing environmental concerns and expectations of stakeholders. The most prominent environmental issue this time is climate change. Multinational corporations are made accountable for the release of an extensive amount of greenhouse gas emissions through their operations around the world. They are also expected to possess resources and capabilities to address the climate change issue by reducing greenhouse gas emissions within reach of the corporation. Therefore the challenge for multinational corporations which pursue a proactive climate change strategy is to successfully implement its strategy within subsidiaries around the world in order to achieve noteworthy greenhouse gas reductions.

The objective of the dissertation is to identify facilitating factors within the organizational context as well as barriers to implementing a corporate climate change strategy. Propositions are developed based on strategy implementation research, environmental management research, and environmental psychology research and tested in the course of a case study. The design of the case study is built on the notion that taking an organizational as well as an individual perspective is crucial for a comprehensive consideration of the process of implementing a corporate climate change strategy within a multinational's subsidiaries.

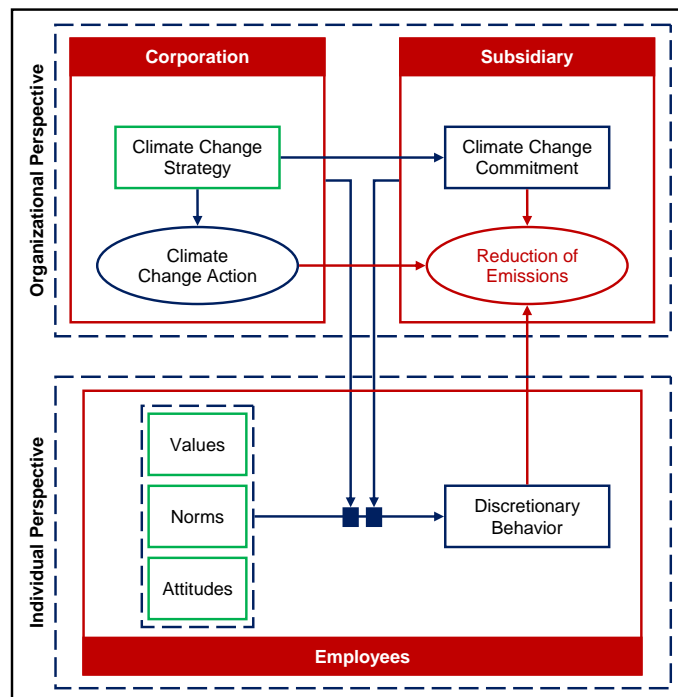


Figure 15: Implementation model of corporate climate change strategy

PhD student at ISIS:

MMMag. Holger Klier

Duration:

February 2009 / July 2011

Website:

http://www.uni-graz.at/implement_cccs

2.7.2 The Study of Environmental Systems Science at the interface study and career

With the growing pressure on today's labour market, university graduates need special key competences in order to withstand international competition. This study is based on the hypothesis that employability is fostered by key competences that enable individuals to contribute to sustainable development. Those competences are the central part of the study of environmental systems science, founded in 1991 at the University of Graz. It encourages students to obtain skills for sustainable development, such as systems thinking, handling of complexity, anticipatory thinking, critical thinking, communication skills and interdisciplinary working. The aim is to generate interdisciplinary qualified academics, which are able to use the knowledge from more than one's own discipline, to consider problems as a whole and then handle and solve them in a systemic thinking way.

The research question of the dissertation is:

What is the relevance of the study of environmental systems science to the labour market?

The objectives of this project are:

1. Identifying key competences of environmental systems science graduates considering their qualification profile and key competences that enable individuals to contribute to sustainable development.
2. Comparison of employers' expectations and graduates' profile.
3. Identifying indicators to measure the relevance of the study of environmental systems science to the labour market.

The conceptual framework considers the different types of the study of environmental systems science and their profile in regard to the labour market. Based on a survey we will quantify how useful the acquired competences described in the qualification profile are compared to the needs of graduates in their fields of work. The sample includes two groups: (i) the whole number of graduates of the studies of Environmental Systems Science from 1995 until 2010, and (ii) 10 representatives of employers and human resource managers.

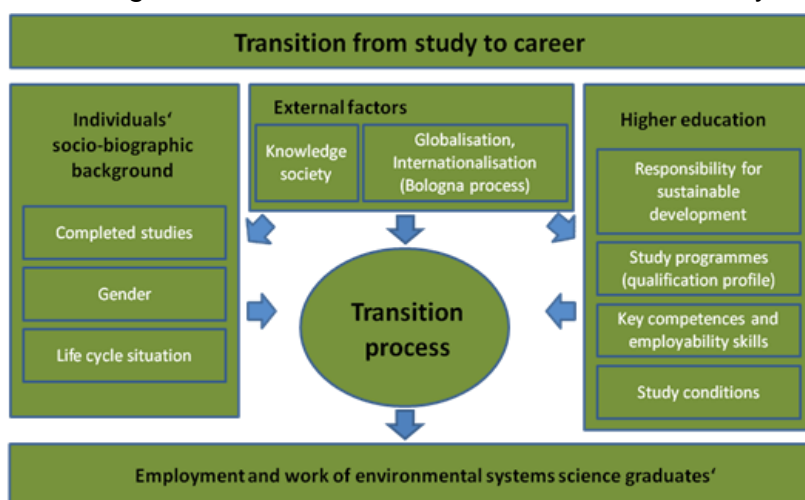


Figure 16: Transition from study to career

PhD student at ISIS:

Mag. Corinne Von der Hellen

Duration:

2008 – 2011

Website:

http://www.uni-graz.at/ess_interface

2.8 Research cooperations and networks

2.8.1 EGC – Environment and Global Change



The University of Graz has defined seven research core areas, four of them with inter-university-cooperation. One of the latter is the research core area „Environment and Global Change“. Within this core area, global and regional climate and environmental changes are investigated and monitored. Further, the role of humans as co-initiator, co-concerned, and co-designer of this change as well as the question of search for possible ways for a transformation towards a sustainable development and innovation are central themes of EGC.

Researchers from climate and environmental physics, environmental chemistry, hydrogeology, environmental biology, environmental economics, sociology, geography and regional sciences, system sciences and sustainability research, environmental ethics and law collaborate inter-disciplinarily.

There are four main research areas:

- GlobEOS (Global Earth Observation and Stewardship)
- RegIMOS (Regional and Local Integrated Modeling System and Studies)
- GreenPROTEC (Green Processes and Technologies f)
- RegiKNOWS (Regional Changes and Knowledge Transfer for Sustainability)

Prof. Claudia Binder is co-speaker of EGC.

2.8.2 SES - Social-Ecological-Systems-Club

The Social Ecological Systems Club was founded by Nobel Prize Laureate Prof. Dr. Elinor Ostrom in order to develop a conceptual framework and an ontology to analyze and compare Social Ecological Systems (SES). The key issue is to understand why some SES are more sustainable than others and how the design of the governance of those systems are related to their sustainability. The SES Club is currently composed of renowned researchers from the USA and Europe, all of whom were personally selected by Prof. Ostrom. Prof. Claudia Binder is part of the SES Club.

2.8.3 ITdNet - International Transdisciplinarity Net

The ITdNet as a network on teaching and practicing transdisciplinary research has the aim to foster existing, and initiate new, boundary organizations between science and society. To this end, the network shares knowledge and experiences, organizes meetings and workshops, writes jointly scientific articles and initiates joint research projects.

