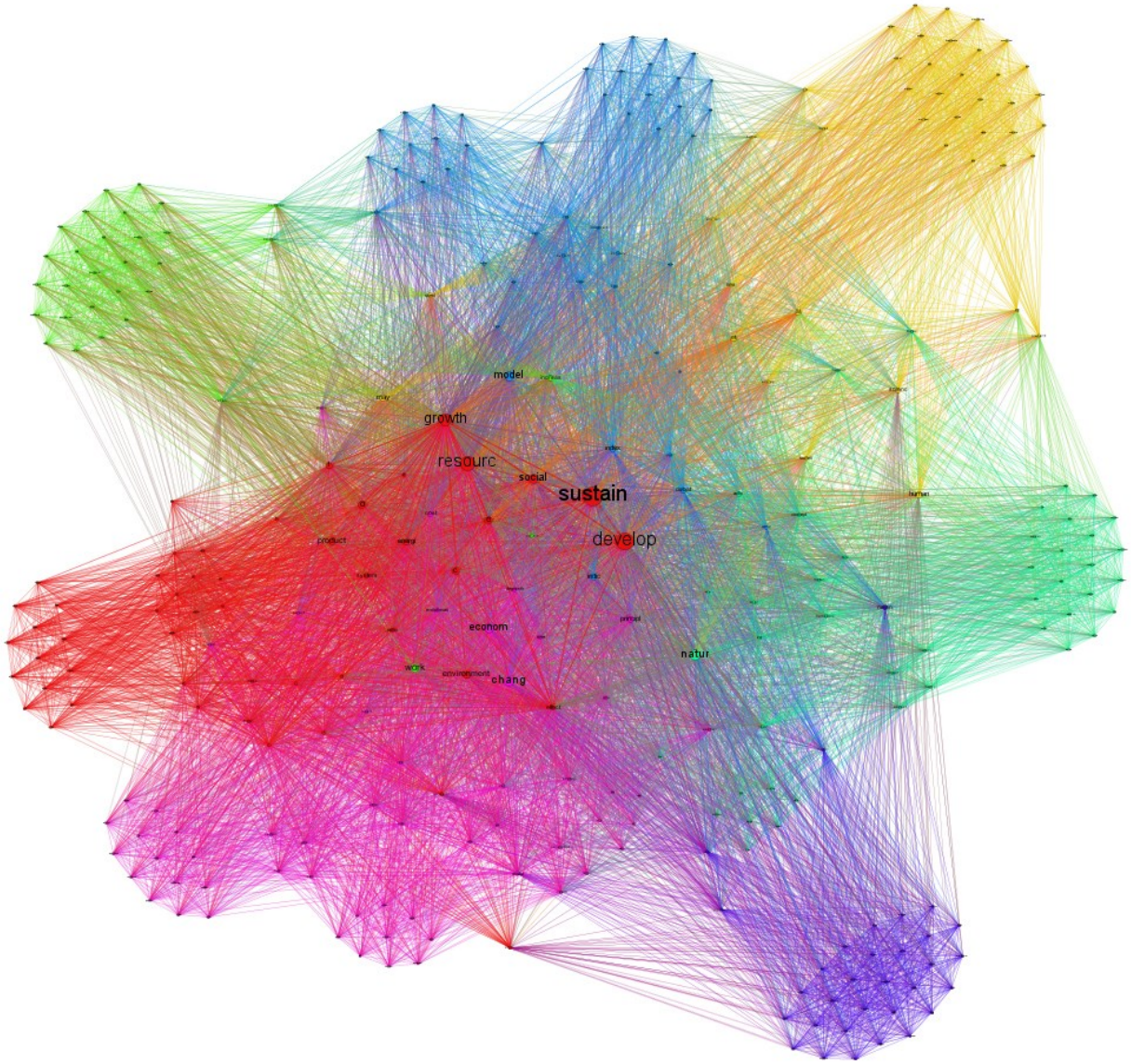
Annual Report 2013

Institute of Systems Sciences, Innovation and Sustainability Research



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ISIS / Institute of Systems Sciences,
Innovation & Sustainability Research
University of Graz

Merangasse 18/I,
8010 Graz, AUSTRIA

The image on the front cover shows the result of a Latent Semantic Analysis (LSA) performed on a corpus of scientific papers on sustainability. LSA is a computer-based mathematical method for natural language processing that generates a semantic space in which relations between texts and the terms they contain can be analyzed. The interesting property of LSA is that it can classify texts as dealing with the same content even if they do not have a single word in common. LSA hence can disclose *latent* semantic relationships.

Editorial

2013 marked the 300th anniversary of a cornerstone in the formation of the concept 'Sustainable Development'. In 1713, Hans Carl von Carlowitz published "Sylvicultura Oeconomica" in which he defined some basic rules for sustainable forestry, e.g. not using more wood than a forest can reproduce. While his ideas remained neglected for many decades, by the second half of the 20th century the growing pattern of unsustainable growth and development meant that they could no longer be ignored. The concept of sustainable development thus emerged and now occupies a prominent place in national and international politics, societal discourse, as well as in individual and organizational behavior. However, the emerging current transition towards more sustainable societies is still in its infancy, and one often has the impression that unsustainable development is being sustained rather than its opposite.

Against this background, we believe that the mission of the Institute of Systems Sciences, Innovation and Sustainability Research (ISIS) lies in contributing to sustainable development by offering high quality teaching, science and research. As sustainability-related challenges usually tend to be based on rather ill-defined problems, an interdisciplinary and transdisciplinary approach becomes absolutely necessary. This entails combining systems sciences with innovation, transition and sustainability research, employing an international and interdisciplinary team of excellent researchers, cooperating nationally and internationally with other research institutions, and integrating a variety of affected parties in research projects.

The decision by the Austrian Science Fund to support a new doctoral program has proven to be a great success for ISIS and the university-wide research cluster "Environment and Global Change". Coordinated by Prof. Lukas Meyer (Institute of Philosophy) and involving Wilfried Winiwarter, Alfred Posch and Rupert Baumgartner from ISIS, the doctoral program has been named "CC-Cope: Climate Change Uncertainties, Thresholds and Coping Strategies". The aim is to engage in related interdisciplinary research on the relevant topics by combining approaches found in philosophy, natural sciences and social sciences.

In terms of research and teaching output, 2013 witnessed a further increase in our performance. We were able, for example, to increase the number of peer-reviewed scientific papers to 18 in 2013, compared to 10 in 2012, even while maintaining the level of publications in other areas.

We would also like to take the opportunity of congratulating Nina Braschel who was the first to receive a PhD in the interdisciplinary PhD program in environmental systems sciences.

We hope that you as a reader will find our annual report informative and interesting and welcome any feedback you care to offer on our activities.

Rupert J. Baumgartner

Alfred Posch

Content

1 THE INSTITUTE

1.1 Mission statement

The Institute of Systems Sciences, Innovation and Sustainability Research investigates possibilities for the transition towards a more sustainable world. 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 sciences, innovation and transition sciences as well as on sustainability science, and develop inter- and transdisciplinary methods to analyse and model human-environment systems, develop scenarios and transition pathways, and assess regulatory strategies.

ISIS is characterized by the disciplinary diversity of its members. Highly motivated researchers originating from diverse fields of natural, social and formal sciences collaborate along real-world problems.

ISIS is unique in several ways:

- Scientific work focuses on three central topics: systems sciences, innovation and transition sciences, as well as sustainability science and management.
- It is open to external collaboration with scientists from social as well as natural sciences.
- The transdisciplinary research focus facilitates high quality applied research and leads to strong collaborative ties with regional stakeholders and with business and industry.
- Research projects apply a mix of both qualitative and quantitative approaches.
- Offering one of the few curricula on Environmental Systems Sciences, ISIS grew into additionally coordinating two international joint master's programmes.
- ISIS is well embedded in international networks in both teaching and research.

Figure 1: The ISIS-team

ISIS is a part of the Faculty of Environmental, Regional and Educational Sciences and features a broad interface within the faculty as well as beyond. Together with the "Wegener Center" ISIS plays a central role within the university's research core area "Environment and Global Change".

1.2 Faculty and Staff members

Professors:

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

Head of ISIS
Vice Dean at the URBi Faculty
Professor for Sustainability Management

Research Interests: Corporate Sustainability, CSR, Strategic Management, Life Cycle Analysis, Industrial Ecology, Management systems, Sustainable Supply Chain Management, New Business Models.

Univ.-Prof. Dr. **Manfred Füllsack**
Phone: 3235 Email: manfred.fuellsack@uni-graz.at

Professor for Systems Sciences

Research Interests: Systems, Complexity, Networks, Games and Computational Theory, Work (History, Sociology, Economy, Philosophy), Computer-Based Modelling and Simulation.

Univ.-Prof. Dr. **Wilfried Winiwarter**
Phone: 7340 Email: wilfried.winiwarter@uni-graz.at

Professor for Systems Sciences

Research Interests: Systems Analysis, Global Biogeochemical Cycles (Nitrogen Cycle), Interactions between Physical and Social Systems.

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

Vice Head of ISIS, Dean for studies at the URBi Faculty
Academic coordinator of the International Joint Master programme in Sustainable Development.

Research Interests: Environmental and Innovation Management, Eco-Controlling, Industrial Ecology, Inter- and Transdisciplinary Learning for Sustainable Development.

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

Since October 2011 also guest-professorship at Harvard University, U.S.A

Research Interests: Systems Analysis, Transdisciplinary Problem Solving, Integration of Stakeholders within Scenarios Developments, Systemic Creative Problem Solving, Cross-Cultural Aspects of Entrepreneurship.

Prae-Docs and Post-Docs:

Dr. **Nina Braschel**
Phone: 7344 Email: nina.braschel@uni-graz.at

Research Interests: Emissions Trading, Waste Management.

Until April 2013.

Dipl.Ing. Dr. **Thomas Brudermann**
Phone: 7336 Email: thomas.brudermann@uni-graz.at

Research Interests: Environmental Psychology, Social Dynamics and Crowd Psychology, Behavioural Economics and Neuroeconomics, Economic Psychology, Agent-based Modelling in Social Sciences, Sustainability-related bottom-up initiatives.

Mag. **Sabrina Engert**
Phone: 7332 Email: sabrina.engert@uni-graz.at

Research Interests: Sustainability Management, Corporate Social Responsibility, Strategic Management, Management Systems.

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.

Porfirio Guevara, MSc
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Research Interests: Poverty and Education Analysis, Innovation, Economic Growth, International Trade, Environmental Economics, System Dynamics Modelling.

Mag. **Martina Hölzl**
Phone: 7346 Email: martina.hoelzl@uni-graz.at

Research Interests: Corporate Sustainability, Social Entrepreneurship and Innovation, Renewable Energy.

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

Research Interests: Resources, Catastrophes, Systems Sciences, System Dynamics.

Dr. **Elke Perl-Vorbach**
Phone: 7342 Email: elke.perl@uni-graz.at

Research Interests: Sustainable Innovation, Sustainable Supply Chain Management, Environmental Information Systems, Innovation- and Technology-Management.

Dr. **Peter Perstel**
Phone: 7347 Email: peter.perstel@uni-graz.at

Research Interests: Sustainable Materials, Material Libraries, Waste Management, Innovation Management and Creative Techniques.

Dr. **Romana Rauter**
Phone: 3236 Email: romana.rauter@uni-graz.at

Research Interests: Sustainable Innovation, Innovation and Technology Management, Environmental Aspects of Operational Innovation Management, Transfer of Knowledge and Knowledge Management, New Business Models.

Mag. **Kathrin Reinsberger**
Phone: 7343 Email: kathrin.reinsberger@uni-graz.at

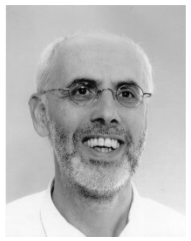
Research Interests: Environmental Economics, Climate and Energy Policy, System Dynamics, Energy Management, Renewable Energy, Energy Transition.

Dipl.Ing. Dr. **Ulrike Seebacher**
Phone: 7331 Email: ulrike.seebacher@uni-graz.at

Research Interests: Corporate Social Responsibility, Corporate Sustainability, Sustainable Regions, Sustainability Learning of Persons and Organisations, Sustainable Lifestyles.

Until August 2013.

Lecturer:

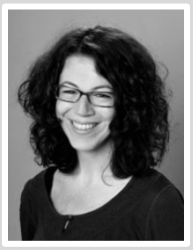


Dr. **Ralf Aschemann**
Phone: 3232 Email: ralf.aschemann@uni-graz.at

Academic co-ordinator of the "Erasmus Mundus Master's Programme in Industrial Ecology"; co-ordinator of transdisciplinary case-study teaching at ISIS; Erasmus advisor.

Research Interests: Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA), Environmental Effects of Transport, Industrial Ecology, Higher Education and Environmental Assessment and Management, Health Impact Assessment (HIA).

Project Staff:



Eva Fleiß, MA
Phone: 1521 Email: eva.fleiss@uni-graz.at

Research Interests: Empirical Social Research, Validity of Survey Questions, Environmental Sociology/Sustainability, Renewable Energy, Photovoltaics.

Morgane Fritz, MA
Phone: 1525 Email: morgane.fritz@uni-graz.at

Research Interests: Waste Management, Corporate Social Responsibility, Product/Service Development, Value Chain Management, Life Cycle Assessment.

Mag. **Julia Gruber**
Phone: 1546 Email: julia.gruber@uni-graz.at

Research Interests: Life Cycle Assessment, Sustainable Development, Material Flow Analysis, Ecological Economics, Behavioural Economics, Growth and Well-Being.

Since Oct. 2013.

Mag. **Martin Kislinger**
Phone: 1520 Email: martin.kislinger@uni-graz.at

Research Interests: Dynamic systems modelling: System Dynamics and Agent-based Modelling, renewable energy, innovation diffusion, social network analysis, mobility (Shared Space).

Josef-Peter Schöggl, MSc
Phone: 1524 Email: josef.schoeggl@uni-graz.at

Research Interests: Design for Sustainability, Life Cycle Assessment, Corporate Social Responsibility, Sustainable Supply Chain Management.

Dipl.-Ing. **Andrea Maria Schröck**
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Research Interests: Renewable Resources, Environmental Chemistry, Sustainable Development.

Dipl.-Geogr. **Alessandra Götz**
Phone: 3234 Email: alessandra.goetz@uni-graz.at

Simulation and Modelisation of Energy Demand in Cities;
Multi method approaches of Multi-Agent Systems, System Dynamics, GIS

Scholarship holders:

Magdalena Pierer, MSc
Email: magdalena.pierer@uni-graz.at

Research Interests: Nitrogen in the environment, sustainable food production and consumption, waste management.

Mag**. Thomas Winkler**, MSc.
Email: thomas.winkler@uni-graz.at

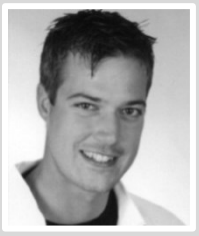
Research Interests: GHG emission scenarios, climate change, ecotourism.

Mag. **Maria Hecher**
Phone: 1546 Email: maria.hecher@uni-graz.at

Research Interests: Energy transition, renewable energy technologies, energy consumption patterns, energy regions, transdisciplinary research.

Administration:

Sabina Grobbauer, MBA
Phone: 3238 Email: sabina.grobbauer@uni-graz.at



Mario Perner
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Until Oct. 2013

Klaudia Kramer
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Since Sept. 2013

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Mag. Patrizia Kamp

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until June 2013

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Until June 2013

Sandra Viczek

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Martina Zimek

Email: martina.zimek@uni-graz.at

2 RESEARCH PROJECTS AND ACTIVITIES

2.1 Research profile

Research at ISIS is based on **three scientific pillars**: systems sciences, innovation and transition research, and sustainability research. By combining these three science fields, we seek to enhance the ability of human-environment systems to deal with global change.