Its programme is of true interdisciplinary nature, integrating knowledge from different disciplines, systems, interests and modes of thought with a set of specifically designed and internationally recognized methods. Going well beyond everyday research activities, the network follows a transdisciplinary approach integrating practice and

research from the very beginning. As such, it contributes to closer relations between science and practice, assisting transition processes towards sustainable development. Prof. Claudia Binder, Prof. Alfred Posch and Prof. Gerald Steiner are board members of the ITdNet.

2.8.4 ISDR-Society – International Sustainable Development Research Society

The International Sustainable Development Research Society (www.isdrs.org) was formally founded in 2006 and builds upon a 16 year history of the International Sustainable Development Research Conferences and its associated journals like *Sustainable Development*, *Progress of Industrial Ecology or Business Strategy and the Environment*. The vision is to establish a forum where diverse research communities can come together creating a transparent dialogue on key problems, issues, initiatives, policies and strategies needed to make progress on sustainable development a reality. It aims to foster and communicate the importance of sustainable development in a global society, to promote collaboration and dialogue of a high quality and building bridges between different research communities and between research and its applications in society. In 2010 the 16th annual International Sustainable Development Research Conference was held in Hong Kong (China), in 2011 the 17th annual conference will be held in New York (USA). Prof. Rupert Baumgartner is board member of the ISDR-Society.

2.8.5 ISIE – International Society for Industrial Ecology

Prof. Claudia Binder is member of the International Society for Industrial Ecology, ISIE (<http://www.is4ie.org/>). She was formerly Secretary of the society. ISIE was founded in 2001 and promotes industrial ecology as a way of finding innovative solutions to complex environmental problems. Its mission is to promote the use of industrial ecology in research, education, policy, community development, and industrial practices. It facilitates communication among scientists, engineers, policymakers, and managers interested in better integrating environmental concerns with economic activities.

2.8.6 Chulalongkorn University Bangkok

In May 2010, ISIS set up a Memorandum of Understanding with the Chulalongkorn University Bangkok (Thailand), Environmental Research Institute in the field of environmental research. Dr. Ralf Aschemann is the contact person at ISIS.

2.9 Seminars hosted by ISIS

The ISIS-seminar is a platform where generally external experts give a presentation on most relevant research topics. Usually organized on a monthly basis, besides ISIS-members this event is also open for the URBI-faculty and friends of the institute.

The seminars given in 2010:

Prof. Dr. Jim Bingen (Michigan State University): "The role of theories and methods for transdisciplinary integration processes", 14. January 2010

Prof. Dr. Clinton Andrews (State University of New Jersey): "Designing Green Buildings for Realistic Occupants: An Agent-Based Approach", 11. February 2010

Prof. Carlos Bedoya (Universidad Nacional de Colombia): "Sustainable Social Housing as a Public Policy", 22. September 2010.

Richard Grassetti (Grassetti Environmental Consulting/California State University): "40 Years of Environmental Impact Assessment in California - History, Evolution, Trends, and Case Studies", 12. October 2010.

Prof. Dr. Günther Ossimitz (University of Klagenfurt): "Systems and Self-Organization", 17. November 2010.

Prof. Dr. Matjaz Mulej (International Academy for Systems and Cybernetic Sciences): "Stop causing humankind's suicide, please! Five good cases of systemic thinking about crucial issues put in synergy for solution to the global rises", 15. December 2010.

3 Publications and other research output

Performance Record Institute for Systems Sciences, Innovation and Sustainability Research

	2008	2009	2010
Publications			
Publications in scientific journals	5	7	14
Scientific monographs	0	2	3
Editorships of scientific monographs	3	2	1
Book Chapters	6	10	8
Contributions to conference proceedings	13	7	22
Posters presented at scientific conferences	2	0	3
Other scientific publications	4	1	1
Projects			
Internally funded projects	0	0	1
Third-party funded projects	14	14	19
Cooperation projects	2	2	1
Functions			
Functions in external scientific committees	3	2	3
Functions in external appointment and habilitation committees	0	1	1
Functions in international journals	9	29	27
Scientific reports	1	1	2
Networking			
Presentations at scientific conferences	20	19	22
Awards	0	0	2
Organisation of scientific conferences	7	4	7
Visiting scientists (Incoming Mobility)	1	3	6
Travel activities (Outgoing Mobility)	3	3	16
Transfer – Science to professionals			
Publications – science to professionals	0	0	0
Publications in journals – science to professionals	0	0	0
Presentations – science to professionals	0	0	3
Organization of conferences for professionals	0	0	3
Training and further education – science to professionals	0	0	1
Transfer – Science to public			
Press releases	0	0	0
Publications for non-scientific audience	1	2	2
Presentations for non-scientific audience	6	3	5
Organized conferences for non-scientific audience	0	0	0
Training and further education	0	0	0

- Performance of project staff included

3.1 Publications in scientific journals

Baumgartner, Rupert; Ebner, Daniela: Corporate sustainability strategies: profiles and maturity system, in: *Sustainable Development* 18, 2 (2010), 76 - 89.

Baumgartner, Rupert; Korhonen, Jouni: Strategic thinking for sustainable development, in: *Sustainable Development* 18, 2 (2010), 71 - 75.

Baur, Ivo; Dobricki, Martin; Lips, Markus: Einstellungen zu Hochleistungs- und Vollweidestrategie, in: *Agrarforschung Schweiz* 1, 9 (2010), 326 - 333.

Binder, Claudia R.; Feola, G.; Steinberger, J.: Considering the normative, systemic and procedural dimensions in indicator-based sustainability assessments in agriculture, in: *Environmental Impact Assessment Review* 30 (2010), 71 - 81.

Binder, Claudia R.; Schöll, R.: Structured Mental Model Approach for Analyzing Perception of Risks to Rural Livelihood in Developing Countries, in: *Sustainability* 2, 1 (2010), 1 - 29.

Faramarzi, M.; Yang, H.; Mousavi, J.; Schulin, R.; Binder, Claudia R.; Abbaspour, K. C.: Analysis of intra-country virtual water trade strategy to alleviate water scarcity in Iran, in: *Hydrology and Earth System Sciences* 7 (2010), 2609 - 2649.

Feola, G.; Binder, Claudia R.: Identifying and investigating pesticide application types to promote a more sustainable pesticide use. The case of smallholders in Boyacá, Colombia, in: *Crop Protection* 29 (2010), 612 - 622.

Feola, G.; Binder, Claudia R.: Towards an improved understanding of farmers' behaviour: the integrative agent-centred (IAC) framework, in: *Ecological Economics* 69, (2010), 2323 - 2333.

Feola, G.; Binder, Claudia R.: Why don't pesticide applicators protect themselves? Exploring the use of Personal Protective Equipment among Colombian smallholders, in: *International Journal of Occupational and Environmental Health* 16, (2010), 11 - 13.

Gelbmann, Ulrike-Maria: Comparative Analysis of Innovative CSR-Tools For SMS, in: *International Journal of Innovation and Sustainable Development* 5,1 (2010), 35 - 50.

Gelbmann, Ulrike-Maria: Establishing Strategic CSR: An Austrian CSR Quality Seal to Substantiate the Strategic CSR Performance of SMEs, in: *Sustainable Development* 18 (2010), 90 - 98.

Gelbmann, Ulrike-Maria; Klampf-Pernold, Hannes: Applying Life-Cycle-Oriented Tools for Analyzing the Sustainability of a Regional Waste Management System. In: *Regional Development Dialogue* 31, 2 (2010), 153 - 166.

Posch, Alfred: Industrial Recycling Networks as Starting Points for Broader Sustainability-Oriented Cooperation?, in: *Journal of Industrial Ecology* 14, 2 (2010), 242 - 257.

Schöll, R.; Binder, Claudia R.: Comparison of Farmers' Mental Models of the Present and the Future, in: *Futures* 42, 6 (2010), 593 - 603.