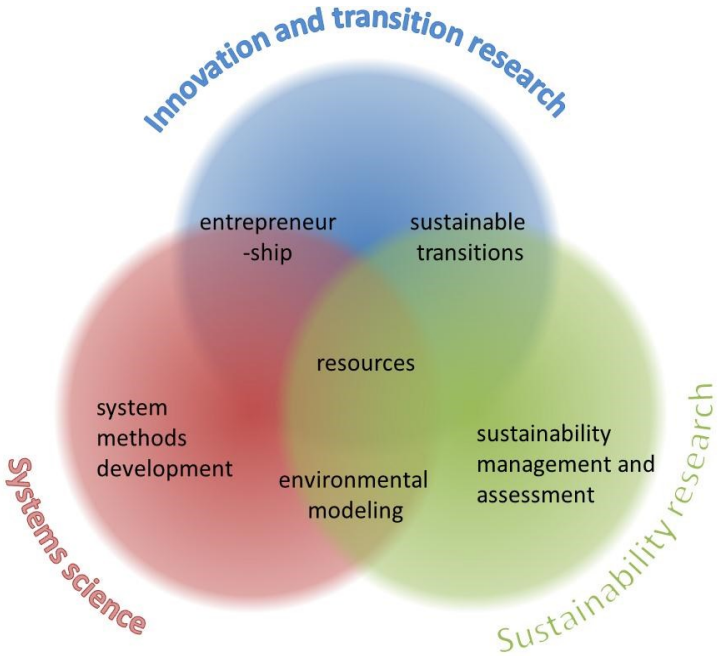


Figure 2: Science fields of ISIS

Systems sciences. Systems modelling (e.g. agent-based modelling or system dynamics), and environmental systems assessment provide a better understanding of different kinds of human environment systems and their adaptation processes to challenges of global change. We are engaged in system methods development, improving computer-based (multi-agent) simulations of systems, in particular of complex adaptive systems. Our investigations include environmental modelling, covering global biogeochemical cycles, like the nitrogen cycle. Special emphasis is put on the interaction between physical and social systems in order to develop concepts and strategies for sustainable development.

Innovation and Transition research. Management of innovations at different levels is a significant challenge for the transition towards sustainable development. It is our goal to gain insight in innovation processes for new products, services, and technologies, but also in transition processes in society, organizations, and sectors, like the energy sector. Therefore, it is necessary to generate an understanding of logics and patterns of human decision making and action. On this basis, we can develop inter- and transdisciplinary concepts for supporting decisions that influence sustainability, and we can help initiate sustainability-oriented transition, innovation and adaptation processes in a variety of human-environment systems.

Sustainability research. Regions and corporations are important actors and entities for sustainable transitions. Thus, we investigate systems and processes for sustainability management and corporate social responsibility (CSR) initiatives at corporate level including the value chains and the regional level. Key aspects include developing environmental evaluation and controlling concepts and methods such as life-cycle-assessment (LCA), strategic management, corporate sustainability management and strategies, industrial ecology, integrated management systems, and management of resources (like waste or energy).

We are currently conducting research projects in the fields of regional and organizational energy systems, resources and waste, and sustainability management and assessment.

Regional and Organizational Energy Systems deal 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?

Resources and Waste considers 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? How can nitrogen and GHG flows in agriculture be assessed and which strategies to optimize these flows are applicable?

Sustainability Management and Assessment responds to 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? How can sustainability aspects integrated in supply chain management? How can the sustainability performance of supply chains be measured?

2.2 Research Projects

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

Energy regions provide one answer for climate change mitigation and adaptation. The aim of this project is to understand and model socio-technical transitions in Austrian energy regions to derive policy recommendations for establishing new, supporting current, and maintaining successful transitions of energy regions. In doing so, we develop a simulation model, which includes an energy flow model, depicting the development and potential for energy production at a regional level, and a behavioural model, studying the impact of policies, social norm and culture on stakeholders' investment and energy consumption decisions. The results are concrete energy policy recommendations at a regional and national scale.

Energy regions are regional initiatives, which usually envision energy self-sufficiency by using regional renewable energy sources and building a decentralized energy infrastructure. Two Austrian energy regions *ökoEnergieland* and *Energieregion Weiz-Gleisdorf*, which show significant differences in their initial conditions, applied strategies and transition processes, have been selected as case study regions. Both regions have been awarded several times in national and international competitions.

The figure shows how stakeholder perceptions and decision-making affect through their action the environmental system, here resources and energy flows. The changes in the environmental system, in turn, are perceived by the stake-holders, who balance the perceived effect with the goals they want to reach. This balance leads to new actions. The human-environment interaction is influenced by external boundary conditions, such as fuels prices, subsidies, etc.

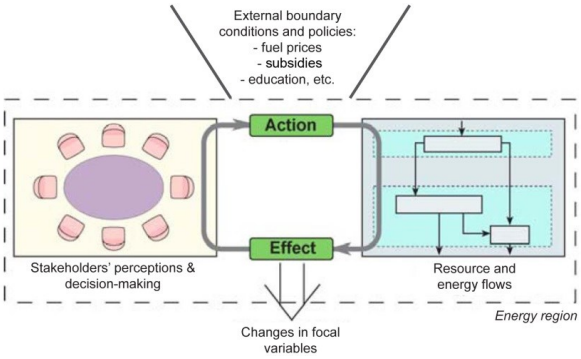


Figure 3: The TERIM Project

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

- analyze the transition dynamics in two Austrian energy regions from their establishment until today.
- 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.
- derive policy recommendations for Austrian policy makers.

Project team at ISIS: Univ.-Prof. Dr. Alfred Posch & Univ.-Prof. Dr. Claudia R. Binder
Mag. Maria Hecher, Dipl.-Geogr. Alessandra Goetz

Project partners: University of Munich, Delft University of Technology, European Centre for Renewable Energy Güssing (EEE), Energieregion Weiz-Gleisdorf

Duration: Apr. 2011 – Mar. 2014

Funding: Austrian Climate and Energy Fund (ACRP Program)

http://www.geographie.uni-muenchen.de/department/fiona/department/sozialgeographie/forschung/terim_eng/index.html

2.2.2 Farm-Clim - Farming for a better climate by improving nitrogen use efficiency and reduce greenhouse gas emission

FARM-CLIM assesses nitrogen (N) and greenhouse gas (GHG) fluxes in Austrian agriculture and proposes measures for improvement. Those measures will undergo an economic assessment. The IPCC default emission factor for soil nitrous oxide (N_2O) emissions will be reviewed and improved including the development of regional concepts to implement mitigation measures. IPCC reporting will be improved and uncertainties be reduced. FARM-CLIM covers the topic in a multi- and interdisciplinary approach including nationally and internationally highly recognised experts from science, reporting and commercial farming. The inclusion of the stakeholders` views at a very early project state will contribute significantly to closing the science-policy gap in the field of climate friendly farming. Specifically, the project aims to:

- Optimize N use in Austrian agriculture
- Minimize N and GHG losses to the environment
- Identify intervention points in agriculture which are relevant for a general N and GHG strategy
- Develop a basis on which guidelines on recommendations for agricultural advisory services on potential optimization measures and their economic impact can be developed.
- Close the science-policy gap on the possibilities to optimize N use and minimize GHG losses

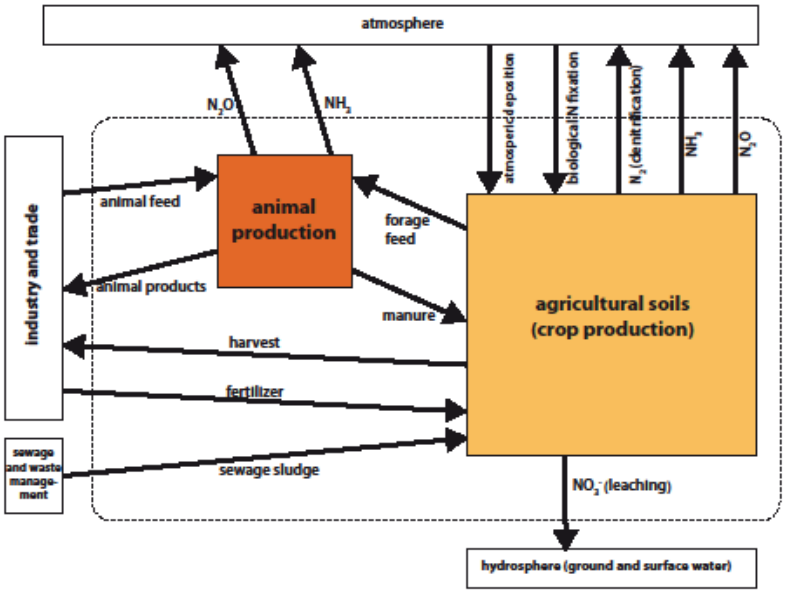


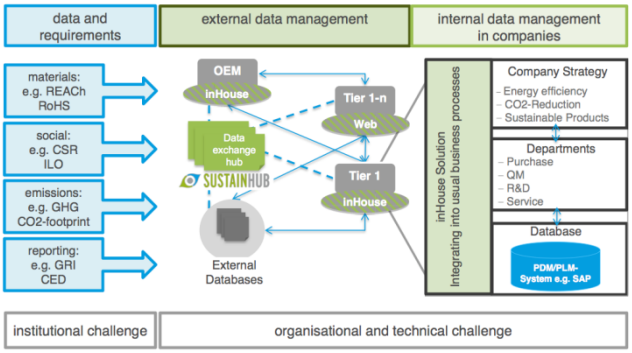
Figure 4: Nitrogen flows in the agricultural sector

Project team at ISIS:	Univ.-Prof. Dr. Wilfried Winiwarter, Dipl.-Ing. Andrea Schröck
Project partners:	University of Natural Resources and Life Sciences (Vienna), Federal Environmental Agency (Umweltbundesamt, Vienna) Austrian Agency for Health and Food Safety (AGES, Vienna), Chamber of Agriculture (Lower Austria), Agricultural Research and Education Center (Raumberg-Gumpenstein)
Duration:	2012 – 2014
Funding:	Austrian Climate Research Programme

2.2.3 SustainHub - sustainability data exchange hub

Sustainability Data Exchange Hub (SustainHub) is a research project with the goal of developing an integrated network solution for managing product compliance and sustainability data along global supply chains. The project is carried out by a research consortium of 15 partners from 6 European countries under the coordination of the Fraunhofer Institute for Manufacturing Engineering and Automation.

There is an increasing demand for eco-efficient products and services, provoked by public opinion, and being incorporated into legislation worldwide. Customer-driven requirements and company strategic goals go beyond the law and are becoming integral to company policies. For the global Electronics and Automotive industries, eco-efficient products are emerging as a critical competitive factor in the marketplace. Large original equipment manufacturers (OEMs) have internalized this trend and passed the requirements on to their suppliers. However, due to complicated and dynamic reporting requirements, suppliers are frequently overwhelmed. The lack of data and the insufficient options for integration into internal processes have inhibited data transparency and compliance, which significantly impends product innovation.



SustainHub is set to solve these problems. It will provide an efficient, integrated system for the generation, validation and transmission of sustainability data across the entire supply chains. SustainHub's data architecture is designed to meet all data exchange needs in a sustainable world, allowing for maximum traceability and transparency.

Figure 5: Sustain Hub Project

Initially, relevant sustainability aspects are defined and a new set of sustainability indicators for a holistic evaluation are created. Then, the data requirements are defined and methods for the aggregation of the sustainability data along a supply chains are developed. In a third phase, plausibility checks are carried out and measures for the integration into corporate decision-making are identified.

Project team at ISIS: Univ.-Prof. Dr. Rupert J. Baumgartner
Morgane Fritz, MBA
Josef-Peter Schöggl, MSc.
Mag. Sabrina Engert

Duration: Feb. 2012 – Jan. 2015

Funding: Seventh Framework Programme of the European Commission

www.sustainhub-research.eu

2.2.4 SUSTAINICUM Business Game

The SUSTAINICUM Business Game is developed within the frame of the SUSTAINICUM project of three Austrian universities (University of Natural Resources and Life Sciences, Vienna, University of Graz, Graz University of Technology), which aims to introduce topics in university teaching that are relevant to sustainability.

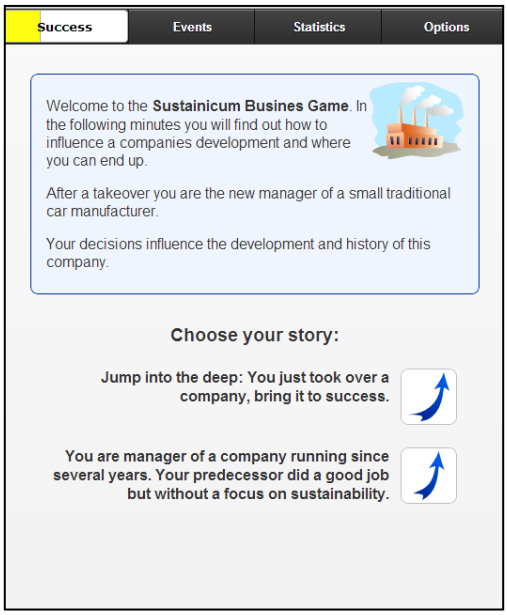


Figure 6: SUSTAINICUM Business Game

The SUSTAINICUM Business Game (www.sustainabilitymanager.at) is a strategy game which is based on the simulation data of the Sustainability Manager, a browser-based sustainable business simulation game. The game is developed by the Institute of Systems Sciences, Innovation and Sustainability Research in cooperation with the Attractive! att15 GmbH. The applied technology Attractive! Boyscout is a modern JavaScript-Game-Framework for decision-oriented Web & Mobile games. The target of the SUSTAINICUM Business Game is to manage a company in the automotive industry in a sustainable way. In doing so, the game simulates the impacts of the different decisions and reflects the key data of economic success, environmental impacts and social engagement.

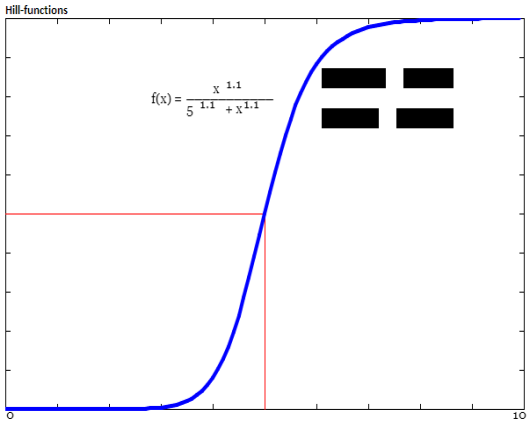
Application and main Objectives

1. Identification of the complexities and connections in a company
2. Support of long-term and sustainability-oriented thinking
3. Recognition of the connection and importance of the three dimensions of sustainable development (economic, ecological and social)
4. Practice-oriented application of sustainable decisions in a company
5. Investment in sustainable development is important for a company's success
6. Decision making process: Realization of the impacts on the company without living with the consequences in real world

Project team at ISIS: Univ.-Prof. Dr. Rupert J. Baumgartner, Mag. Sabrina Engert, Mag. Martina Hölzl, Mag. Anita Orthofer
Project partner: Attractive! att15 GmbH
Duration: Oct. 2012 – Feb. 2013
http://www.att15.com/sustainicum
http://www.att15.com/sustainicum/?locale=en

2.2.5 Interactive electronic textbook (eBook) for systems sciences

The rise of tablet computers and smartphones is accompanied by new possibilities for students as well as professors. It allows to provide eBooks and especially electronic textbooks with interactive elements. Besides the incorporation of audio and video material, educational examples like dynamic models and simulations can be made accessible out of the text, giving the students the possibility to better understand and comprehend the teaching subject.



For these reasons, Manfred Füllsack, Professor for Systems Sciences at ISIS Graz, creates an interactive electronic textbook for systems sciences based on software applications for tablet computers. The project is in progress, a first version of the interactive textbook is available.

Figure 7: Interactive E-Textbook

The aims of the project are:

- To allow active learning with the help of significant examples where dynamics are not presented statically as graphics, but simulated directly via software applications.
- To give students the possibility to learn and try out the characteristic behaviour of specific impacts (for example the consequences of changing parameters) on their own, but at the same time under guidance of the text.
- To test eBooks on their applicability for the special requirements of textbooks generally and to find a convenient, cross-platform and non-proprietary presentation method.

Project team at ISIS:	Univ.-Prof. Dr. Manfred Füllsack
Project partner:	Univ.-Doz. Dr. Martin Ebner (cooperation partner)
Duration:	Sept. 2012 – Dec. 2013
Funding:	Land Steiermark

2.2.6 Boost Erasmus Mundus, europeAn higher educaTion and Employability through video Sharing community (tuBEMATES)

Figure 8: TuBeMates Logo

"tuBEMATES" is an Erasmus Mundus 3 project, aimed at enhancing both the visibility and attractiveness of European Higher Education, in particular for students from South-East Asia. In order to pave the way for the new 'Erasmus 4 All' programme, tuBEMATES creates a community where students can share impressions and expectations on Erasmus Mundus experiences through self-produced video-clips and trailers. For those video-clips there will be a competition, which is going to start in early 2014. Moreover, employers and representatives from the business sector will be involved.

With those means, the project's concept considers two important aspects: (1) According to recent publications about perceptions of foreign students, fewer Asian graduates choose European universities for their postgraduate studies to improve their career opportunities and to enrich intercultural understanding with EU countries; (2) the new programme "Erasmus 4 All" focuses, inter alia, more on including firms as partners.
Students as the project's main target groups will be the key actors. Through the development of a video sharing community, Erasmus mundus students will be supported in capitalizing mobility experiences and increasing employability chances. Additionally, best practices and success stories will be disseminated.
The project's activities are broken down into four work packages, namely "management and co-ordination", "dissemination and sustainability", "development of video sharing community" and "quality assurance". For the latter one, ISIS is the responsible project partner and has delivered a detailed quality plan for all project activities including indicators to monitor their progress and success. This internal quality assurance is complemented by an external evaluator, who is assessing the project's quality in terms of processes and outcomes.

Project team at ISIS:	Dr. Ralf Aschemann
Project partner:	University of Barcelona (Spain); Università degli Studi Guglielmo Marconi (Italy); University of Poitiers (France); Aoyama Gakuin University (Japan); Thammasat University (Thailand); Hanoi University of Science and Technology (Vietnam)
Duration:	Sept. 2012 – Oct. 2014
Funding:	European Commission

2.2.7 ALISEN - Analysing Linkages of Socio-Ecological Nitrogen flows

Agricultural practices and nitrogen use are intrinsically connected. As land use management is central to nitrogen flows and often a cause of unintended environmental problems, it is worthwhile to deepen the understanding of socioeconomic and natural drivers in influencing stocks and flows of nitrogen. However, farmers are involved in socioeconomic systems, which influence their sources of livelihood, their business decisions and in direct consequence their actions on the farm. An integrated socio-ecological model study of nitrogen stocks and flows is being developed within the scope of the project ALISEN (**A**nalysing **LI**nkages of **S**ocio**E**cological **N**itrogen flows) by coupling a decision-making module with a nitrogen stock and flow module. Simulating decision making employs an autonomous agent approach, with the agent's choices to be derived from the farming community in the area concerned. Stocks and flows of nitrogen will be calculated by a biophysical soil modelling. Amongst others, this project aims to identify:

- decisive factors in change of agricultural practice
- spatially explicit changes in land use
- stocks and flows of nitrogen indicating sustainability of land use

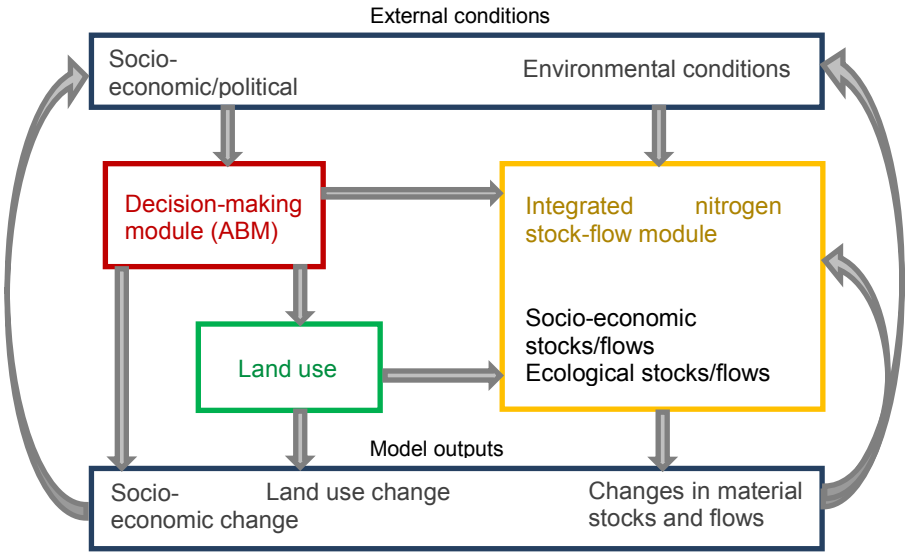


Figure 9: Concept of the integrated model system

Application area is the Upper Austrian Enns valley, a rural region, characterized by abundant natural and social science datasets since it is part of a research cluster (LTER). The chosen study region underwent dramatic changes in its society-nature relationship during the last two centuries. Nowadays, it experiences problems of marginalized rural areas such as declining agriculture, a lack of jobs, low incomes and poor infrastructure.

Project team at ISIS:	Univ.-Prof. Wilfried Winiwarter, Dipl.-Ing. Andrea Schröck
Project leader:	Institute of Social Ecology, Vienna (Veronika Gaube)
Duration:	Oct. 2013 – Jun. 2014
Funding:	Austrian Science Fund (FWF)

2.2.8 FLIPPR - Future Lignin and Pulp Processing Research

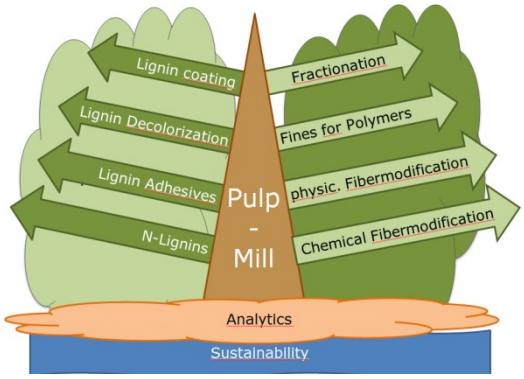


Figure 10: Integration of FLIPPR Areas

In this COMET K-Project, the efforts are focused on establishing structural know-how to make more efficient use of major raw materials streams of the paper and pulp industry - cellulose and lignin. The single projects focus on applications in the pulp and paper value chain but also in areas outside the classical product chain. The goal of FLIPPR is to transform this empirical domain into a science-based endeavor and to give the current product and process development approaches in the field of lignin and fibre usage a new direction.

ISIS is together with the Wegener Center responsible for the Area Sustainability. ISIS will conduct a life cycle sustainability assessment (LCSA) of "high potential" biorefinery-products, based on the innovations from other project partners. Besides the ecological assessment additional emphasis is placed on social impacts, sustainability and life cycle costs. Thus an integrated system for life cycle sustainability assessment (LCSA) is developed and applied.

In more detail, ISIS is responsible for the following tasks:

- Environmental LCA for standard industrial feedstock of paper and pulp industry partners
- Environmental LCA of state of the art products which can be substituted by innovations of the pulping industry
- Life cycle sustainability assessment (including environmental LCA, social LCA and life cycle costing) of biorefinery-products based on the results of other project parts

The purpose of these tasks is to find the critical issues (hotspots) for the three pillars of LCSA – environmental LCA (E-LCA), social LCA (S-LCA) and life cycle costing (LCC) – that really determine the contribution of the lignin and cellulose-derived products to the emergence of sustainable low carbon systems.

Project team at ISIS:	Univ.-Prof. Dr. Alfred Posch, Mag. Julia Gruber, Univ.-Prof. Dr. Rupert J. Baumgartner, Dr. Ralf Aschemann, Dr. Romana Rauter
Lead Institution:	Future Lignin and Pulp Processing Research Project GmbH
Company Partners:	Sappi Gratkorn-Produktions GmbH, Mondi Frantschach GmbH, Norske Skog Bruck GmbH, Zellstoff Pöls AG
Scientific Partners:	University of Natural Resources and Life Science, Graz University of Technology (Graz), University of Graz (Wegener Center)
Duration:	Apr. 2013 – Mar. 2017
Funding:	FFG, COMET K1-Project
www.flippr.at	

2.2.9 WISSEN - Transition to smart living environments: a potential analysis for Styria from a social and economic perspective

New technologies and services for mobility, buildings, energy production, and manufacturing processes open up new courses of action for Styria and its economy. For societal usage and integration of these options not only technological but also social innovations are necessary. Therefore, the project WISSEN analyses the developments of and potentials for smart living environments in Styria with focus on the inclusion of citizens as active co-creators of this societal change. The project is working on conclusions for societal, political and economic implementations and identifies promising areas for further analysis.

Within this project, the istitute is concerned with the part of "energy transition" and focuses hereby on decentralized renewable energy production by photovoltaic facilities (PV). In recent years photvoltaic technology is gaining raising attention. To further promote the diffusion of photovoltaic in Styria, the establishment and development of various forms of PV adoption needs to be enhanced. Therefore the aim of our research is to investage the role of stakeholder networks in the adoption and diffusion process of photovoltaic.

The methodology we use comprises a literature review, the analysis of secondary data as well as qualitative and quantitative methods of empricial social research. In a further step, a SWOT analysis (strengths, weaknesses, opportunities, threats) with an integrated AHP (analytic hierarchy process) will generate strategies in order to improve policy design.

Our analysis helps to gain a better understanding of the PV adoption process in Styria and provide knowledge to possibly adapt the framework conditions for photovoltaic diffusion in Styria.

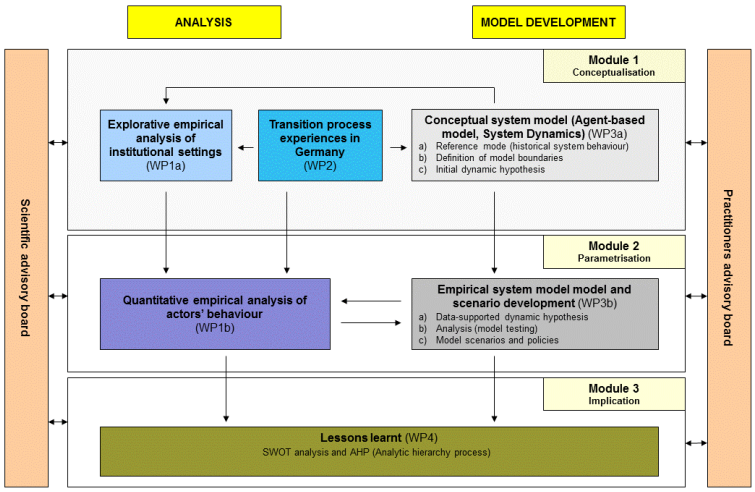
Figure 11: Stakeholder Workshop, Audimx FH Joanneum (10/2013)

Project team at ISIS:	Univ.-Prof. Dr. Alfred Posch Mag. Kathrin Reinsberger
Project partner:	Wegener Center (project leader) IFZ , FH Joanneum, Joanneum Research
Duration:	Feb. 2013 – Jul. 2014
Funding:	Land Steiermark – A8 Science and Health

2.2.10 RESHAPE - Reshaping institutions and processes in the transition towards renewable energy: lessons from bottom-up initiatives

Taking into account disappointments in recent climate negotiations on the international level as well as the lack of supranational authorities, it becomes clear that there is a need for reshaping processes and institutions for a further progress in climate policy. Here, bottom-up initiatives may become important cornerstones in the transformation towards a carbon neutral and adaptive society.

The project explores different examples of bottom-up initiatives that emerged in the recent years in Austria in the field of photovoltaics. It contains empirical analyses of different case studies and reflects the Austrian situation with experiences in Germany. The empirical analysis and selection of the cases will follow the conceptional systematization of different types of bottom-up initiatives. Qualitative and quantitative empirical research on institutional settings on the macro- and meso-scale and actor's behaviour on the micro scale go along with the development of an agent-based system model which allows different scenario development of the diffusion of participation in those initiatives.



The methodology used in the project includes: literature research, qualitative and quantitative methods of empirical social research (interviews, survey, and statistical data analysis), system modelling (agent-based modelling) and stakeholder dialogue. In this way, the two research streams - system modelling and empirical social research - are highly interwoven.

Figure 12: Reshape Project

The main outcome of the project will be appropriate policy recommendations for reshaping institutions and processes in the transition towards renewable energy that support bottom-up initiatives to gain increasing significance in the renewable energy provision optimally embedded within the overall energy strategy of Austria.

Project team at ISIS: Univ.-Prof. Mag. Dr. Alfred Posch
Eva Fleiß, MA
Mag. Martin Kislinger
Univ.-Prof. Dr. Manfred Füllsack
Mag. Kathrin Reinsberger
Dr. Thomas Brudermann

Duration: Mar. 2013 – Feb. 2015

Funding: Austrian Climate Research Program (Climate and Energy Fund)

2.2.11 **SEDE – ecodesign seminars for the automotive industry in Styria**

The automotive industry is under increasing legal and public pressure to minimize negative environmental impacts of their products. On that point, a product life cycle perspective has to be developed and used by the companies so that environmental aspects of resource extraction, production and logistic processes, product use and recycling will be analyzed and reduced. Further, a special focus lies on the design and construction phase. This is due to the fact that the earlier in the product development sustainability factors are considered, the larger are the improvement potentials (see Figure below). Therefore the full integration of ecodesign and the provision of specific knowledge and competences are particularly important.

The goal of this project is to develop a series of 6 related seminars in ecodesign for employees in the automotive industry in Styria with a special focus on SMEs. The contribution of ISIS focuses on basic principles and specific methods for implementing ecodesign, as well as on tools for assessing sustainability aspects at different product development stages. The project was initiated together with the automotive cluster ACStyria, the Graz University of Technology, ISIS and several SMEs.

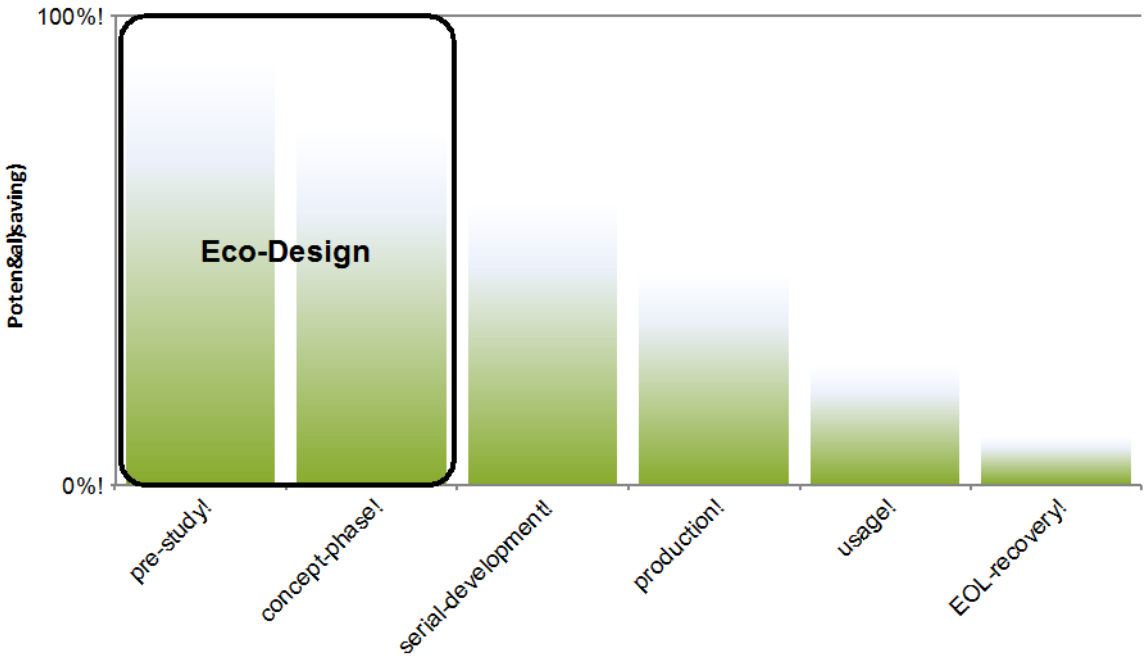


Figure 13: Environmental improvement potential throughout a vehicles life cycle (Own illustration based on: Hofer, D.,2011; Mascle, C. & Zhao, H.P., 2008. Integrating environmental consciousness in product/process development based on life-cycle thinking.)

Project team at ISIS:	Univ.-Prof. Dr. Rupert J. Baumgartner
	Dr. Peter Perstel
	Josef-Peter Schöggl, MSc.
Duration:	Nov. 2013 – Jul. 2014
Funding:	FFG

2.2.12 **Bioresources – the green heart of Styria**

Bioresources are a key resource of the 21st century. Especially Styria as a region with a strong tradition in high-quality food production as well as a having strong industry faces the challenge of ensuring an optimal use of bioresources. A paradox characteristic of bioresources is their limited infinity – they are available for an unlimited time as they are renewable, but limited by the finite surface on which they are grown. The project "Bioresources – the green heart of Styria" is coordinated by ESEIA (European Sustainable Energy Innovation Alliance), project partners are Joanneum Research, Energie Steiermark, Spar Austria, Styrian chamber of agriculture and ISIS.

The current transition of energy systems to renewable energy sources and the increasing demand for healthy and sufficient food on the one hand and the limited availability of land as production basis of bioresources on the other hand make an efficient and effective use of bioresources essential. Bioresources are the basis of many economic sectors like agriculture and forestry, food industry, pulp and paper industry, timber industry, but also the energy sector depends directly or indirectly on bioresources.