3.2 Scientific Monographs

Baumgartner, Rupert: *Nachhaltigkeitsorientierte Unternehmensführung: Modell, Strategien und Managementinstrumente*. Munich: Rainer Hampp Verlag 2010, 273 S.

Globocnik, Dietfried: *Front End Decision Making*. Wiesbaden: Gabler 2010 (Betriebswirtschaftliche Studien in forschungsintensiven Industrien), 393 S.

Kenik, Elvis: *Slowenische Managementstile in Abhängigkeit der Kulturdimensionen nach Hofstede*. Germany: VDM Verlag Dr. Müller 2010, 127 S.

3.3 Editorships of scientific monographs

Aschemann, Ralf (Hrsg.): *Handbook of Strategic Environmental Assessment*. London: Earthscan 2010, 621 S.

3.4 Book chapters

Aschemann, Ralf; Gudmundsson, Henrik; Joumard, Robert; Tennoy, Aud: Indicators and their functions, in: INRETS, Bron, France, (Hrsg): *Indicators of environmental sustainability in transport: an interdisciplinary approach to methods*. Bron (France) 2010, 23 - 43.

Gelbmann, Ulrike-Maria: Müll ist Materie am falschen Ort – Zum Verwertungsparadoxon in der Abfallwirtschaft, in: Wagner, Anselm, (Hrsg): *Abfallmoderne. Zu den Schmutzrändern der Kultur*. Vienna: LIT Verlag 2010, 97 - 111.

Gelbmann, Ulrike-Maria; Klampfl-Pernold, Hannes: Nachhaltige Abfallwirtschaft als inter- und transdisziplinäre Aufgabe, in: Lenz, Werner (Hrsg): *Interdisziplinarität – Wissenschaft im Wandel. Beiträge zur Entwicklung der Fakultät für Umwelt-, Regional- und Bildungswissenschaft*. Vienna: Löcker 2010, 161 - 177.

Gelbmann, Ulrike-Maria; Klampfl-Pernold, Hannes: Integrative Nachhaltigkeitsevaluierung regionaler Abfallwirtschaftssysteme, in: Lorber, Karl et al. (Hrsg): *Depotech 2010 Abfallwirtschaft, Abfalltechnik, Deponietechnik und Altlasten*. Vienna: LIT Verlag 2010, 597 - 600.

Mader, Clemens; Steiner, Gerald; Zimmermann, Friedrich; Spitzeck, Heiko: Sekem – Humanistic Management in the Egyptian Dessert, in: Spitzeck, H./ Pirson, M./ Amann, W./Khan, S./von Kimakowitz, E. (Hrsg): *Humanistic Management in Practice*. New-York: Palgrave Macmillan 2010 (Humanism in Business Series, 1), 204 - 214.

Rauter, Romana: Wissenstransfer. Von der Forschung zu kleineren Betrieben, in: Lenz, Werner (Hrsg): *Interdisziplinarität - Wissenschaft im Wandel*. 2010, 331 - 343.

Steiner, Gerald; Sindler, Alexandra: „Offene Kreativität“ – eine transdisziplinäre Bildungsinitiative, in: Werner Lenz (Hrsg): *Interdisziplinarität und ihre Spuren in einer jungen Fakultät*. 2010, 267 - 281.

Von der Hellen, Corinne: Kompetenz als Qualifizierungsinstrument für AbsolventInnen der Umweltsystemwissenschaften, in: Schröttner, Barbara und Hofer, Christian (Hrsg): *Kompetenzen - Interdisziplinäre Rahmen; Competences - Interdisciplinary Frameworks*. Graz: Grazer Universitätsverlag 2010, 53 - 64.

3.5 Contributions to conference proceedings

Aschemann, Ralf: *Preliminary Results of the "TwoEA-M Project"*, in: Universiti Sains Malaysia (Hrsg): *Proceedings of the 2nd Int Conf on Env Research and Technology*, Penang/Malaysia. Universiti Sains Malaysia 2010.

Basic, M.; Borozan, D.; Dabic, M.; Daim, T.; Drenjačević- Perić, I.; Hell, M.; Kariv, D.; Marli Gonan Božac, M.G.; Novak, I.; Piertzkovsky, M.; Potočan, V.; Pudziene, A.; Steiner, Gerald; Terrasse, C.: *Exploring Entrepreneurship Attitudes of Students of Higher Education*, in: EFMD - European Foundation for Management Development (Hrsg): *Entrepreneurs as Agents of Creativity in Times of Crisis*. Paris 2010.

Basic, M.; Dabic, M.; Novak, I.; Steiner, Gerald: *Entrepreneurial Attitudes among University Students: a Comparative Study*, in: INBAN (Hrsg): *Creativity and Innovation in an International Context*. Valencia 2010.

Baumgartner, Rupert: *Managing corporate sustainability and CSR: a framework combining values, strategies and instruments*, in: Hahn, Tobias (Hrsg): *Proceeding of the Corporate Responsibility Research Conference 2010*. Marseille 2010.

Baumgartner, Rupert; Schröder, Werner: *Sustainable Plant Asset Management*, in: Richard Welford (Hrsg): *Proceedings of the 16th International Sustainable Development Research Conference*. Hong Kong 2010.

Binder, Claudia R.; Feola, G.: *Normative, systemic and procedural aspects: a review of indicator-based sustainability assessments in agriculture*, in: IFSA (Hrsg): *Workshop on Methods and procedures for building sustainable farming systems*, Vienna 2010.

Binder, Claudia R.; Schoell, R.; Diaz, J.: *Bringing together diverging system perspectives: The utility of transdisciplinary scenario analysis*, in: *Proceedings of the 9th IFSA Symposium*, Vienna 2010, 470 - 478.

Binder, Claudia R.; Steinberger, J.; Schmid, A.: *Sustainability Solution Space for the Swiss milk added chain: Combining LCA data with socio-economic indicators*, in: *20th European Meeting on Cybernetics and Systems Research*, Vienna 2010.

Braschel, Nina: *Greenhouse Gas Emission Inventory in the Waste Industry*, in: Karl E. Lorber (Hrsg): *Tagungsband zur 10. Depotech-Konferenz Abfallwirtschaft, Abfalltechnik, Deponietechnik und Altlasten*, Leoben 2010, 629 - 632.

Castoldi, N.; Schmid, A.; Binder, Claudia R.: *Trade-off analysis for agro-ecological indicators: application of Sustainable Solution Space to maize cropping systems in northern Italy*, in: IFSA (Hrsg): Workshop on Methods and procedures for building sustainable farming systems, Vienna 2010.

Feola, G.; Schoell, R.; Binder, Claudia R.: *Identifying barriers and opportunities for transitions towards more sustainable agriculture through system analysis. The case of Vereda La Hoya, Colombia*, in: IFSA (Hrsg): Proceedings of the 9th IFSA Symposium, Vienna 2010, 1873 - 1883.

Gelbmann, Ulrike-Maria: *Authoritydriven Fostering of Corporate Social Responsibility. A Survey in Austria*, in: Hahn, Tobias (Hrsg): Proceedings of the Corporate Responsibility Research (CRR) Conference 2010. Marseille 2010.

Gelbmann, Ulrike-Maria; Klampfl-Pernold, Hannes: *Product line analysis as a means of considering over-all effects of waste management on nature and society*, in: Mulej, Matjaz et al. (Hrsg): Proceedings of the IRDO 2010 Conference. Maribor 2010.

Kenik, Elvis: *Biological systems as guidance for sustainable and environmentally friendly innovations*, in: IRDO - Institute for development of social responsibility (Hrsg): Social responsibility: Nature and humans. Maribor 2010.