The goals of the project are to develop a scientific basis for the optimal use of bioresources in Styria, to induce a broad stakeholder dialogue about the use of bioresurces and to formulate policy recommendations. The basis is to collect and synthesize regional, national and international knowledge about conventional and unconventional bioresources and to combine methods to assess environmental, social and economic benefits and impacts of different scenarios regarding bioresource-use in Styria.

Figure 14: Project workshop in Brussels

Project team at ISIS: Univ.-Prof. Dr. Rupert J. Baumgartner
Duration: Jul. 2013 – Dec. 2014
Funding: Government of Styria – Zukunftsfonds

2.3 PhD - projects

2.3.1 Sustainable Strategic Management: An Analysis of the European Automotive Industry

Sustainable development in the context of corporations in the automotive industry is a frequently discussed issue. There is an on-going discussion relating to corporations and their commitment to sustainable development. In the centre of this discussion is the stakeholder debate, whether if the corporations are tracking the intention to be "good citizens" or simply follow the goal of improving their image and profitability. Furthermore the topics efficiency and innovation capacity play a prominent role in considering ecological and social aspects in the automotive industry. In the past, numerous journal articles are dealing with the question, "why are corporations choosing to commit or not commit to sustainability aspects and activities"? The connection between corporate sustainability and the corporation's performance is often discussed in the context of strategic management and the implementation process of sustainability in the corporation's strategy. Nowadays, a significant amount of corporations assume responsibility and implement the concept of corporate sustainability in their corporate strategy. In doing so, they focus on different models and tools. Corporations are responding to external pressure by creating tailor-made sustainability strategies which may not necessarily cater to the balance between the sustainability strategy, competitive strategy, and the normative justification of the corporation. In addition corporations discriminate social and environmental issues from traditional strategic issues and therefore they interrupt the positive contribution to economic performance.

The objective of the dissertation is to identify the most important influencing factors of implementing sustainability from a strategic management perspective. Due to the increasing discussions within the automotive industry relating to ecological aspects, environmental performance and legislative processes, the importance of research about corporate behaviour, action and communication is rising. This represents a relevant factor in fostering the sustainability management of the automotive industry. In doing so, it is important to identify the long-term objectives and strategies of the different corporations.

PhD student at ISIS: Mag. Sabrina Engert
Duration: 2012 - 2015

2.3.2 **Development of Sustainability Orientation in Austrian Start-up Businesses**

Mainstream discourse dealing with corporate sustainability is focusing on already existing companies and their benefits of including social and environmental aspects in business activities. Past findings drawn from established businesses show that sustainability helps to create business value, to open strategic resources and to minimize risks but at the same time it costs money and challenges management. The context in which start-ups include corporate sustainability remains almost unexplored since characteristics of newly created businesses differ crucially from established companies. Approaches to link findings of corporate sustainability research with start-up businesses are mainly missing until now. Although, the starting phase of a new business' life might be a critical starting point for its future sustainability orientation. Considering the high number of founded start-up businesses per year only a minimal higher degree of corporate sustainability implementation in start-up businesses could result in a broad effect and a movement towards more sustainable businesses in general.

The main research questions of the dissertation are: What are the implications of a Corporate Sustainability Strategy for start-up businesses? How should a strategic concept of implementing sustainability aspects in start-up businesses be defined?

The objective of the dissertation is to examine Austrian start-up businesses and their specific characteristics that require different approaches of corporate sustainability compared to the already existing approaches for established companies. Therefore, the research seeks to identify the different types of sustainability-oriented start-up businesses in Austria based on their actions and attitudes towards corporate sustainability. Furthermore, the research will try to increase the integration of sustainability aspects in start-up businesses by identifying and proposing supportive methods that possess the potential to facilitate the implementation process of corporate sustainability.

PhD student at ISIS: Mag. Martina Hölzl
Duration: 2013 - 2016

2.3.3 Assessment of social sustainability aspects to measure companies´ sustainable performance along the supply chain – A focus on the Electronics and Automotive industries

The topic of this thesis is based on a European project called "SustainHub". This project focuses on compliance and sustainability data exchange within the Supply Chain of the Electronics and Automotive industries for SMEs and large groups.
For more than twenty years now, abundant papers have been published in the field of sustainable development. The literature shows a diversity of references, especially on the environmental and economic aspects of sustainable development, but there is a lack of knowledge as regards social sustainability.
This is an issue of high significance particularly in the electronic and automotive industries which are built on complex and sometimes long supply chains: about ¾ of the supply chain is composed of partners that are not in direct contact. There are many levels of suppliers (tier-1, tier-2, tier -3…n) and a variety of stakeholders: Original Equipment Manufacturers (OEM), distributors, regulators, NGOs, Associations... But few guidelines exist to guide companies towards a transparent and comparable social sustainability data exchange. Aspects such as child labor, human rights, gender equity, employment conditions or special categories of workers are today really difficult to track along the supply chain.

The research question of the dissertation is:
How to identify social sustainability aspects and foster the exchange of social sustainability data along the supply chain of companies from the electronic sector?
The objectives of this project are:

1. Bring new knowledge to the social sustainability field of research with a focus on companies practices to complete the existing theoretical approaches
2. Present the status quo of social sustainability data exchange along the supply chain in Europe and in Latin America
3. Provide a comprehensive framework and checklist for social sustainability data exchange

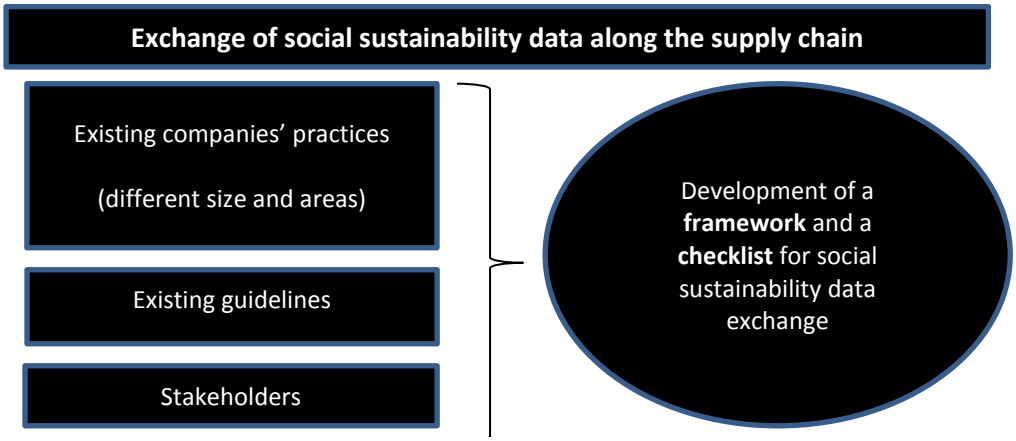


Figure 15: Exchange of social sustainability data along the supply chain

PhD student at ISIS: Morgane Fritz, MA
Duration: 2012 - 2015

2.3.4 The impacts of food choice on the environmental nitrogen pollution in Austria

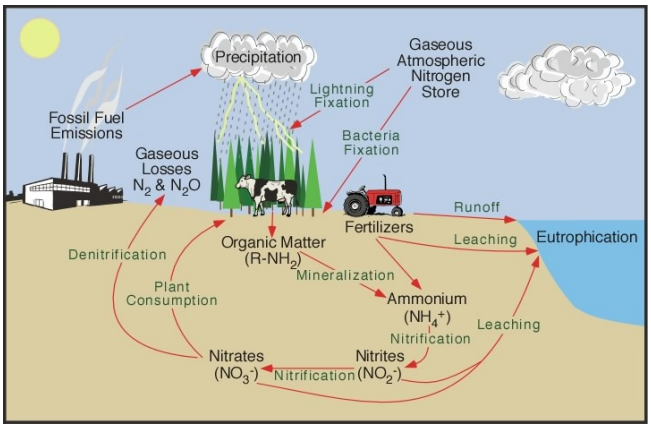


Figure 16: The Nitrogen cycle. (Source: http://www.physicalgeography.net)

Nitrogen is crucial for life on our planet, primarily as component of proteins and as an essential nutrient providing the basis for our food production. Whereas it constitutes the major part of the earth's atmosphere in its molecular form N_2, it is only reactive nitrogen (Nr – i.e. all biologically, chemically, and radiatively active nitrogen compounds, such as for example NH_3, NO_X, N_2O, NO_3) that can be used and is needed by most organisms.

As humans today artificially create amounts of reactive nitrogen (e.g. as fertilizer for food production) that far exceed natural terrestrial creation, the natural nitrogen cycle is altered. Excess nitrogen ultimately accumulates in the environment, causing significant effects on humans and ecosystems. These effects include eutrophication, soil acidification, nitrate pollution of groundwater, formation of particles hazardous to health, ozone formation and climate change. Thus, the use of nitrogen has both "good and bad" effects.

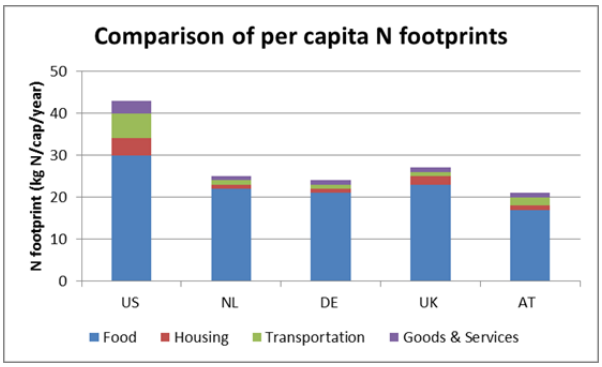


Figure 17: Comparison of per capita N footprints

As a starting point, the PhD project draws on the "N-Print project" (www.n-print.org), which is an integrated nitrogen footprint model focusing on food and energy consumption.

The objective of the dissertation is firstly to take stock of Austria's nitrogen footprint of food consumption by adapting and further developing one module of the N-Print, the N-Calculator. Secondly, possible points of intervention shall be identified and analyzed regarding their suitability and (cost-)effectiveness as potential policy measures. They shall serve an integrated policy approach that considers various interactions and interlinkages.

Thus, the dissertation is intended to raise awareness among the public and policymakers for the relationship between food consumption and nitrogen and its effects in Austria. In that sense, the dissertation might also contribute to an Austrian national nitrogen budget to be established in the future. Finally, the project shall yield recommendations regarding possible points for improvement and policy measures and their effectiveness. The PhD project under the supervision of Prof. Wilfried Winiwarter is funded by a doctorate scholarship from the URBi-Faculty.

PhD student at ISIS: Magdalena Pierer, MSc
Duration: 2012 - 2015

2.3.5 Dynamic Complexity, Efficiency, and Coordination Failures in Education Systems

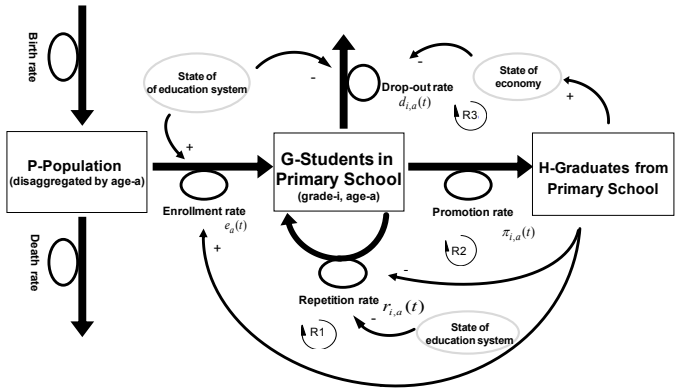


Figure 18: Overview of the Model

The present research is an attempt at improving our understanding of processes influencing achievement in primary education systems in developing countries covering the period 1990-2010. To attain this goal a dynamic simulation model will be constructed incorporating local idi-osyncratic complexities such as positive feedbacks and nonlinear joint interactions between key variables like aggregate human capital and their effects on the efficiency and vulnerability of primary education system. The core of the model will contain a continuous-time stock-flow structure resembling a cohort chain where a flow of students enter the education system and progress throughout a number of intermediate stages, and then finish either by graduating or dropping out of school (Figure 18). With this, it is expected to generate new insights of the determinants of primary education attainment with specific application to the case of Nicaragua and an explanation of its historical performance. For the present study I will surface the dynamics of the pattern shown by the system under study and explore the development process detailing the impact of exogenous shocks on its pattern evolution. System Dynamics methodology will be used as the main research method (Sterman, 2000). It is a planning tool that considers the interaction over time of key variables interacting within the system under analysis. The model to be developed seeks to capture main (nonlinear) decision rules used by different stakeholders that determine their behavior and the effect on the selected variables. The central idea is to examine the implications of various exogenous changes that impact the productivity of one or more parts of the education process through:

a) A systemic perspective for the analysis of human systems that explicitly includes the nonlinear and dynamic complexities of socio-economic and environmental factors influencing the development of education systems, in particularly those in developing countries. A fundamental aspect of our model definition and causal hypothesis will be the existence of positive feedbacks from endogenous aggregate characteristics in which the members of one generation, namely parents, induce decisions in the next generation.

b) An innovative tool to evaluate the performance of education systems over time. This is-sue is of particular relevance for some countries, such as those in Latin America and Africa, which despite significant improvements in their education institutions and macroe-conomic environments have failed to experience sustained improvements in their primary school outcomes.

c) The use of computer simulation of feasible policy actions (or exogenous shocks) that might be effective in changing the performance of an education system can provide very useful information to understand factors such as resilience, pattern formation, and sys-tem attractors.

PhD student at ISIS: Porfirio Guevara, MSc
Duration: 2010 - 2014

2.3.6 Restructuring the Austrian Energy System – Potential, Indicators, Dynamics

The shortage of non-renewable resources has been the main focus of concern within the last decades. Especially the "oil crisis" in the 1970's demonstrated the relevance of a sustainable usage of non-renewable energy sources such as oil, coal or gas. The current dependence of fossil fuels leads to economic and political uncertainties such as increasing energy prices and causes a steady and irreversible climate change due to permanently increasing CO_2-emissions. Despite these facts, global energy production is still highly depended on mainly fossil fuel based energy sources. Furthermore, the steady rise in population and the economic growth lead to an increasing consumption of energy and doesn't make it easier to initiate the turnaround.
Although Austria has a high potential of natural energy sources such as water or wood and Austrian government aims for the reinforced usage of these renewable energies, the dependency on fossil fuels and also the emissions of greenhouse gases are rising constantly. As many other European countries, Austria faces the challenge to find a pathway away from existing centralized and mainly fossil fuel based energy sources towards more decentralized energy production systems based on domestic renewable energy sources. In addition to the intensified exertion of renewable energy sources, decentralized production of it will play an important role to ensure a sustainable energy management for Austria in the future.
The main research aim of this project is to understand and describe the transition process of decentralized renewable energy production in Austria. Based on the multi-level perspective of socio-technical transition (Geels, 2002) the objectives are:

- to investigate which organizational settings can support the enhancement and development of on-site renewables.
- to understand and describe the transition process (key-agents and key-parameters).
- to define framework conditions to foster a rapid adoption.

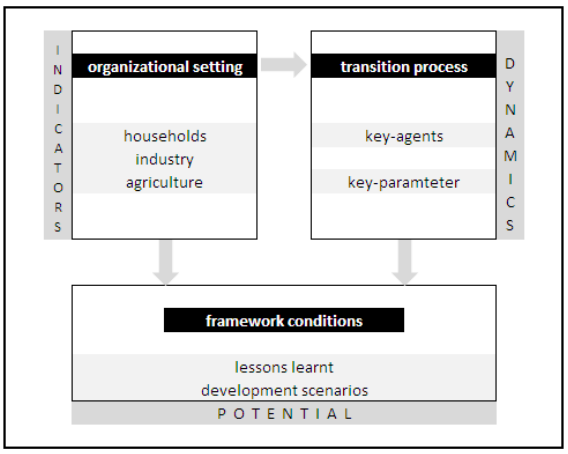


Figure 19: Thesis Framework

In order to define framework conditions in a highly effective and cost-efficient way, they need to be adjusted to the respective needs of (potential) participators at different levels. Here we distinguish between three major groups of adopters: households, industry and agriculture.