Kreuzeder, Andreas; Binder, Claudia: *Teaching Systems-Science: A reality check*, in: Robert Trappl (editor) (Hrsg): Cybernetics and Systems 2010. Vienna 2010.

Lesmes Fabian, Camilo Andres; Garcia-Santos, Glenda; Binder, Claudia R.: *Model for Dermal and Inhalation Exposure Assessment of Pesticide Application on Agricultural Products in Colombia*, in: ETH Zurich (Hrsg): Tropentag 2010 Book of Abstracts. Zürich 2010.

Lesmes Fabian, Camilo Andres; Garcia-Santos, Glenda; Binder, Claudia R.: *Model for Dermal and Inhalation Exposure Assessment of Pesticide Application on Agricultural Products in Colombia*, in: Institute of Lyfe Cycle Assessment of Japan (Hrsg): EcoBalance 2010. Tokyo 2010.

Lesmes Fabian, Camilo Andres; Garcia-Santos, Glenda; Binder, Claudia R.: *Pesticide Flow Model for the Environmental and Human Exposure Assessment to Pesticide Use in Developing Countries*, in: International Society in Industrial Ecology (Hrsg): ISIE - ConAccount Proceedings. Tokyo 2010.

Mrotzek, Maximilian; Binder, Claudia R.: *Generic System Structures of Catastrophes*, in: Trappl, R. (Hrsg): 20th European Meeting on Cybernetics and Systems Research, Vienna 2010.

Steiner, Gerald; Risopoulos-Pichler, Filippina: *Creative communication management within complex entrepreneurial innovation processes: a transdisciplinary systems approach*, in: Austrian Society for Cybernetics (Hrsg): Proceedings of the 20st European Meeting on Cybernetics and Systems Research (EMCSR). Vienna 2010.

Steiner, Gerald; Risopoulos-Pichler, Filippina: *Nature and Humans: Human Being = Dangerous for Nature and Humans!*, in: IRDO - International Conference Social Responsibility and Current Challenges (Hrsg): International Conference Social Responsibility and Current Challenges. Maribor 2010.

Von der Hellen, Corinne: *The Relevance of Systems Science Competence in Professional Life.*, in: Robert Trappl (Hrsg): *Cybernetics and Systems*. Vienna 2010, 619 - 624.

3.6 Posters presented at scientific conferences

Aschemann, Ralf: *Erasmus Mundus Master's Programme in Industrial Ecology*, International Conference on the Environment and Natural Resource 2010, Salaya, Thailand, 10.-12.11., 2010.

Braschel, Nina: *Greenhouse Gas Emission Inventory in the Waste Industry*, DepoTech Leoben, Austria, 2010.

Gelbmann, Ulrike-Maria; Klampfl-Pernold, Hannes: *Product line analysis as a means of considering over-all effects of waste management on nature and society*, Depotech Leoben, Austria, 2010.

3.7 Other scientific publications

Grobbauer, Sabina: *Innovative green technologies as economic engine - Market opportunities for local Styrian firms and the supportive role of ECO WORLD STYRIA*, Master-Thesis, Graz 2010.

3.8 Presentations at scientific conferences

Lesmes Fabian, Camilo Andres: *Pesticide Flow Model for the Environmental and Human Exposure Assessment to Pesticide Use in Developing Countries*, Beitrag (Presenter), ISIE-MFA ConAccount Meeting, International Society of Industrial Ecology (Japan), Tokyo, Japan, 09.11.2010.

Binder, Claudia R.: *Raum und Ressourcen: eine systemische Perspektive*, Beitrag (Presenter), Räume Interuniversitäres Symposium, Karl-Franzens-University Graz, Austria, 08.11.2010.

Von der Hellen, Corinne: *Umweltsystemwissenschaften an der Schnittstelle Studium und Beruf*, Beitrag (Presenter), Doktoranden-/Forschungskolloquium im WS 10/11, Institut für Umweltkommunikation an der Universität Lüneburg, Germany, 03.11.2010.

Lesmes Fabian, Camilo Andres: *Model for Dermal and Inhalation Exposure Assessment of Pesticide Application on Agricultural Products in Colombia*, Beitrag (Presenter), EcoBalance 2010, Towards and Beyond 2010, Institute of Life Cycle of Assessment of Japan, Japan, 12.10.2010.

Baumgartner, Rupert: *Managing corporate sustainability and CSR: a framework combining values, strategies and instruments*, Beitrag (Presenter), Corporate Responsibility Research Conference 2010, Marseille, France, 17.09.2010.

Gelbmann, Ulrike-Maria: *Authoritydriven Fostering of Corporate Social Responsibility. A Survey in Austria*, Beitrag (Presenter), Corporate Responsibility Research Conference 2010, Marseille, France, 17.09.2010.

Lesmes Fabian, Camilo Andres: *Model for Dermal and Inhalation Exposure Assessment of Pesticide Application on Agricultural Products in Colombia*, Beitrag (Presenter), Tropentag 2010, World Food System, A contribution from Europe., ETH Zurich, Switzerland, 14.09.2010.

Binder, Claudia; Schoell, R.; Diaz, J.: *Bringing together diverging system perspectives: The utility of transdisciplinary scenario analysis*, Beitrag (Presenter), 9th IFSA Symposium, IFSA (Austria), Vienna, Austria, 07.07.2010.

Binder, Claudia; Feola, G.: *Normative, systemic and procedural aspects: a review of indicator-based sustainability assessments in agriculture*, Beitrag (Presenter), 9th IFSA Symposium, IFSA (Austria), Vienna, Austria, 06.07.2010.

Feola, G.; Schoell, R.; Binder, Claudia: *Identifying barriers and opportunities for transitions towards more sustainable agriculture through system analysis. The case of Vereda La Hoya, Colombia*, Beitrag (Presenter), 9th IFSA Symposium, IFSA (Austria), Vienna, Austria, 05.07.2010.

Posch, Alfred: *Introduction into "Sustainable Lifestyle"*, Hauptbeitrag (Keynote), EuroEnviro2010, Graz, 08.05.2010.

Mrotzek, Maximilian: *Modeling of transition, innovation and adaptation processes in Human-Environment Systems*, Beitrag (Presenter), Kick-off workshop for the research core area "Modelling and Simulation", Universität Graz (Austria), 19.04.2010.

Binder, Claudia; Steinberger, J.; Schmid, A.: *Sustainability Solution Space for the Swiss milk added chain: Combining LCA Data with socio-economic indicators*, Beitrag (Presenter), 20th European Meeting on Cybernetics and Systems Research, Vienna, 07.04.2010.

Kreuzeder, Andreas; Binder, Claudia R.: *Teaching Systems-Science: A reality check*, Beitrag (Presenter), 20th European Meeting on Cybernetics and Systems Research, Vienna, Austria, 06.04.2010.

Mrotzek, Maximilian; Binder, Claudia: *Generic System Structures of Catastrophes*, Beitrag (Presenter), European Meetings on Cybernetics and Systems Research, Austrian Society for Cybernetic Studies in cooperation with the International Federation for Systems Research (Austria), Vienna, Austria, 06.04.2010.

Von der Hellen, Corinne: *The Relevance of Systems Science Competence in Professional Life*, Beitrag (Presenter), 20th European Meeting on Cybernetics and Systems Research, Austrian Society for Cybernetic Studies, Vienna, Austria, 06.04.2010.

Aschemann, Ralf: *Teaching Environmental Assessment at an Austrian University: what are the problems and gaps*, Beitrag (Presenter), Johor Bahru, Malaysia, 24.03.2010.