PhD student at ISIS: Mag. Kathrin Reinsberger
Duration: 2011 - 2014

2.3.7 Measuring and improving sustainability in global supply chains: an example from the electronics and automotive industries

Has sustainability already found consideration in many different areas of business operations, from product, design, to post-consumer product management, so is its consideration in supply chain management operations still lacking behind. The field of Sustainable Supply Chain Management (SSCM) intends to fill this gap. From a company's' profit-oriented point of view, SSCM makes sense, since it has the potential to decrease costs due to efficiency improvements. It also avoids non-compliance with increasingly stringent regulations and legislations, such as REACH, RoHS or the End of Life Vehicle Directive in the automotive industry. From an environmental and social perspective the life cycle phase, ranging from raw material extraction, through manufacturing processes to the final delivery to the customer, is of particular concern. The depletion and the pollution of the environment and massive violations with labor and human rights are just some challenges that have to be overcome. This particularly holds true for complex and resource extensive sectors such as the automotive and electronics industries. An efficient management of natural and human resources at all stages in this process, as well as the application of measures to collectively minimize the negative impacts on these two dimension of sustainability is a necessary and promising approach.

The objective of this project is:
This dissertation addresses unsolved problems in SSCM with the intention to rectify them. Firstly a new set of comprehensive and aggregable indicators for sustainability assessment in automotive and electronics supply chains will be developed. Secondly, the question “Can a sustainable supply chain be profitable?" is to be answered in detail. This will be done by investigating the benefits, challenges and success factors of sustainable supply chain management and by analyzing the interdependencies between sustainability and financial indicators.

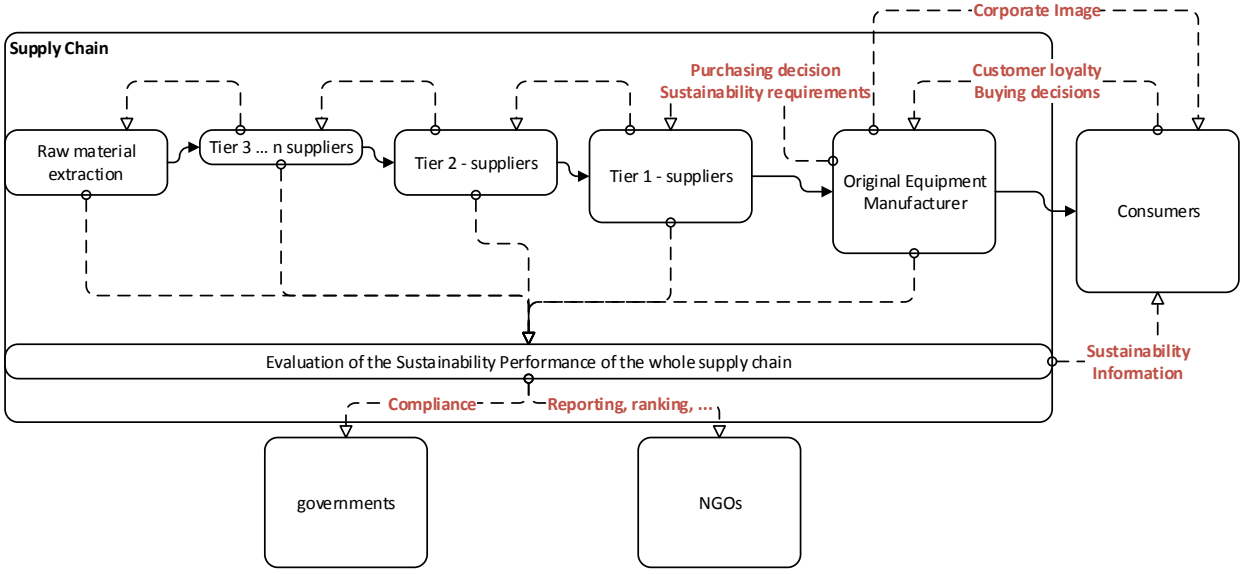


Figure 20: Sustainability related interdependencies in a supply chain

PhD student at ISIS: Josef-Peter Schöggl, MSc
Duration: 2012 - 2015

2.3.8 A Nitrogen budget for Austria´s agricultural sector

Bio-available nitrogen is an important nutrient in the agriculture. It stimulates plant growth and therefore it is added to fields as fertilizer. Further distribution of nitrogen to the environment is uncontrolled and almost impossible to avoid. Due to excess nitrogen, unintended biogenic processes are promoted and environmentally adverse substances (ammonia, nitrogen oxide or nitrous oxide) are released to the atmosphere, or (nitrate) to the ground water. Furthermore, nitrogen release may trigger eutrophication or reduce biodiversity in the ecosystems.

The objective of this dissertation is to optimize application efficiency of bioavailable nitrogen in agriculture and to minimize losses and impacts on the environment. Concrete investigative questions are:

- What are the intervention points in the Austrian agricultural nitrogen cycle?
- Which measures for optimizing the nitrogen cycle are possible?
- How can future scenarios for the application of nitrogen in the agriculture be developed, concerning the intervention points as mentioned above?

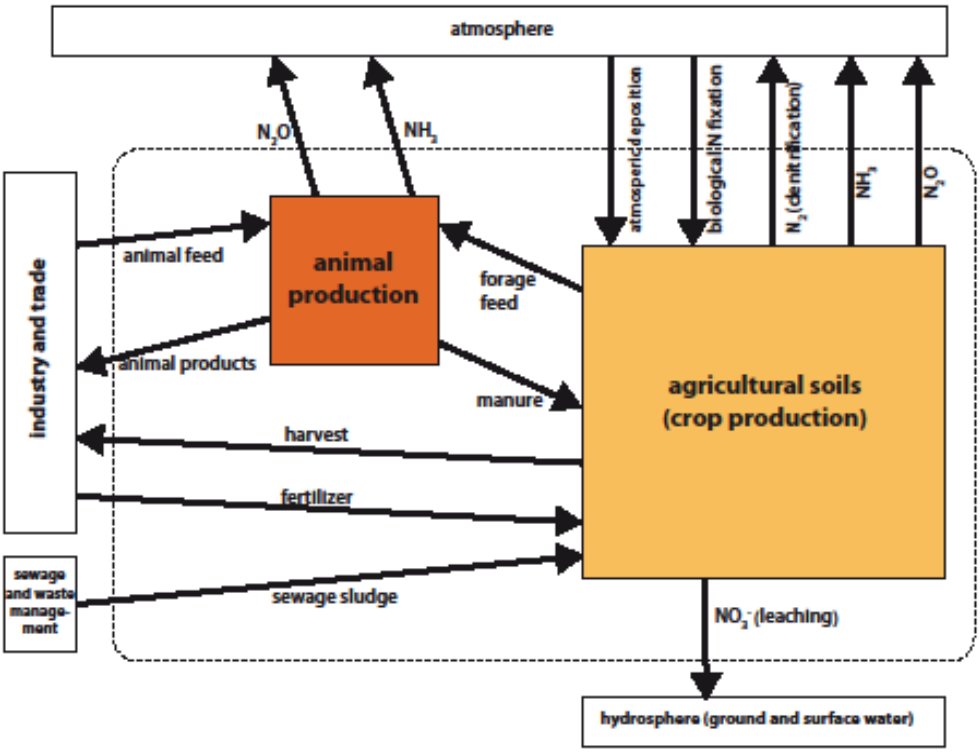


Figure 21: Nitrogen in- and output flows in the agricultural sector

Contributing to the national project “Farming for a better climate by improving nitrogen use efficiency and reduce greenhouse gas emission” (Farm-Clim), specified tasks within the PhD thesis will be developed together with the project partners.

PhD student at ISIS: Dipl. Ing. Andrea Schröck
Duration: 2013 - 2015

2.3.9 Scenarios for future greenhouse gas emissions in Austria

Future emissions and concentrations in Austria will be assessed with the help of the RCPs (Representative Concentration Pathways) and the SSPs (Shared Socioeconomic Pathways) of the future 5th Assessment Report of the IPCC. One of the main drivers at the beginning of the research project is the search for crossovers between the international scenarios and the national policies. This has to be seen as the main knowledge gap in this area as the Austrian's emission scenarios of the Austrian Environmental Agency are based on different methods and calculations than the RCPs.
The main objective of the dissertation is the analysis of future GHG in Austria in order to answer the main research question "What are the main influences on future emissions in Austria till the end of the century?". The background for this analysis are the RCP and SSP scenarios, and the main drivers for climate change and a raise in radiative forcing in Austria should be identified and qualified. The connection and similarities between the RCPs and Austria's climate policy shall be identified and, if possible, combined with adapted storylines specifically for Austria. Furthermore, it should be possible to use this method to create a framework which can be used by different single nations to assess their emissions and concentrations.
The preliminary conceptual framework of the dissertation project derives from the before mentioned representative concentration pathways scenarios by the IPCC. These scenarios will be adapted for a national purpose in Austria. Figure 22 gives an overview of the preliminary research framework:

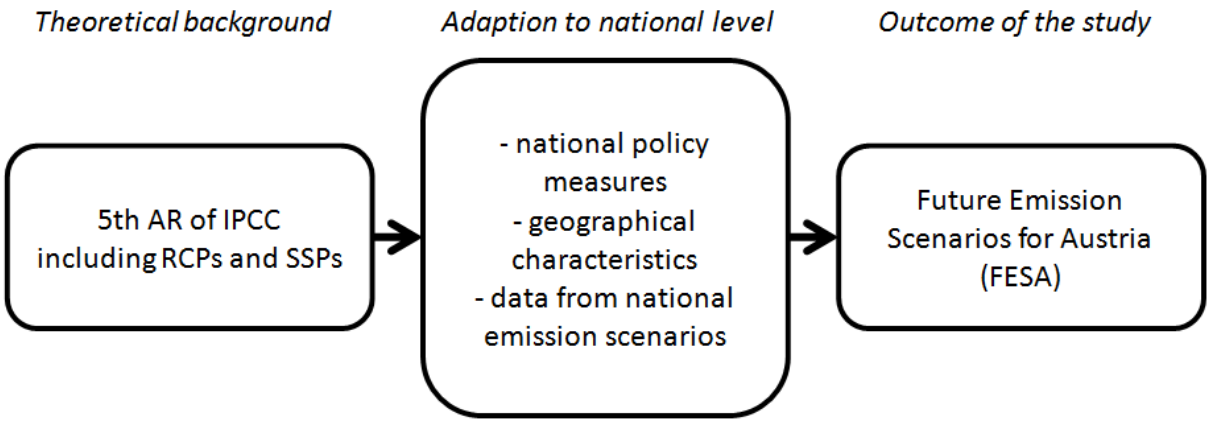


Figure 22: Preliminary conceptual framework for the disseration project

PhD student at ISIS: Mag. Thomas Winkler, MSc
Duration: 2013 - 2016

2.3.10 **Renewable Energy Diffusion in Austria**

Due to its high technological potential and the rapidly decreasing costs, photovoltaics is a worldwide increasingly promising cornerstone of renewable energy production. In several European countries, e.g. in Germany, the PV penetration is far higher than in Austria. In Germany, recently citizen solar power plants have gained strong attraction. Within citizen solar power plants ("Bürgerkraftwerke") residents jointly invest in a local PV plant and may use the electricity locally or feed it into the grid. In Austria, applications for PV investment subsidies at the household level exceeded the limited budgets for PV within minutes after opening the calls in recent years. Similar experiences were made with the subsidised feed-in tariffs for PV plants, where a long waiting list has emerged. Obviously, this is evidence that the current subsidy regime is successful in stimulating the market uptake of PV in Austria and that there is still huge potential. However, it can be assumed that the current subsidy regime only reaches the tip of the iceberg: Individuals with strong pro-environmental values, highly interested in and fascinated by innovative energy technologies, and with good access to trustworthy information sources in their social and professional network. Thus, an unchanged continuation of the current subsidy regime might reach its limit as soon as demand within this small group of early adopters is saturated.

The main objective of this dissertation is to construct a dynamical system model to predict renewable energy adoption and market diffusion in Austria, aiming at an improved understanding of the decision making process for investments within and between the following three levels. The dissertation focuses mainly on photovoltaics and compares the process of innovation diffusion to other renewable energy sources, including wind, water, biomass and geothermal energy:

4. Households: How to push forward a highly decentralized energy generation e.g., with PV plants (up to 5 kWp) on the roofs of residential homes?
5. Industry: What further side conditions (peculiarities in decision making, limitations for action, etc.) need to be considered for fostering renewable energies in the business sector (manufacturing industry)?
6. Other kinds of organizations: What kind of support is needed to establish e.g., citizen solar power plants or similar concepts in a high number in Austria?

Starting from innovation theory - especially market diffusion and adoption theories - the dissertation will lead to a comprehensive understanding of the factors (including psychological, social and cultural factors) that are decisive whether an individual or an organization becomes a potential adopter at all and under which conditions. The expected outcome will include policy recommendations, such as a policy mix of economic incentives, regulations and other policy interventions and business models that foster a rapid adoption of renewable energy technologies in the Austrian energy sector.

PhD student at ISIS: Mag. Martin Kislinger
Duration: 2012 - 2015

2.3.11 I shine, not burn. An empirical study on actor's decisions in the field of photovoltaic in Austria.

Since the 1970s, the subfield of environmental sociology emerged and started to receive a large amount of attention (Groß, 2010, pp. 645–646; Huber, 2011, pp. 79f.). Environmental sociology is concerned with societal causes of and reactions to ecological problems (Diekmann and Preisendörfer, 2001).
One of the most prominent problems is the need to reduce CO2-emissions. This is especially important in light of the increase in global energy consumption today. One major contributor to global CO2-emissions are private households: A total of 23% of the energy consumption in OECD-countries can be attributed to private households. Studies indicate that there is a large potential for reducing energy consumption in this area. If private households would adapt their behavior in different areas, a 20%reduction of CO2-emissions could be possible (Dietz et al, 2009). These examples depict the importance of understanding the factors influencing individuals' actions.
A fitting theoretical framework often applied in environmental sociology and other disciplines – rational choice theory (RCT) – perceives ecological problems as being a (sometimes unintended) macro consequence of individuals' actions (Huber, 2011, pp. 183ff.; Liebe and Preisendörfer, 2001, p. 221).

The work at hand aims at contributing to this field of research by analysing factors influencing individuals' actions in the field of photovoltaic (PV) in Austria using the example of Bottom-up initiatives (BUIs). Empirical results on motives of relevant actors – individuals who are involved in the founding-process or individuals who participate in already established BUIs – will be delivered by addressing the following research questions.

Research questions and studies:

1) **Study 1**, based on qualitative interviews: Which motives drive actors to initiate and/or implement a Bottom-up initiative in the field of PV in Austria? Which motives can be identified to be most important?
2) **Study 2**, based on a large-scale survey: Which motives drive actors when they decide to (not) be part in an initiative? Which motives can be identified to be most important?
3) **Study 3**, based on a laboratory experiment: How do people make trade-offs between themselves and benefits to the environment? How are these payoffs related to different survey measures on self-reported environmental behaviours and attitudes?

According to the research questions the goals are (study 1) to construct a typology of actors based on the analysis of individual's motives to initiate a BUI, (study 2) to explain individuals' motives to (not) participate in a BUI according to the SEU-theory, and (study 3) to further investigate rational decision making by analyzing what role other-regarding preferences play in the decision making process.

The PHD-project is embedded in the project RESHAPE.

PhD student at ISIS: Eva Fleiß, MA
Duration: 2013 - 2015

Research cooperations and networks

2.3.12 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, hydro-geology, environmental biology, environmental economics, sociology, geography and regional sciences, systems sciences and sustainability research and management, environmental ethics and law collaborate interdisciplinary cooperate in this research core area.

There are five main research areas:

- GlobEOS (Global Earth Observation and Stewardship)
- RegIMOS (Regional and Local Integrated Modelling System and Studies)
- EnviSYS (Changing Ecosystems and Earth-external Environmental Systems)
- GreenPROTEC (Green Processes and Technologies)
- RegiKNOWS (Regional Changes and Knowledge Transfer for Sustainability)

Figure 23: EGC Logo

2.3.13 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. Alfred Posch and Prof. Gerald Steiner are board members of the ITdNet.

2.3.14 AIT Knowledge & Talent Development Programme: Innovation & Sustainability

The Foresight & Policy Development Department of the Austrian Institute of Technology (AIT) established the Knowledge & Talent Development Programme "Innovation & Sustainability" in order to meet the „grand societal challenges", which are characterized by increasing dynamics and complexity of the involved and interacting systems. In the field of "Sustainable innovation oriented Infrastructure Policy" (SIIP) the Foresight & Policy Development Department cooperates with the Institute of Systems Science, Innovation & Sustainability Research, University of Graz and the Institute of Transportation, Vienna University of Technology.

Figure 24: Structure of Knowledge & Talent Development Programme

This programme provides selected master and PhD students with an excellent scientific environment that allows the flexibility to pursue in-depth research in a broad variety of critical areas related to sustainable innovation oriented infrastructure policy. PhD and master student are not only scientifically mentored by AIT- and ISIS-scholars; they are also financially supported with scholarships.

ISIS succeeded to finish two master projects (Claudia Enzi and Thomas Wagner) and is working on two PhD Projects (Vivianne Aggestam and Roman Seidl).

2.3.15 ISDRS – International Sustainable Development Research Society

The International Sustainable Development Research Society (www.isdrs.org) was formally founded in 2006 and builds upon a 17 year history of the International Sustainable Development Research Conferences. 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 was held in New York (USA), and in 2012 the 18th annual conference was held in Hull (UK). The 19th annual conference took place in Stellenbosch (South Africa). Univ.-Prof. Dr. Rupert J. Baumgartner is board member and executive secretary of the ISDR-Society.

2.3.16 ISIE – International Society for Industrial Ecology

ISIE (www.is4ie.org/) 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.

2.3.17 Institute of Social Ecology, Vienna

A teaching cooperation was set up between ISIS and the Institute of Social Ecology (SEC), Vienna campus of the University of Klagenfurt. This cooperation takes advantage of the flexibility of the respective curricula, allowing students to choose blocks of courses from the respective other institution as part of their own training. The arrangement allows ISIS students to spend a semester in Vienna, or SEC students to come to Graz. Also the joint supervision of master's theses is welcomed explicitly. Contact persons are Prof. Fridolin Krausmann and Mirjam Weber for SEC, and Prof. Wilfried Winiwarter for ISIS.

2.3.18 Weatherhead Center for International Affairs (WCFIA) at Harvard University

The Center for International Affairs was founded in 1958 and was renamed the Weatherhead Center for International Affairs in 1998 in gratitude for the magnificent endowment established by Albert and Celia Weatherhead and the Weatherhead Foundation. The Center was created as a means of confronting the world's condition, a condition diagnosed by Robert Bowie and Henry Kissinger in their gripping '*The Program of the Center for International Affairs*' (1958):

> *"Foreign affairs in our era pose unprecedented tasks.…Today no region is isolated; none can be ignored; actions and events even in remote places may have immediate worldwide impact…vast forces are reshaping the world with headlong speed. Under the impact of wars, nationalism, technology, and communism, the old order has been*

shattered. Empires have crumbled; nations once dominant are forced to adapt to shrunken influence. New nations have emerged and are struggling to survive.…Nowhere do traditional attitudes fit the new realities.…Thus notions of sovereignty and independence need revision to apply to a world where a nation's level of life or survival may depend as much on the actions of other countries as on its own…"

That diagnosis, and the challenges that shaped the Center's vision and mission then, remain pertinent and continue to inform the WCFIA's work today. As this philosophy is much based on a system thinking perspective, it also provides a common perspective which is shared by the WCFIA and the ISIS as well. The Weatherhead Center is the largest international research center within Harvard University's Faculty of Arts and Sciences. The Center is structured to encourage the highest practical level of personal and intellectual interaction among a diverse community of scholars and practitioners. It is distinctive in its recognition that knowledge is a product not only of individual academic research, but also of vigorous, sustained intellectual dialogue among scholars and nonacademic experts. To stimulate this dialogue, the Center sponsors a wide array of seminars, research programs, workshops, and conferences.

The cooperation between the WCFIA and the ISIS started in 2011, when Gerald Steiner, a current visiting scholar at the WCFIA and Associate Professor of Systemic and Sustainability Management at the ISIS, was awarded J.A. Schumpeter Professor 2011-2012 at Harvard University. As a major benefit of this cooperation, ISIS's research focus has been further extended by policy related dimensions of sustainable development, global food security, and innovation studies.

2.4 Seminars hosted by ISIS – "ISIS Science Talk"

For its "ISIS Science Talk", the institute is inviting external experts to give a presentation on core research topics of ISIS (i.e., systems sciences, innovation and sustainability research). These presentations are followed by a discussion and a small buffet. This event is held in English and open for the entire URBI Faculty, other interested colleagues and students and any friends of the institute.

The following talks were held in 2013:

- Dr. Wolfram Tertschnig (Federal Ministry of Agriculture, Forestry, Environment and Water Management): *A 'Road show' of Austrian Sustainability Policy* (23 January 2013)
- Dr. Mikko Jalas (Aalto University, School of Business, Department of Management and International Business): *Accounting for everyday life as if time mattered; an empirical examination of the activity patters and energy use of Finns 1979-2009* (8 May 2013)
- Dr. Karolina Safarzynska (University of Vienna): *The coevolution of culture and environment* (15 May 2013)
- Prof. Dr. Heinz K. Stahl (University of Economics and Business Vienna): *The Philosophy of Constructivism and its Consequences for the Management of Organizations* (12 June 2013)
- Dr. Lena Höglund-Isaksson (International Institute for Applied Systems Analysis): *Lessons learnt from the Swedish NOx charge on stationary sources* (30 October 2013)

Up-to date information and the whole list of speakers can be found at: http://isis.uni-graz.at/en/forschen/science-talk.

2.5 Corporate Responsibility Research Conference 2013

Figure 25: CRRC 2013 "Making the number of options grow"

The Corporate Responsibility Research Conference is an international conference on Corporate Social Responsibility (CSR) held at different European universities every year. In 2013 ISIS organized the conference to be held from September 11th to 13th at the University of Graz.

As this year's motto the organizers chose "Making the number of options grow". It appealed to scientific experts in the field as well as to practitioners. The main topics of the conference ranged from sustainability oriented management to stakeholder management, sustainability oriented business models, measuring of sustainability and sustainability reporting. Conference topics also included energy and resources, sustainable consumption, critical approaches to sustainability and CSR and the rather buzz-word topic of resilience. Accordingly the conference was highly interdisciplinary and addressed many aspects directly or indirectly related to enterprises' contribution to social responsibility.

During the two main conference days some one hundred participants gave their presentations and added to disseminating and enhancing knowledge in the field through their constructive criticism and friendly contribution. Promoting young researchers was also an important goal of the conference. Accordingly the afternoon before the start of the actual conference was dedicated to a so-called PhD workshop. During this workshop attendants discussed problems, traps and challenges during the initial and advanced phases of early academic career and tried to find solutions. The scientific contribution of the young academics was presented during the main conference, which gave the opportunity to gain feedback from senior and other young colleagues.

Except from the conference dinner in the "Kunsthaus Graz" the committed supporting program included a professional excursion to the Zotter chocolate manufacture, which is internationally well-known for its excellent corporate responsibility performance, and a workshop with sustainability expert professional Josef Zotter. Accordingly the conference provided room for networking and in-depth discussion and will lead to further co-operation.

All in all, participants of the conference experienced fruitful days in Graz and complimented on the well-organized event, the high quality of contributions, the fine social program, and especially the relaxed, friendly, and co-operative atmosphere.

(bitte ULLI wegen Foto zur CRR fragen)

3 PUBLICATIONS AND OTHER RESEARCH OUTPUT

ISIS in total	2010	2011	2012	2013
3.1 Publications				
Publications in scientific journals	14	7	10	18
Scientific monographs	3	1	0	1
Editorships of scientific monographs	1	2	1	2
Book Chapters	8	5	12	13
Contributions to conference proceedings	22	14	9	16
Posters presented at scientific conferences	3	3	4	5
Other scientific publications	1	5	4	3
3.2 Projects				
Third-party funded projects	19	20	11	12
3.3 Functions				
External scientific functions and functions in external scientific committees	3	5	6	17
Functions in international journals (in 2012 and 2013 individual reviews are not counted separately)	27	29	10	9
3.4 Networking				
Presentations at scientific conferences	22	10	30	42
Awards	2	0	2	5
Organization of scientific conferences	7	5	10	18
Visiting scientists (Incoming Mobility)	6	2	1	3
Travel activities (Outgoing Mobility)	16	7	7	4
3.5 Transfer – Science to professionals				
Publications – science to professionals	0	2	1	0
Publications in journals – science to professionals	0	1	0	0
Presentations – science to professionals	3	6	4	3
3.6 Transfer – Science to public				
Press releases	0	1	7	9
Publications for non-scientific audience	2	0	1	2
Presentations for non-scientific audience	5	6	16	5

3.1 Publications

3.1.1 Publications in scientific journals

Baumgartner, Rupert J.: *Managing Corporate Sustainability and CSR: A Conceptual Framework Combining Values, Strategies and Instruments Contributing to Sustainable Development*, in: Corporate Social Responsibility and Environmental Management (2013).

Baumgartner, Rupert J.: *Nachhaltigkeitsmanagement - Forschung zum Thema ökologisch verträgliche, sozial verantwortliche und wirtschaftlich erfolgreiche Unternehmensführung*, in: B H M: Zeitschrift für Rohstoffe, Geotechnik, Metallurgie, Werkstoffe, Maschinen- und Anlagentechnik 158, 7 (2013), 301 - 305.

Baumgartner, Rupert J.: *Substitution und Dematerialisierung: Eine elektronische Plattform soll Unternehmen auf der Basis von Daten und Kennzahlen strategische Perspektiven für eine nachhaltige Entwicklung eröffnen*, in: ReSource – Fachzeitschrift für nachhaltiges Wirtschaften, 4/2013, (2013), 35 - 38.

Baumgartner, Rupert J.; Winter, Thomas: *The sustainability manager: a tool for education and training on sustainability management*, in: Corporate Social Responsibility and Environmental Management (2013).

Braschel, Nina; Posch, Alfred: *A review of system boundaries of GHG emission inventories in waste management*, in: Journal of Cleaner Production 44 (2013), 30 - 38.

Braschel, Nina; Posch, Alfred; Pusterhofer, Vera: *Allocation of emission allowances within the European Union Emissions Trading Scheme to the waste sector*, in: Low Carbon Economy 4, 4 (2013), 24 - 34.

Brudermann, Thomas; Rauter, Romana; Yamagata, Yoshiki: *Behavioral aspects of urban resilience*, in: Innovation and Supply Chain Management 7, 3 (2013), 83 - 91.

Brudermann, Thomas; Reinsberger, Kathrin; Orthofer, Anita; Kislinger, Martin; Posch, Alfred: *Photovoltaics in Agriculture: A Case Study on Decision Making of Farmers*, in: Energy Policy 61 (2013), 96 - 103.

Celec, Robert; Globocnik, Dietfried; Kruse, Phillipp: *Resources, Capabilities, Export Performance and the Moderating Role of Entrepreneurial Orientation in the context of SMEs*, in: European Journal of International Management (2013).

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Mrotzek, Maximilian; Domínguez Rué, Emma: *A response to comments on 'Shakespearean tragedies dynamics' by Bani Dayal Dhir*, in: International Journal of General Systems Volume 42, 3 (2013), 297 - 300.

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Steiner, Gerald*: Competences for Complex Real-World Problems: Toward an Integrative Framework,* Working Paper 2013-0002, in: Weatherhead Center for International Affairs, Harvard University, (2013).

Steiner, Gerald: *Higher Education for Complex Real-World Problems and Innovation: A Tribute to Heufler's Industrial Design Approach*, in: Creative Education 4 (2013), 130 - 136.

Winiwarter, Wilfried; Erisman, Jan Willem; Galloway, James N.; Klimont, Zbigniew; Sutton, Mark A.: *Estimating environmentally relevant fixed nitrogen demand in the 21st century*, in: Climatic Change 120 (2013), 889 – 901.

3.1.2 Scientific monographs

Rauter, Romana: *Interorganisationaler Wissenstransfer. Zusammenarbeit zwischen Forschungseinrichtungen und KMU*. Springer Gabler 2013, 364 p.

3.1.3 Editorships of scientific monographs

Füllsack, Manfred (Hrsg.): *Systems sciences at ISIS* (interactive textbook). Self-publisher 2013.

Füllsack, Manfred (Hrsg.): *Networking Networks. Origins, Applications, Experiments*. Vienna: Turia + Kant 2013, 107 p.

3.1.4 Book chapters

Aschemann, Ralf: *MIND as an example of developing Joint Study Programmes with Asia*, in: ASEMUNDUS (Eds.): Erasmus Mundus - Succeeding in European-Asian Higher Education Cooperation - ASEMUNDUS, Good Practice Report. Self-publisher 2013, 14 - 17.

Baumgartner, Rupert J.: *Strategische Perspektiven Nachhaltiger Entwicklung im industriellen Kontext*, in: Thomé-Kozmiensky; K. J.; Pomberger, R. (Eds.): O. Universitätsprofessor Dr. Karl E. Lorber: Festschrift zur Emeritierung. Neuruppin: TK Verlag 2013, 37 - 44.

Baumgartner, Rupert J.; Fink, Julian; Sumann, Tina; Sebanz, Simon: *Energy and Material Flow Analysis in Complex Production Structures: A Case Study at AT&S AG*, in: Biedermann, H.; Vorbach, S.; Posch, W. (Eds.): Ressourceneffizienz: Konzepte, Anwendungen und Best-Practice-Beispiele. München-Mering: Rainer Hamp Verlag 2013 (Sustainability Management For Industries 5), 68 - 83.

Finco, Angelo; Oliveri, Stefano; Gerosa, Giacomo; Winiwarter, Wilfried; Züger, Johann; Gebetsroither, Ernst: *Assessing Present and Future Ozone Hazards to Natural Forests in the Alpine Area — Comparison of a Wide Scale Mapping Technique with Local Passive Sampler Measurements*, in: Cerbu, G. A.; Hanewinkel, M.; Gerosa, G.; Jandl, R. (Eds.): Management Strategies to Adapt Alpine Space Forests to Climate Change Risks. New York: InTech 2013, 125 - 145.

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Guevara Chaves, Porfirio: *Nonlinear Dynamics of Ghost Busters: Detecting Fraud with System Dynamics*, in: Eberlein, R.; Martinez-Moyano, I. J. (Eds.): Proceedings of the 31st International Conference of the System Dynamics Society, Cambridge, USA. 2013.

Kislinger, Martin; Füllsack, Manfred; Posch, Alfred: *Assessing network topologies in respect of the role of bottom-up initiatives in the transition towards renewable energy*, in: University of Munich, Department of Geography, Human-Environment Relations (Ed.): Geography and Sustainabilty, Conference on Transdisciplinary Research and Modeling - Potential of transdisciplinary approaches and modeling for supporting transitions towards sustainability, Munich, Germany. 2013.

Moser, T.; Kantelhardt, Jochen; Schaller, L.; Amon, Barbara; Zechmeister-Boltenstern, Sophie; Kaspar, M.; Hasenauer, H.; Pötzelsberger, E.; Kitzler, B.; Winiwarter, Wilfried; Schröck, Andrea Maria; Zethner, G.; Anderl, M.; Baumgarten, A.; Dersch, G.; Prosenbauer, M.: *Economic Assessment in the ACRP-Project FarmCLIM*, in: ÖGA (Ed.): Proceedings of the ÖGA 2013 (23. ÖGA-Jahrestagung), Zurich, Switzerland. 2013.

Rauter, Romana; Gsodam, Petra; Nguyen, Duong T.; Stabauer, Petra; Baumgartner, Rupert J.: *Creating value with sustainability: New business models in Austria*, in: The Centre for Sustainable Design (Ed.): Proceedings of the 18th International Conference on Sustainable Innovation, Epsom, United Kingdom. Self-publisher 2013.

Reinsberger, Kathrin; Posch, Alfred: *Bottom-up initiatives as a catalyst for energy transition - A behavioural perspective on community-based photovoltaic projects*, in: SDEWES Society (Ed.): Proceedings of the 8th SDEWES Conference, Dubrovnik, Croatia. 2013.

Schröck, Andrea Maria; Winiwarter, Wilfried; Gaube, Veronika: *Modelling the management of nitrogen flows under conditions of land use change – a case study of the Enns valley in Upper Austria.* , in: 24th International scientific-expert conference on agriculture and food industry. (Ed.): Proceedings of the 24th International scientific-expert conference on agriculture and food industry, Sarajevo, Bosnia and Herzegovina. 2013.

Seebacher, Ulrike: *Personal Changes Towards a Socially Responsible and Sustainable Living – Educational Concepts and Experiences*, in: Institute for the Development of Social Responsibility (IRDO) (Ed.): Proceedings of 8th IRDO international conference on Social responsibility and current challenges 2013: Education and communication for more social responsibility, Maribor, Slovenia. 2013.

3.1.6 Posters presented at scientific conferences

Baumgartner, Rupert J.; Fritz, Morgane; Schöggl, Josef-Peter: *Measuring sustainability in global supply chains - an example from the automotive and electronics industries*, for: Logistikwerkstatt 2013, Technical University Graz, 2013.