Binder, Claudia R.; Feola, G.: *Normative, systemic and procedural aspects: a review of indicator-based sustainability assessments in agriculture*, Hauptbeitrag (Keynote), OECD-Workshop on Agri-Environmental Indicators, Leysin, Switzerland, 24.03.2010.

Aschemann, Ralf: *Teaching Environmental Assessment at an Austrian University: experiences and challenges*, Beitrag (Presenter), Tianjin, China, 21.03.2010.

Steiner, Gerald; Risopoulos-Pichler, Filippina: *Nature and Humans: Human Being = Dangerous for Nature and Humans!*, Beitrag (Presenter), International e-learning on Environmental Protection, IRDO, Maribor, Slovenia, 12.03.2010.

Binder, Claudia R.: *Expert Forum on the Reduction of Food Waste*, Beitrag (Presenter), Expert Forum on the Reduction of Food Waste, London, UK, 23.02.2010.

Binder, Claudia R.; De Baan, Laura; Mouron, P.; Wittmer, D.: *Can Switzerland become a phosphorous exporter?*, Beitrag (Presenter), University of Yale, Center for Industrial Ecology, New Haven, USA, 04.02.2010.

3.9 Awards

Braschel, Nina: *Hans Roth Saubermacher Umweltpreis 2010*, Saubermacher Dienstleistungs AG (Austria), 2010.

Mrotzek, Maximilian: *Best Paper Award EMCSR*, European Meetings on Cybernetics and Systems Research (EMCSR) (Austria), 2010.



Figure 17: Saubermacher Umweltpreis 2010

3.10 Organisation of scientific conferences

Aschemann, Ralf: *Final conference TwoEA-M: Enhancing Attractiveness of Environmental Assessment and Management Higher Education*, Graz, 23.09.2010 - 24.09.2010.

Binder, Claudia R.: *Ester Boserup Conference 2010 - A Centennial Tribute: Long-term Trajectories in Population, Gender Relations, Land Use, and the Environment*, Co-Organizer, Vienna, 15.11.2010 - 17.11.2010.

Binder, Claudia: *Global Change and the World's Mountains, International Conference, Perth, Scotland*, Member of organizing committee, Perth, Scotland, 26.09.2010 - 30.09.2010.

Binder, Claudia: *Reducción del riesgo ambiental y sobre la salud humana por el uso de pesticidas, Taller con expertos, Universidad de Boyacá, Columbia*, Main Organizer with Universidad de Boyacá, Tunja, Boyaca, Colombia, 21.01.2010.

Steiner, Gerald: *European Meeting on Cybernetics and Systems Research (EMCSR)*, Co-chair of the symposium on "Management, Organizational Change, and Innovation", Member of the program committee, Vienna, 06.04.2010 - 09.04.2010.

Steiner, Gerald: *International Conference "Innovation Driven Entrepreneurship" (BMRA)*, Chair of the symposium "Sustainability Entrepreneurship", Vilnius, Lithuania, 14.10.2010-16.10.2010.

Steiner, Gerald: *International Conference on Social Responsibility and Current Challenges (IRDO)*, Member of the program committee, Maribor, Slovenia, 11.03.2010 - 12.03.2010

3.11 Functions in international journals

3.11.1 Editorial functions

Aschemann, Ralf: *Journal of Environmental Assessment Policy and Management*, Member Editorial Board, since 01.10.2009.

Aschemann, Ralf: *Journal of Environmental Research*, Member Editorial Board, since 01.07.2009.

Baumgartner, Rupert: *Journal of Cleaner Production*, Editor, since 01.11.2008.

Baumgartner, Rupert: *Progress in Industrial Ecology: an international journal*, Member Editorial Board, since 01.08.2007.

Baumgartner, Rupert: *Sustainable Development*, Member Editorial Board, since 01.10.2008.

Posch, Alfred: *Progress in Industrial Ecology: an international journal*, Editor, since 2005.

3.11.2 Reviews

Reviews were undertaken for following journals:

Business Strategy and the Environment

Journal of Business and Management

Journal of Cleaner Production

Journal of Environmental Assessment Policy and Management

Journal of Mechanical Engineering

Sustainable Development

Systems Research and Behavioral Science

3.12 Functions in an external scientific committee

Baumgartner, Rupert: *Dissertation Committee University of Stavanger (Norway)*, Membership, 20.12.2010 - 10.03.2011.

Baumgartner, Rupert: *International Sustainable Development Research Society (China)*, Executive Committee, since 01.07.2006.

Steiner, Gerald: *European Rural Development Focus Group on alpine regions (European Union)*, Membership, since 01.01.2001.

3.13 Scientific reports

Baumgartner, Rupert: *Review of New Book Proposal*, Wiley VCH (Germany), 13.12.2010.

Baumgartner, Rupert: *Evaluation of Research Output*, National Research Foundation (South Africa), 01.07.2010.

3.14 Transfer: science to professionals

Baumgartner, Rupert: *Nachhaltige Entwicklung, Nachhaltigkeitsmanagement und Innovation*, Beiratsveranstaltung zum Thema "Nachhaltigkeit", Plattform für Innovationsmanagement (Austria), 19.10.2010.

Baumgartner, Rupert: *Sustainability Management – a new approach for business?*, MOVE Kundenevent, Knapp AG (Austria), 12.10.2010.

Bedenik, Katja: *Workshop „Einflussanalyse von Indikatoren nachhaltiger Entwicklung für den Bereich Wirtschaft/Umwelt“*, Workshop, Lebensministerium (Austria), 12.11.2010.

Bedenik, Katja: *Workshop Energiekataster, Weizer Energie-Innovationszentrum, Weiz, Energieregion Weiz-Gleisdorf* (Austria), 22.10.2010.

Gelbmann, Ulrike-Maria: *„Mit FAIRantwortungsvoller Unternehmensführung (CSR) und Nachhaltigkeit zum wirtschaftlichen Erfolg“*, Lebensministerium, CSR Consultats, WKO, CSR Dialogforum Oberösterreich (Austria), 26.11.2010 - 27.11.2010.

Rauter, Romana: *KBB Training - Module 6: Knowledge Transfer*, 04.05.2010.

Von der Hellen, Corinne: *ExpertInnenworkshop Shared Space*, Workshop, Institute for Systems Science, Innovation and Sustainability Research, 03.03.2010.

Von der Hellen, Corinne: *ExpertInnenworkshop Shared Space*, Workshop, Institute for Systems Science, Innovation and Sustainability Research, 11.02.2010.

3.15 Transfer: science to public

Braschel, Nina: *Grünbuch der nachhaltigen Logistik-Handbuch für die ressourcenschonende Gestaltung logistischer Prozesse*, 2010.

Gelbmann, Ulrike-Maria: *Junioruni "Unsere gemeinsame Zukunft"*, 01.12.2010.

Gelbmann, Ulrike-Maria; Schmidt, Gerald: *Kinderuni "Wohin geht der Müll"*, 21.02.2010.

Gelbmann, Ulrike-Maria; Schmidt, Gerald: *Kinderuni "Wohin geht der Müll"*, 30.09.2010.



Kenik, Elvis: *Scientific member*, IRDO Institute for Social Responsibility, since 01.03.2008.

Mrotzek, Maximilian: *Eine Einführung in die Systemwissenschaften*, SummercampUS Institute for Systems Science, Innovation and Sustainability Research (University Graz), 09.09.2010.

Posch, Alfred: *Podiumsdiskussion: Green Jobs - Deine Karriere im grünen Bereich*, TREES - Technologies of Renewable Energies for Environmental Sustainability, AISEC (Austria), Graz (Austria), 18.05.2010.