Reinsberger, Kathrin; Posch, Alfred: *Bottom-up initiatives as a catalyst for energy transition - A behavioural perspective on community-based photovoltaic projects*, for: Solar World Congress 2013, Cancun, Mexico, 2013.

Seebacher, Ulrike: *Nachhaltig Handeln: Trainingskonzepte und Erfahrungen*, for: Grazer Abfallwirtschaftstagung 2013 – Nachhaltigkeits-Landkarte Steiermark, 2013.

Winiwarter, Wilfried; de Vries, W.; Grizzetti, B.; Hicks, K.; van Grinsven, H.; Voss, M.: *The European Center of the International Nitrogen Initiative: Concepts and Vision*, for: N2013, 6th international N conference, Kampala, Uganda, 2013.

Winiwarter, Wilfried; Schröck, Andrea Maria; Amon, Barbara: *Nitrogen budgets to identify intervention points in agriculture: the case study of Austria*, for: N2013, 6th international N conference, Kampala, Uganda, 2013.

3.1.7 Other scientific publications

Mrotzek, Maximilian; Kreuzeder, Andreas; Gössler, Walter (Hrsg.): *Phosphorus: Papers of an Interdisciplinary Practical Training at the University of Graz*. ISIS Report, 2013.

Rauter, Romana; Gsodam, Petra; Nguyen, Duong T.; Stabauer, Petra; Baumgartner, Rupert J.: *New Business Models in Austria - Forerunners in Sustainable Economics*. ISIS-Report, 2013.

Seebacher, Ulrike: *Microtraining Sustainable Lifestyle*. SUSTAINICUM COLLECTION. Educational Material for Sustainabilty, 2013.

3.2 Projects

During the year 2013 12 third-party funded research projects have been carried out at our institute. For the detailed description of each project please see chapter 1.5.

3.3 Functions

3.3.1 External scientific functions and functions in external scientific committees

Baumgartner, Rupert J.: *International Sustainable Development Research Society* (United Kingdom), executive board, since 01.07.2006.

Baumgartner, Rupert J.: *Opponent for licentiate exams*; Blekinge Institute of Technology (Sweden), 25.04.2013.

Baumgartner, Rupert J.: *Reviewer Swiss National Fund* (SNF) (Switzerland), 16.12.2013.

Baumgartner, Rupert J.: *Reviewer Doctoral Programmes*, FCT (Portugal), 03.2013.

Baumgartner, Rupert J.: *Reviewer EPSRC* (United Kingdom), 13.02.2013.

Perstel, Peter: *International Council of Graphic Design Associations* (Canada), executive board, 01.10.2012 - 01.10.2014.

Posch, Alfred: *Examining Board for the Award of the Doctorate in Science and Management of Climate Change* (Italy), membership, 07.03.2013.

Posch, Alfred: *Akademien der Wissenschaften Schweiz* (Switzerland), advisory board, 2013.

Posch, Alfred: *APCC* (Austria), advisory board, since 2013.

Posch, Alfred: *ITdNet* – International Transdisciplinary Net (European Union), membership, since 2002.

Posch, Alfred: Corporate Sustainability Implementation Mapping of sustainability approaches and implementation-strategy evaluation of selected front-running companies; *Master thesis by Thomas Jankov*; Utrecht University (The Netherlands), 07.2013.

Posch, Alfred: The Photovoltaic Support Scheme in Germany - An environmental criteria assessment of the EEG feed-in tariffs, Master thesis by Christoph Töpfer; Leipzig University, *Leipzig University (Germany),* 05.2013.

Posch, Alfred: Economic Modeling of Water Resources in Agriculture. Top down and Bottom up approaches, PhD-thesis by Roberto Daniel Ponce Oliva, *Cá Foscari Universitá di Venezia (Italy)*, 03.2013.

Posch, Alfred: The role of public private partnerships (PPPs) in scaling up financial flows in the post Kyoto regime, PhD-thesis by Giulia Galluccio, *Cá Foscari Universitá di Venezia (Italy)*, 03.2013.

Posch, Alfred: Climate change impact and vulnerabilityassessment of water resources systems: the case of Lower Brahmaputra River Basin, PhD-thesis by Animesh Kumar Gain, *Cá Foscari Universitá di Venezia (Italy)*, 03.2013.

Winiwarter, Wilfried: *Commission on Climate and Air Quality of the Austrian Academy of Sciences* (Austria), chair, since 01.04.2013.

Winiwarter, Wilfried: *European Center of the International Nitrogen Initiative* (Austria), chair, since 01.01.2013.Winiwarter, Wilfried: *FP7 Projekt InGOS* (Belgium), advisory board, since 02.12.2013.

3.3.2 Functions in international journals

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 J.: *Journal of Cleaner Production*, editor, since 01.11.2008.

Baumgartner, Rupert J.: *Sustainable Development*, member editorial board, since 01.10.2008.

Füllsack, Manfred: *Systems*, Editor, 01.01.2013 - 31.12.2013.

Mrotzek, Maximilian: S*ystems. Connecting matter, life, culture and technology*, member editorial board, 2013.

Winiwarter, Wilfried: *Aerosol and Air Quality Research*, member editorial board, since 01.09.2012.

Winiwarter, Wilfried: *Greenhouse Gas Measurement & Management*, member editorial board, since 01.01.2011.

Winiwarter, Wilfried: *Systems. Connecting matter, life, culture and technology*, member editorial board, since 01.10.2012.

Reviews were undertaken for following journals:

- Aerosol and Air Quality Research
- Atmospheric Environment
- Constructivist Foundations
- Ecological Indicators
- European Journal of Future Research
- Global Environmental Change
- Greenhouse Gas Measurement & Management
- International Journal of General Systems
- International Journal of Sustainable Development and World Ecology
- Journal of Cleaner Production
- Journal of Environmental Assessment Policy and Management
- Journal of Environmental Research
- Journal of Industrial Ecology
- Nature Communications
- Regional Environmental Change
- Sustainable Energy Technologies and Assessments
- Sustainability
- Systems

3.4 Networking

3.4.1 Presentations at scientific conferences

Aschemann, Ralf: *A Comparison of the EU and California EIA/SEA Processes*, presenter, for: IAIA Annual Conference 2013 Calgary, Canada, Calgary, 15.05.2013.Baumgartner,

Rupert J.: *Nachhaltige Innovation als Werttreiber*, keynote, for: Verleihung des Johann Puch Innovation Award 2012, Graz, 17.09.2013.

Baumgartner, Rupert J., Sumann, Tina: Energy and Material Flow Analysis in complex production structures-A case study at AT&S AG, for: Sustainability Management for I ndustries Conference 2013, Leoben, 19.09.2013

Baumgartner, Rupert J.: Sustainable Supply Chain Management using a data exchange hub, keynote, for: Supply Chain Outlook 2013, Stockholm, 28.11.2013

Brudermann, Thomas: *Behavioral aspects for agent-based models of resilient urban systems*, presenter, for: 43rd Annual IEEE/IFIP International Conference on Dependable Systems and Networks, Budapest, 24.06.2013.

Brudermann, Thomas: *Massenpsychologie und Revolution*, keynote, for: PRO SCIENTIA Sommerakademie, Marijin Dvor, Lužnica, Croatia, 07.09.2013.

Brudermann, Thomas: *Modeling urban emergencies: Behavioral aspects*, presenter, for: Mini workshop on Urban Resilience, National Institute for Environmental Studies (NIES) and Mitsubishi Research Institute (Japan), Tokyo, Japan, 27.02.2013.

Brudermann, Thomas: *Modelling urban emergencies: Behavioural aspects*, presenter, for: Workshop on Linking Climate Compatible Urban Development to Resilience, Asian Institute of Technology (AIT) (Thailand), Novotel Hotel at Siam Square, Bangkok, 13.03.2013.

Brudermann, Thomas: *Sharing Electricity in Urban Emergency Cases – An Agent-based Perspective*, presenter, for: 9th Conference of the European Social Simulation Association (ESSA), Warsaw, 24.06.2013.

Engert, Sabrina: *Corporate sustainability strategies in the automotive industry: A literature review and research options*, presenter, for: ISDRC 19 - 19th International Sustainable Development Research Conference, Stellenbosch, South Africa, 01.07.2013.

Engert, Sabrina: *Sustainable Strategic Management (SSM) - Literature Review and Conceptual Framework*, presenter, for: Corporate Responsibility Research Conference 2013, Graz, 12.09.2013.

Fritz, Morgane; Baumgartner, Rupert J.: *Reporting and exchange of social sustainability data along the supply chain of the electronics industry: Status quo, influencing factors and proposition of a framework*, in: CRRC 2013 (Ed.): CRRC 2013 - Making the Number of Options Grow! Graz, Austria, September 11 – 13, 2013.

Fritz, Morgane; Schöggl, Josef-Peter; Baumgartner, Rupert J.: *Sustainability assessment in supply chains - A literature Review of sustainability aspects and the development of indicators*, in: International Sustainable Development Research Society (Ed.): ISDRC 19 - Just Transitions: A global perspective, Stellenbosch, South Africa, 2013.

Füllsack, Manfred: *Arbeit braucht Wissen, aber braucht das Wissen die Arbeit*, keynote, 23.10.2013.

Füllsack, Manfred: *Emerging Communication*, keynote, for: "Selbstorganisierende Systeme" der AAU Klagenfurt, University Klagenfurt (Austria), 09.12.2013.

Füllsack, Manfred: *Emergenz und ihre Beobachtung*, presenter, for: Ernst Bloch-Zentrum (Ludwigshafen). 05.06.2013.

Füllsack, Manfred: *Zum Regelmäßigen des Unregelmäßigen – Automatismen und Komplexitätsreduktion*, keynote, for: Graduiertenkolleg Automatismen Universität Paderborn, University Paderborn (Germany), 17.04.2013.

Gelbmann, Ulrike-Maria: *Management Resilience & Resilience Management – Four basic questions*, presenter, for: Corporate Responsibility Research Conference 2013, Graz, 12.09.2013.

Gelbmann, Ulrike-Maria: *A "House of Enterprise Resilience to Climate Change"*, presenter, for: VHB NAMA Conference 2013 Vienna, 07.10.2013.

Orthofer, Anita: *Regional institutional arrangements for renewable energy use*, presenter, for: Corporate Responsibility Research Conference, Graz, 12.09.2013.

Pierer, Magdalena: *A Nitrogen Footprint for Austrian Food Products*, presenter, for: Foodscapes conference, Seggau Castle, Styria, Austria, 22-25 Sept. 2013, 22.09.2013.

Pierer, Magdalena: *Guidance document on national nitrogen budgets: "Showcase" annex – humans and settlements*, presenter, for: Workshop "Greening Agriculture" & Meeting der Task Force on Reactive Nitrogen (TFRN), Expert Panel on Nitrogen Budgets, 26.04.2013.

Posch, Alfred: *Inter- und transdisziplinäre Lehre - Erfahrungen aus dem Bereich der Umweltsystemwissenschaften*, presenter, for: Fachgrenzen überschreiten - Wie interdisziplinäre Lehre gelingen kann. Tag der Lehre 2013, University of Graz 07.11.2013.

Posch, Alfred: *Coping Strategies for reducing vulnerability to energy market disturbances - the case of the Austrian paper and pulp industry*, presenter, for: Corporate Responsibility Research Conference, Graz, 12.09.2013.

Rauter, Romana; Jonker, Jan: *Living Apart Together? Business Models and Multiple Value Creation*, presenter, for: Corporate Responsibility Research Conference 2013, Graz, 13.09.2013.

Rauter, Romana; Stabauer, Petra; Nguyen, Duong T.: *New Business Models in Austria*, presenter, for: Conference on New Business Models, Radboud University Nijmegen (The Netherlands), 14.06.2013.

Reinsberger, Kathrin: *Bottom-up initiatives - Behavioural aspects of photovoltaic adoption,* presenter, for: Solar World Congress 2013, Cancun (Mexico), 06.11.2013.

Reinsberger, Kathrin: *Bottom-up initiatives as a catalyst for energy transition*, presenter, for: SDEWES Dubrovnik 2013, Dubrovnik (Croatia), 26.09.2013.

Schöggl, Josef-Peter: *A concept for plausibility checks of supply chain sustainability information*, presenter, for: Corporate Social Responsibility in Supply Chain Management - Research Workshop, University Kassel (Germany), 08.07.2013.

Schöggl, Josef-Peter: *Eine Checkliste für nachhaltige Produktentwicklung: Am Beispiel innovativer Leichtbautechnologien in der Automobilentwicklung*, presenter, for: Ökobilanzwerkstatt 2013, Netzwerk Lebenszyklusdaten (Germany), Graz University of Technology, 24.09.2013.

Schröck, Andrea Maria: *Modelling the management of nitrogen flows under conditions of land use change – a case study of the Enns valley in Upper Austria,* presenter, for: 24th international scientific-expert conference on agriculture and food industry, Sarajevo, Bosnia and Herzegovina, 26.09.2013.

Seebacher, Ulrike: *Personal Changes Towards a Socially Responsible and Sustainable Living – Educational Concepts and Experiences*, presenter, for: 8th IRDO International Conference "Social Responsibilities and Current Challenges. Education and Communication for more Social Responsibility. 07.-09.03.2013, Maribor, Slovenia, 08.03.2013.

Steiner, Gerald: *A Competence Framework for Innovation and Sustainability: Global Food Security & Phosphorus*, keynote, for: 8th International Conference Social Responsibility and Current Challenges 2013 – Education and Communication for More Sustainable, 02.03.2013.

Steiner, Gerald: *Barriers and Opportunities for Industrial Innovation Systems in Transition: Exemplified by Old Industrial Regions*, presenter, for: The Eastern Academy of Management 2013 Conference - Creativity and Innovation: Designs for the Future, 08-11 May 2013, Baltimore, MD, USA, 15.05.2013.

Steiner, Gerald: Competences for Complex Real-World Problems: Toward an Integrative Framework, presenter, for: The Eastern Academy of Management 2013 Conference - Creativity and Innovation: Designs for the Future, 08-11 May 2013, Baltimore, MD, USA, 09.05.2013, .

Steiner, Gerald: *Innovation as Driver of Competitiveness and Sustainability,* keynote, for: ISDRC 19 – 19th International Sustainable Development Research Conference, Stellenbosch, South Africa, 02.07.2013.

Steiner, Gerald: *Innovation Systems as Facilitators of Just Transition: A Global Perspective,* keynote, for: ISDRC 19 – 19th International Sustainable Development Research Conference, Stellenbosch, South Africa, 01.07.2013.

Steiner, Gerald: *Large-Scale Collaborative Problem Solving Using the Example of Phosphorus as a Global Case (GlobalTraPs): A Transdisciplinary Approach*, presenter, for: ISDRC 19 – 19th International Sustainable Development Research Conference, Stellenbosch, South Africa, 02.07.2013.

Steiner, Gerald: *Which Factors Influence Global Phosphorus and Fertilizer Prices?,* keynote, for: 5th Conference of the Global Partnership on Nutrient Management (GPNM) of the United Nations (UNEP), Beijing, China, 21.06.2013.

Winiwarter, Wilfried: *A Nitrogen Footprint for Austrian Food Products,* presenter, for: N2013, 6th international N conference, Kampala, Uganda, 18-22 Nov. 2013, 18.11.2013.

Winiwarter, Wilfried: *Effects of Climate Change on Air Pollution Impacts and Response Strategies for European Ecosystems (ECLAIRE),* presenter, for: 23nd CCE Workshop and 29th Task Force Meeting of the ICP Modelling and Mapping, 8-11th April 2013, Copenhagen, Denmark, 08.04.2013.

Winiwarter, Wilfried: *Integrierte Modellierung von Luft-Boden Interaktionen mit dem GAINS Modell: Forschung und Anwendung,* presenter, for: Bodenforum Österreich, Graz, 16.10.2013.

3.4.2 Organization of scientific conferences

Aschemann, Ralf: *Orientation week, summer school and graduation for "Erasmus Mundus Master's Programme in Industrial Ecology" (MIND)*, Seggauberg, 18.08.2013 - 23.08.2013.

Baumgartner, Rupert J. J.: *Corporate Responsibility Research Conference 2013*, organizer, Graz, 01.01.2013 - 30.09.2013.

Baumgartner, Rupert J. J.: Sustainable Building Conference 2013, reviewer, 01.03.2013 - 15.09.2013.

Baumgartner, Rupert J. J.: *Track Chair at the 19th Annual International Sustainable Development Research Conference*, Stellenbosch/South Africa, 30.06.2013 - 02.07.2013.

Engert, Sabrina: *Corporate Responsibility Research Conference 2013*, organizer, Graz, 01.01.2013 - 30.09.2013.

Füllsack, Manfred: *Networking networks*, organizer, Vienna, 28.11.2013.