Rauter, Romana; Pauschenwein, Jutta: *Module 6 Knowledge Transfer*, in: Handbook Knowledge for Business in Border Regions, 2010.

Steiner, Gerald: *Member of the Scientific Advisory Board of "Keimblatt Ökodorf" (ecovillage)* (<http://www.oekodorf.or.at/>), Keimblatt Ökodorf (Austria), since 2008.

Vorbach, Stefan; Rauter, Romana: *Presentation of ISIS at Research 2010*, two-day research conference with about 30 institutes of TU Graz, about 35 institutes of Uni Graz, some centers and institutes of Med-Uni Graz, Science-Park Graz, Joanneum Research, and others.

4 Teaching

4.1 Study Programmes

4.1.1 Environmental System Sciences

In teaching, ISIS is the focal institute for the bachelor and master study programmes in **Environmental System Sciences** with its five subject foci: business administration (respectively sustainability oriented management), chemistry, economics, geography, and physics.



The main idea of these study programmes is to generate interdisciplinary trained academics that are able to handle complex problems that are related to environmental protection and/or to the broader concept of sustainable development of different systems.

Here, the capability to apply formal methods of systems sciences, in-depth knowledge in the respective subject focus and profound competences for working in interdisciplinary teams are the most important cornerstones of the profile of graduates in Environmental System Sciences.

The roots of the study programmes in Environmental System Sciences go back to 1991 when the first individual diploma studies were developed. Continuously increasing interests by students and high dedication of some professors finally led to the implementation of regular bachelor and master study programmes in October 2003 which are still unique in its conception in Europe. Now, about 1,300 students are enrolled in the bachelor and master programmes in Environmental Systems Sciences; the bachelor programmes comprise 180 ECTS credit points which equals a study period of six semesters, and the consecutive master programmes 120 ECTS credit points, or four semesters.



Figure 18: Teaching at ISIS

ISIS is responsible for the education in formal methods of systems sciences, mathematics and statistics, interdisciplinary education for basics in human-environment systems, parts of the subject focus business administration at bachelor level, the subject focus sustainability-oriented management at master level, and last but not least the interdisciplinary practical courses. The latter is a special and unique course type where an interdisciplinary team of teachers and students with different subject foci work together on a complex real-world problem for sustainable development of a certain system. Besides interdisciplinarity, also transdisciplinarity is part of the teaching concept, aiming at the integration of stakeholders from outside the University in order to initiate a mutual learning process between academics and practitioners.

Comprehensive information on Environmental System Sciences can be found at www.uni-graz.at/usw/.

4.1.2 International Joint Master's Programme in Sustainable Development



In 2008, a curriculum for the **International Joint Master's Programme in Sustainable Development** was designed and approved by six partner universities, with the University of Graz (Austria) as co-ordinating university, Ca' Foscari University of Venice (Italy), Leipzig

University (Germany), and Utrecht University (The Netherlands) are degree-awarding consortium members, and Basel University (Switzerland) and Hiroshima University (Japan) are associated mobility partners.

In this master's programme sustainability issues are approached from an international as well as inter- and transdisciplinary perspective. The focus is set on applying the competences to the question of sustainable development and the needs and possibilities of societal transformation. It combines the strengths and specializations in teaching and top research of six partner universities, thereby offering the students a programme recognized in the countries of the consortium partners and the possibility of going on to PhD-studies as well as increasing the employability in the private, public and semi-public sector.

Admission to this Master's Programme is granted to persons who have completed at least the equivalent of a Bachelor's or Diploma degree, and can demonstrate their research skills, their basic knowledge of the natural and/or social sciences, and a general insight in the subject of sustainable development and intervention strategies. The Master's Programme comprises 120 ECTS credits corresponding to a period of study of at least four semesters or two years. 60 ECTS credits have to be earned at the home university. Students are required to complete at least 30 ECTS credits at one of the partner universities. Besides the academic coordination, ISIS offers courses for the first semester in basics in Sustainable Development, for the third integration semester, and one specialization track (second semester) in Sustainable Business Management. Master theses are generally supervised by two teachers of two different partner universities.

Comprehensive information on the International Joint Master's Programme in Sustainable Development can be found at www.jointdegree.eu.

4.1.3 Erasmus Mundus Master's Programme in Industrial Ecology (MIND)

The European Commission's "Education, Audiovisual and Culture Executive Agency" (EACEA) selected the new **Erasmus Mundus Master's Programme in Industrial Ecology (MIND)** in July 2010. Beside the International Joint Master's Programme in Sustainable Development, this is the second Joint Master Programme, where ISIS is the coordinating institute. It is planned to start MIND with winter term 2011/12.

MIND is a two-year programme with 120 ECTS, intending to train students

- to conduct industrial ecology analyses of complex sustainability problems,
- to design industrial ecology solutions for these problems, and
- to develop implementation strategies for those solutions identified.

The MIND consortium consists of the University of Graz as co-ordinator: Univ.-Prof. Dr. Claudia Binder acts as programme director, Dr. Ralf Aschemann as academic co-ordinator and the Office for International Relations is in charge of the administrative co-ordination. Partners in the MIND consortium are Leiden University and Delft University of Technology; Chalmers University of Technology Gothenburg; Asian Institute of Technology (Thailand); Rochester Institute of Technology (USA) and Waseda University (Japan).

In the first study year, the three EU universities offer basic modules on industrial ecology. In the second study year, all consortium universities offer a specialization module in industrial ecology (third semester), cf. the figure below.

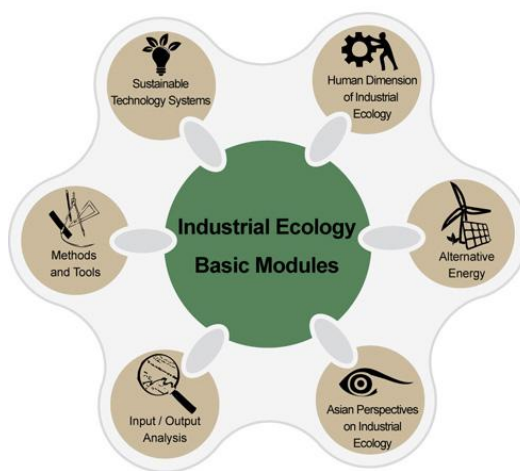


Figure 19: Structure of the MIND programme

It is intended to run MIND at least for five consecutive editions, i.e. study years 2011/12 to 2016/17. For the same period, the EACEA will support MIND by granting scholarships for students and scholars and by contributing to the running administrative costs.

In February 2011, the first 25 MIND students were selected by the MIND Admission Committee, see the photo below, please.

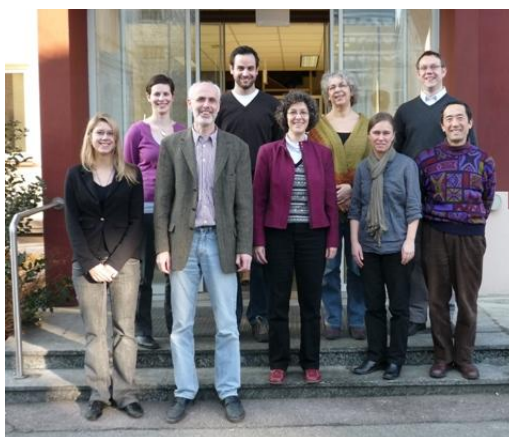


Figure 20: Members of the MIND Admission Committee and from the Office for International Relations of the University of Graz in front of the ISIS building

Comprehensive information on MIND can be found at www.emmind.eu.

4.2 Courses

Winter term 2009/2010

Type	Course	Lecturer	Duration
IP	Interdisziplinäres Praktikum (Nachhaltiges Bauen und Sanieren am Beispiel der Ökoregion Kaindorf)	Binder C, Maydl P, Ninaus J, Steininger K	4
SE	Seminar zu Qualitative Systemwissenschaften	Schmickl T	2
SE	Seminar zu Qualitative Systemwissenschaften	Grossmann W	2
PS	Proseminar zu Qualitative Systemwissenschaften	Bartmann J, Vlk T	2
VO	Qualitative Systemwissenschaften 2 (SL2)	Huber A	2
VU	Integral- und Differentialrechnungen für Umweltsystemwissenschaften	Hötzl E, Keeling S, Peichl G, Perko R, Schwaiger J	4
VU	Differentialgleichungen für Studierende der Umweltsystemwissenschaften	Prager W	2
VU	TIM 1 (Management von Forschung und Entwicklung)	Globocnik D, Vorbach S	2
PS	TIM 2 (Kreativitätstechniken)	Steiner G	2
PS	TIM 2 (Qualitätsmanagement)	Vorbach S	2
PS	MSD 2 (Umweltmanagement)	Vorbach S	2
KS	EMM 1 (Eco-Entrepreneurship)	Steiner G	2
KS	EMM 2 (Eco-Controlling)	Posch A	2
KS	ETM 2 (Management von Umweltprojekten)	Posch A	2
VU	MSD 1 (Betriebswirtschaftliche Umweltökonomie)	Klampfl-Pernold H, Vorbach S	2
KS	ETM 1 (Innovation und Innovationsmanagement)	Globocnik D, Vorbach S	2
SE	Management and International Business 1	Posch A, Steiner G, Vorbach S	2
SE	Management and International Business 2	Posch A, Steiner G, Vorbach S	2
PK	Umweltökonomisches Praktikum	Posch A	4
OL	Orientierungslehrveranstaltung für USW: NAWI für SOWI Studierende	Gspurning J, Kosmus W, Lippitsch M, Mittelbach M, Sulzer W	2
OL	Orientierungslehrveranstaltung für USW: SOWI für NAWI Studierende	Steininger K, Vorbach S	2
IP	Interdisziplinäres Praktikum (Die Ennsnahe Trasse: Jetzt oder Nie)	Ahamer G, Fallast K, Purker E	4
IP	Interdisziplinäres Praktikum (Abhängigkeit der Stadt Graz von fossilen Energieträgern etc.)	Gehrke C, Gutschi C, Töglhofer C	4
IP	Interdisziplinäres Praktikum (PPP Modelle in der Abfallwirtschaft und deren Nachhaltigkeit)	Fischer W, Hasler A, Klampfl-Pernold H, Schmidt G, Schreyer C	4
IP	Interdisziplinäres Praktikum (Mobilitätsverhalten und Fahrradverkehr)	Aschemann R, Bodi O, Posch K, Pretenthaler F, Töglhofer C	6
IP	Interdisziplinäres Praktikum (Nachhaltiges Bodenmanagement)	Krisper G, Lazar R, Loibnegger T, Von der Hellen C	4

IP	Interdisziplinäres Praktikum (Vom Wohn- zum Lebensraum)	Ehretreiber J, Mader C, Pölzl M, Trummler M	6
IP	Interdisziplinäres Praktikum (Demographischer Wandel als nachhaltige Herausforderung)	Fischer W, Hasler A, Kirschner E, Ninaus J, Von der Hellen C, Vovk Korze A	6
IP	Interdisziplinäres Praktikum (Entwicklungspotentiale zur direkten Sonnenenergienutzung)	Bednar-Friedl B, Gobiet A, Gutschi C, Habsburg-Lothringen C, Prettenthaler F	6
PS	MSD 2 (Stakeholdermanagement)	Gelbmann U	2
VU	Qualitative Systemwissenschaften 1 (SL1)	Binder C, Knöri C, Ossimitz G, Steiner G	3
VO	Allgemeine Ökologie für USW	Depisch B, Raspotnig G, Tschernatsch M	2
VU	Grundlagen der betriebswirtschaftlichen Umweltökonomie	Gelbmann U	2
PS	MSD 2 (Nachhaltige Entwicklung und Kooperationen)	Perl-Vorbach E	2
PS	Proseminar zu Statistik für Umweltsystemwissenschaften	Feit T, Gamerith W, Perko R	1

Summer term 2010

Type	Course	Lecturer	Duration
PS	Proseminar zu Statistik für Umweltsystemwissenschaften	Feit T, Gamerith W, Perko R	1
VO	Qualitative Systemwissenschaften 3	Huber A	2
VU	Vektorrechnung für USW	Prager W, Schwaiger J	3
VU	Vektorrechnung für USW	Prager W, Schwaiger J	3
SE	Qualitative Systemwissenschaften	Diebner H, Ossimitz G	2
VU	Qualitative Systemwissenschaften 1 (SL1)	Bauer M, Mrotzek M	3
PS	Proseminar zu Qualitative Systemwissenschaften	Bartmann J, Grossmann W, Vlk T	2
VO	Quantitative Systemwissenschaften 1 (SN1)	Propst G	3
VU	Quantitative Systemwissenschaften 2 (SN2)	Desch G	2
VU	Quantitative Systemwissenschaften 3 (SN3)	Bortz D	2
SE	Seminar zu Quantitative Systemwissenschaften	Desch G	2
SE	Management und International Business 1	Posch A, Vorbach S	2
SE	Management and International Business 2	Posch A, Vorbach S	2
KS	ICO 1 (Management von Forschung und Entwicklung)	Strebel H	2
PS	MSD 2 (Stakeholdermanagement)	Gelbmann U	2
PS	MSD 2 (Umweltmanagement)	Vorbach S	2
PS	MSD 2 (CSR Corporate Social Responsibility)	Von der Hellen C	2
KS	EMM 1 (Eco-Entrepreneurship)	Steiner G	2
KS	EMM 2 (Eco-Controlling)	Posch A	2
KS	ETM 2 (Management von Umweltprojekten)	Posch A	2
KS	ICO 2 (Strategisches Innovationscontrolling)	Gelbmann U	2
VU	MSD 1 (Betriebswirtschaftliche Umweltökonomie)	Klampfl-Pernold H, Vorbach S	2
PV	Innovationsmanagement	Posch A, Vorbach S	2

KS	ETM 1 (Innovation und Innovationsmanagement)	Globocnik D, Vorbach S	2
PK	Umweltökonomisches Praktikum	Posch A, Vorbach S	4
IP	Interdisziplinäres Praktikum (Möglichkeiten und Potentiale zur Ökostromerzeugung)	Knoll P, Lazar R, Ninaus J	4
IP	Interdisziplinäres Praktikum (Beyond GDP - gibt es ein Leben nach dem BIP?)	Aschemann R, Kettner C, Kreimer M, Schleicher S	4
IP	Interdisziplinäres Praktikum (Go East: Erhebung und Vergleich der Umweltsituation in Kroatien und Slowenien)	Ahamer G, Aschemann R, Lieb G	4
IP	Interdisziplinäres Praktikum (Energieeffizienz als Ansatz zur Erreichung von Klimaschutzziele)	Bednar-Friedl B, Gutschi C, Jilek W, Ninaus J, Pressl R, Reiter K, Streicher W	6
PS	MSD 2 (Nachhaltigkeitsberichterstattung)	Resel K	2
KS	EMM 1 (Sustainable Product Development)	Steiner G	2
KS	EMM 2 (Integrated Management Systems)	Vorbach S	2
IP	Interdisziplinäres Praktikum (Regionalentwicklung als Impulsgeber)	Fischer W, Gigler G, Hasler A, Pizzera J, Scheff J, Vovk Korze A	6
IP	Interdisziplinäres Praktikum (Carsharing - ein Beitrag zur Verringerung des Individualverkehrs)	Fallast K, Gelbmann U, Posch K, Wolking B	6
VU	Umwelt-, Nachhaltigkeit und Gender	Weller I	2
SE	Gender-Analysen zu Umwelteinstellungen und Umweltverhalten	Weller I	2
SE	Nachhaltiger Konsum & Gender	Weller I	2

4.3 Completed master thesis

Ainedter, Stefanie: *Comparison of Product Carbon Footprint of music CD and online music download*, (Wimmer, Wolfgang).

Anzenberger, Phillip: *Globalisierung im Lichte von Corporate Social Responsibility*, (Vorbach, Stefan).

Baumgartner, Silvia Maria: *Stakeholder und Stakes der steirischen Abfallwirtschaft*, (Vorbach, Stefan).

Coralic, Una: *Nachhaltiger Tourismus am Beispiel eines bosnischen Dienstleistungsunternehmens*, (Posch, Alfred).

Ebenschaiger, Kurt: *Kritische Analyse des Water Footprint Konzepts*, (Posch, Alfred).

Eisbacher, Ina-Maria: *Entscheidungsstruktur und -situation kommunaler Akteure der steirischen Abfallwirtschaft*, (Vorbach, Stefan).

Fuchs, Alfred Anton: *Wirtschaftliche Aspekte, ökologische Auswirkungen und gesellschaftliche Akzeptanz des Baus eines Wasserkraftwerkes im steirischen Ennstal*, (Vorbach, Stefan).

Hartl, Irina: *Nutzermotivationsstrategien für das Heiz- und Lüftverhalten im mehrgeschossigen Wohnbau*, (Posch, Alfred).

Heschl, Norbert: *Instrumente zur nachhaltigen CO₂-Reduktion - Von der Klimarahmenkonvention zum EU Emission Trading System*, (Stigler, Heinrich).

Kladler, Michaela: *CSR im Bankensektor*, (Vorbach, Stefan).

Ladan, Ivana: *Qualitätsverbesserungen bei der Produktentwicklung am Beispiel der Thermo Flux d.o.o.*, (Vorbach, Stefan).

Maierhofer, Alexander: *Technology Management and Technology Transfer- A Training- and Qualificationconcept for Transfer Managers*, (Vorbach, Stefan).

Meier, Cornelia: *Hemmende und fördernde Faktoren beim Wissenstransfer von Forschungseinrichtungen zu Unternehmen*, (Vorbach, Stefan).

Petermichl, Robert: *Facilitating Technology Transfers: methods and decision support recommendations*, (Vorbach, Stefan).

Pichler, Jasmin: *Ökonomischer und Ökologischer Vergleich verschiedener Entsorgungsmöglichkeiten für Einwegwindeln am Beispiel des AWV Hartberg*, (Vorbach, Stefan).

Roszbacher, Agnes: *Ermittlung des Biomassepotentials der ungarischen Gemeinde Cslyosplos*, (Vorbach, Stefan; Györi-Nagy, Sándor).

Roszbacher, Ferdinand: *Die Wissensbilanz als Instrument des Hochschulmanagements: Österreichische Universitäten im Vergleich*, (Posch, Alfred).

Schertler, Alexander: *Die Bedeutung des Passivhaus-Standards von Mehrfamiliengebäuden. Die Besonderheiten, die Probleme und die Kritiken in der Praxis.*, (Posch, Alfred).

Singer, Veronika: *Technologietransfer als Dienstleistung – Methodische Verankerung und instrumentelle Unterstützung*, (Vorbach, Stefan).

Tobin, Alexandra: *Comparison of photovoltaic technologies in terms of module cost, system cost and levelized cost of electricity*, (Vorbach, Stefan).

Voetsch, Andreas: *Statistische Prozesskontrolle mittels Qualitätsregelkarten und Six Sigma*, (Vorbach, Stefan).

Windhofer, Manuel Josef: *Krisenmanagement für Busunfälle in Österreich*, (Vorbach, Stefan).

Winkler, Roland: *Systematic Service Innovation - Ein methodischer Ansatz zur kundenorientierten Gestaltung wissensintensiver Dienstleistungsinnovationen*, (Vorbach, Stefan).

Wolkinger, Birgit Julia: *Standortbezogene Treibhausgasbetrachtung: Analyse in den Bereichen Gebäude, Mobilität und Büro*, (Vorbach, Stefan).

Zettl, Daniela: *Wissenstransfer und Innovationsprozess - Analyse und empirische Untersuchung möglicher Zusammenhänge am Beispiel kleiner und mittlerer Unternehmen in der Steiermark*, (Vorbach, Stefan).

Zoebinger, Alexandra: *Die Digitale Fabrik - Darstellung der Digitalen Fabrik nach heutigem Stand der Technik und Erarbeitung der für Magna Steyr Graz geeigneten Stoßrichtungen*, (Vorbach, Stefan).

Zotter, Katrin: *Verkehrsmaßnahmen und ihr Einfluss auf den innerstädtischen Einzelhandel*, (Posch, Alfred).

4.4 Completed dissertations

Matiasek, Rainer: *Corporate Sustainability. Company Strategies and Consumers.*, (Posch, Alfred; Ungericht, Bernhard).

4.5 Other teaching

ISIS internes DoktorandInnen Seminar (PhD-day) in Deutschlandsberg, Institut für Systemwissenschaften, Innovations- und Nachhaltigkeitsforschung (Universität Graz), 09.06.2010 - 10.06.2010.

5 Administration

5.1 Functions within the University

Aschemann, Ralf: *Programme-Coordinator of Joint Master's Programme in Industrial Ecology*

Baumgartner, Rupert: *Respondent Fachbereich BWL of the CuKo USW, since 2010*

Binder, Claudia: *Head of the institute, since 01.04.2010*

Bedenik, Katja: *IT representative, IT/Homepage support, 04.01.2010 - 31.12.2010.*

Gelbmann, Ulrike-Maria: *Member of the appointment committee, Sustainability Management, 10.2010 - 2011.*

Gelbmann, Ulrike-Maria: *Member of the appointment committee, Schulforschung, 2009 - 2010.*

Kocher, Gernot: *Head of the institute, 16.09.2009 - 31.03.2010*

Mrotzek, Maximilian: *Development of the institute-homepage: <http://www.uni-graz.at/isis/>, IT/Homepage support, 2010.*

Posch, Alfred: *Dean for studies at URBI*

Posch, Alfred: *Vice Head of the institute, since 16.09.2009*

Posch, Alfred: *Programme-Coordinator of Joint Master's Programme in Sustainable Development, since July 2008*

Posch, Alfred: *Member of the strategic council, Akademie für Neue Medien und Wissenstransfer, strategic advisor, since 2009.*

Posch, Alfred: *Member of the awarding committee, Buchbinderpreis, internal coordination, Research, since 2009.*

Posch, Alfred: *Respondent of the Cuko USW, since 2008*

Posch, Alfred: *Member of the appointment committee, Sustainability Management, 10.2010 - 2011.*

Steiner, Gerald: *Organizer of the ISIS-Science Seminar Series, coordination of a research or education program, since 2009.*

Steiner, Gerald: *Member of the Faculty Board of the URBI, Faculty Representative, since 2007.*

Steiner, Gerald: *ERASMUS coordinator at ISIS, coordination of a research or education program, since 2007.*



5.2 Functions in external commissions

Baumgartner, Rupert: *appointment committee, TU Graz (Austria), reviewer,*
15.12.2010 - 31.01.2011.