Füllsack, Manfred: *Simulation komplexer Systeme*, organizer, Vienna, 01.03.2013 - 01.07.2013.

Gelbmann, Ulrike-Maria: *Corporate Responsibility Research Conference 2013*, organizer, Graz, 01.01.2013 - 30.09.2013.

Hammerl, Barbara; Himmel, Wilhelm; Loidl, Alexandra; Gelbmann, Ulrike-Maria: *Grazer Abfallwirtschaftstagung 2013.* Nachhaltigkeits-Landkarte Steiermark. Gelebte Nachhaltigkeit auf dem Weg vom Wissen zum Tun, 30.01.2013.

Hölzl, Martina: *Corporate Responsibility Research Conference 2013*, organizer, Graz, 01.01.2013 - 30.09.2013.

Posch, Alfred: *Member of the Program Committee of the International Conference on Sustainability, Technology and Education 2013*, 29.11.2013 - 01.12.2013, Malaysia, 2013.

Posch, Alfred: *Member of the Scientific Committee of the Conference on Transdisciplinary Research and Modeling*, Munich, 01.01.2013 - 11.04.2013.

Rauter, Romana: *Corporate Responsibility Research Conference 2013*, session chair, 13.09.2013.

Rauter, Romana: *Corporate Responsibility Research Conference 2013*, organizer, Graz, 01.01.2013 - 30.09.2013.

Steiner, Gerald: IRDO - "8th International Conference on Social Responsibility and Current Challenges", program committee, Maribor/Slovenia, 07.03.2013 – 09.03.2013

Seebacher, Ulrike: *Corporate Responsibility Research Conference 2013*, organizer, Graz, 01.01.2013 - 30.09.2013

Winiwarter, Wilfried: *CCCA Workshop* (University of Natural Resources and Life Sciences, Vienna), 11.06.2013.

Winiwarter, Wilfried: *Veranstaltung Klima- & Luftqualität* (Austrian Academy of Sciences, ÖAW), 28.11.2013.

3.5 Transfer: science to professionals

Gelbmann, Ulrike-Maria: *CSR als Innovationstreiber*, for: Unternehmensführung mit Erfolg! Gesellschaftliche Verantwortung (CSR) in der Betriebswirtschaft, The Austrian Federal Economic Chamber Salzburg (Austria), 24.10.2013.

Gelbmann, Ulrike-Maria: *Strategische Implementierung von CSR (in KMU),* for: REGIOLAB - Regional Development Laboratory zum Thema CSR in kleineren und mittleren Unternehmen, The Austrian Federal Economic Chamber Salzburg (Austria), 13.03.2013.

Posch, Alfred: *Internationalisierung der Lehre - Praxisbeispiele internationalisierter Lehre*, for: High Noon - Didaktik zu Mittag, Zentrum für Lehrkompetenz (University of Graz), Graz (Austria), 15.05.2013.

3.6 Transfer: science to public

3.6.1 Press releases

Baumgartner, Rupert J.; Schöggl, Josef-Peter: *Transparenz die Nachhaltigkeit schafft*, oikos - Newsletter Nachhaltigkeit, Internet, April 2013.

Brudermann, Thomas; Reinsberger, Kathrin; Orthofer, Anita: *Photovoltaik für Landwirte - Beweggründe und Hindernisse*, Maschinenring Zeitung, Printmedium, 2013.

Gelbmann, Ulrike-Maria: *Dimensionen, die Welt der Wissenschaft. 300 Jahre Nachhaltigkeit*, ORF OE1, Rundfunk, 30.12.2013.

Perstel, Peter: VDI-Fachkongress 2013: *Leichtbautechnologien – Die mobile Zukunft heute gestalten!,* ÖKONEWS, Tageszeitung für Erneuerbare Energie & Nachhaltigkeit, 14.08.2013.

Perstel, Peter: 3. VDI-Fachkongress 2013: *Nachhaltiger Leichtbau als Chance für die Automobilindustrie,* ÖKONEWS, Tageszeitung für Erneuerbare Energie & Nachhaltigkeit, 07.08.2013.

Perstel, Peter: *Elektromobilität: Time-Out?*, ÖKONEWS, Tageszeitung für Erneuerbare Energie & Nachhaltigkeit, 07.03.2013.

Perstel, Peter: *Smarte Städte - smarte Mobilität* - vernetzt in Graz, ÖKONEWS, Tageszeitung für Erneuerbare Energie & Nachhaltigkeit, 07.03.2013.

Winiwarter, Wilfried: *Zu viel und zu wenig Dünger*, Die Presse am Sonntag, Printmedium, 03.03.2013.

Winiwarter, Wilfried: *The dangers of fertilizers*, FM4 Reality Check, 18.02.2013.

3.6.2 Publications for non-scientific audience

Baumgartner, Rupert J.; Füllsack, Manfred; Posch, Alfred; Perl-Vorbach, Elke; Perstel, Peter: *Interdisziplinäre und systemorientierte Forschung und Lehre zu Nachhaltigkeit,* Innovation und globalem Wandel, 2013. Soziale Technik: Zeitschrift für sozial- und umweltverträgliche Technikgestaltung, 2013.

Winiwarter, Wilfried: *Die österreichische CO2 Bilanz und die Nutzung von Biomasse,* Soziale Technik: Zeitschrift für sozial- und umweltverträgliche Technikgestaltung, 2013.

3.6.3 Presentations for non-scientific audience

Binder, Claudia; Hecher, Maria; Vilsmaier, Ulli; Posch, Alfred: Präsentation der TERIM-Resultate, Arbeit in Workshops und Steuerungsgruppentreffen in der Energieregion Weiz-Gleisdorf, for: TERIM-Projekttreffen und Steuerungsgruppentreffen in der Energieregion Weiz-Gleisdorf, University of Graz, 25.9.2013.

Mrotzek, Maximilian: Geht uns das Silber bald aus? Eine ganzheitliche Analyse der Silberverfügbarkeit mittels der System-Dynamics-Methode, for: ACHTUNG FORSCHUNG!, University of Graz, 16.11.2013.

Mrotzek, Maximilian: Systemisches Denken: Die Umweltsystemwissenschaft an der Universität Graz , for: Schnupper Uni 2013, Graz (Austria), 28.08.2013.

Mrotzek, Maximilian: Geht uns das Silber aus?, for: SIMULATION KOMPLEXER SYSTEME - FORSCHEN IN DER VON-NEUMANN-GALAXIS, Institut für Wissenschaft und Kunst, University of Vienna (Austria), 16.05.2013.

Füllsack, Manfred: *Spannungen in Netzwerken*, keynote, for: Montagsakademie der Uni Graz, Graz, 15.04.2013.

ISIS-Reports

In 2012 ISIS decided to issue a report series of its own, called “ISIS Reports”. The series is dedicated to disseminating interesting scientific results from ISIS members and their colleagues as well as from excellent students. The aim is to provide a means of publication that works more quickly than journals would and an opportunity to publish excellent research work that has not (yet) been published in other ways. This includes research reports, excellent master’s or PhD theses as well as collections of papers from conferences (conference proceedings) or excellent reports from teaching projects. All contents suggested for publication undergo an internal review by the series editors, Wilfried Winiwarter, Ulrike Gelbmann, and Rupert J. Baumgartner.
The series appears at irregular intervals with a minimum of two issues per year. It bears an ISSN number and is available in the form of hard copies and especially as a pdf online on our ISIS website. The language of publication is German or English.

In 2013 there appeared ISIS reports # 2 to 5, ISIS Report # 6 containing papers from the 2013 Corporate Social Responsibility Conference held at Graz is going to follow in January.

ISIS Report #2: Maximilian Mrotzek, Andreas Kreuzeder, Walter Gössler (Guest Eds.): Phosphorus: Papers of an Interdisciplinary Practical Training at the University of Graz. Graz, January 2013 (in English).

ISIS Report #3: Manfred Füllsack (Guest Ed.): Networking Networks. Graz, May 2013 (in English).

ISIS Report #4: Rauter, Romana, Gsodam, Petra, Nguyen, Duong T., Stabauer, Petra, Baumgartner, Rupert J. J. (Guest Eds.): New Business Models in Austria - Forerunners in Sustainable Economics. Graz, October 2013 (in English).

ISIS Report #5: Gastinger, Barbara: Biologische Abfallbehandlung in der Steiermark und ihr Beitrag zum Klimaschutz. Graz, December 2013 (in German).

3.7 The ISIS Website

The ISIS website with an up-to-date news section and plenty of information about the institute can be accessed via isis.uni-graz.at (English version: isis.uni-graz.at/en/).
While central information items like contact information, opening hours, news as well as important links can be found already on the start page, the rest of the new website is organised in four categories:

- *Institute*: This category includes a mission statement, venue information including trip advisor and public transport planning tool, the annual reports since 2010 as well as further up-to date information.
- *Studying*: This category involves information for both current and potential future students of ISIS study programmes: Environmental Systems Sciences, Joint Degree Sustainable Development, Master Industrial Ecology (MIND) and the recently founded doctoral school. A list of master theses and links to the alumni clubs can also be found there.
- *Research*: This section gives an overview on ISIS research aims and activities, ongoing projects, recent publications as well as existing co-operations with national and international partners. There is also a sub-category dedicated to the ISIS science talk, which is forum for invited (international) guests to present their research.
- *People*: Finally, one category is dedicated to introduce people who work (or worked) at ISIS, including their research interests and publications. Open positions are also announced there.

In 2013, Maximilian Mrotzek and Thomas Brudermann served as administrators for the website.

Figure 25: Website screenshot

3.8 Awards

Presenting awards of institute members and/or students of the ISIS is one of the new sections within our ISIS Report. Throughout the last year several members of the institute got an award for their success, both in professional but also in private fields of interest.

Dr. Maximilian Mrotzek got the 3rd place -- Best Paper Award from the International Journal of General Systems 2012 for the paper “Shakespearean tragedies dynamics: identifying a generic structure in Shakespeare’s four major tragedies”, by Emma Dominguez-Rue, and Maximilian Mrotzek, 41(7), October 2012, 667–681].

Thomas Winkler, MSc, got the TUI Sustainability Award for his master thesis “Ecotourism as community development toll - Development of an evaluation framework“. Furthermore, he received the “Young Scientist Travel Award” for the United Nations Climate Change Conference, COP19 in Warsaw in November 2013.

Sabrina Engert with the master thesis “Sustainable Tourism and the impacts of the FIFA World Cup 2010” and Magdalena Pierer with the master thesis “The possible inclusion of the Austrian Waste Management in the EU Emissions Trading System - An empirical analysis on opportunities and limitations” got the Environmental Systems Sciences Award 2013.

Two out of five scholarships from the WKO where awarded to students of the ISIS institute. Julian Fink got one scholarship for his Master Thesis „Analysis of Material Flows in Production Processes of the Electronic Industry - A Case Study at Europe's largest Manufacturer of Printed Circuit Boards“. The second scholarship was awarded to Petra Gsodam for her Master Thesis “Business Models for Renewable Energies in the Electric Sector in Austria” (work in progress).

4 TEACHING

4.1 Study Programmes

4.1.1 Environmental Systems Sciences

In teaching, ISIS is the focal institute for the bachelor and master study programmes in **Environmental Systems Sciences** with its four subject foci: business administration (respectively sustainability oriented management), economics, geography, and NAWI-Tech.

Figure 26: ESS Logo

NAWI-Tech is the newest of all subject foci and was established in 2012. This unique study programme is provided by University Graz (KFUG) and Graz University of Technology (TUG) in their joint activity Natural Sciences. This study (USW Nawi-Tech) replaces somehow the former subject foci physics and chemistry and is focussing predominantly on the aspects of natural sciences in the discussion of sustainability (for further information please see: http://www.nawigraz.at/).

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 Systems Sciences.

Figure 27: Teaching at ISIS

The roots of the study programmes in Environmental Systems 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.

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 Systems Sciences can be found at www.uni-graz.at/usw or www.umweltsystemwissenschaften.at.

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 2013, University of Stellenbosch (South Africa) and TERI University in New Delhi (India) joined the consortium as further mobility partners.

Figure 28: Joint Master Programme

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/sd.

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

The European Commission's "Education, Audiovisual and Culture Executive Agency" (EACEA) has 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 co-ordinating institute.

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

MIND has started with winter term 2011/12 and is co-ordinated by Dr. Aschemann as the academic co-ordinator and Mag. Fauland from the Office for International Relations as administrative co-ordinatior. 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 xx below, before the master's thesis has to be conducted in the fourth semester.

Figure 29: Structure of the MIND programme

According to the Erasmus Mundus regulations, the MIND students have to study at least one semester at two different European countries of the consortium. Moreover, some students have the opportunity to spend one semester at one of the non-European MIND universities. 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 is supporting MIND by granting scholarships for students and scholars and by contributing to the running administrative costs.

In August 2013, the first MIND students have been awarded with their Master's Degree (see figure 30 below) during the jointly organized MIND orientation week, summer school and graduation ceremony in the premises of Seggau Castle in Styria.

Figure 30: The first MIND graduates (August 2013, Seggau Castle)

With winter term 2013/14, MIND started its third edition: 17 students began their master programme at one of the three European partner universities.

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

4.2 Course list

Winter term 2012/2013			
Type	Courses	Lecturer	Contact hours
OL	Orientierungslehrveranstaltung USW	Baumgartner R, Huber A, Krenn H, Propst G, Steininger K, Sulzer W	1
VU	Integral- und Differentialrechnungen für Umweltsystemwissenschaften	Batzel J, Hötzl E, Keeling S, Peichl G, Perko R, Schwaiger J	4
VU	Vektorrechnung für USW	Hötzl E, Schwaiger J	3
PS	Proseminar zu Statistik für Umweltsystemwissenschaften	Ambros R, Feit T,	1
VO	Mensch und Umwelt: Geosphäre	Lazar R, Lieb G, Sulzer W	2
VO	Mensch und Umwelt: Anthroposphäre	Posch A, Steininger K	2
VO	Interdisziplinäre Arbeitsmethoden	Aschemann R	2
VO	Systemwissenschaften 1	Desch G, Mrotzek M, Propst G	2
VO	Vorlesung zu Statistik für Umweltsystemwissenschaften	Feit T	2
VU	Systemwissenschaften 3	Gobiet A, Granigg W	2
VO	Systemintegration und Systembewertung	Winiwarter W	2
SE	Seminar zu Systemintegration und Systembewertung	Mrotzek M, Winiwarter W	2
SE	Seminar zu Systemmodellierung	Füllsack M	2
VU	Methods for inter- and transdisziplinary problem-solving	Aschemann R	2
PS	Social competences for inter- and transdisciplinary problem-solving	Aschemann 3	2
AG	IP – E-Mobility im Alltag: Top oder Flop?	Koland O, Kulmer V, Seebauer S, Steininger K	4
AG	IP – Die Konsequenzen des deutschen Atomausstiegs für den bilateralen Strommarkt	Aschemann R, Narodoslawsky M, Schinko T, Schüppel A	4
AG	IP – Entwicklung des Pilotprojekts “Re-Use-Zentrum Graz”	Gelbmann U, Hammerl B, Hasler A	4
AG	IP – Potenziale und Indikatoren für eine nachhaltige Unternehmensentwicklung	Grasenick K, Kupsa S, Raith D, Vorbach S	6
AG	IP – Environmental Management Systems in Small and Medium Enterprises: Challenges and Benefits	Aschemann R, Baumgartner R, Braschel N, Kanzian R	6
AG	IP – Energiearmut in der Steiermark: Entstehung, Verteilung und Perspektiven	Berger T, Getzinger G, Moik A	6

AG	IP – Sanfte Mobilität in der National- und Naturparkregion Gesäuse-Eisenwurzen	Knapp D, Osebik D, Pötsch T	6
AG	IP – Auswirkungen des Klimawandels auf den Wintertourismus	Damm A, Gobiet A, Wilcke R	4
PS	Angewandte Systemwissenschaften	Kislinger M, Mrotzek M	2
AG	IP – Fit für Morgen: Zukunftsorientiertes Handeln im Handels- und Dienstleistungsbereich mit Fokus auf Abfallwirtschaft, Arbeit und Mobilität	Fischer W, Hasler A, Weber W	6
AG	IP – Regionale Zusammenarbeit zur Kompetenzenentwicklung in der Landwirtschaft und weiteren Partnern am Fallbeispiel Kirchbach-Labilltal	Fischer W, Gruber R, Hasler A, Ober M	6
VO	Umweltorientiertes Innovations- und Technologiemanagement	Rauter R, Vorbach S	2
VO	Management nachhaltiger Entwicklung	Baumgartner R	2
PS	Kreativität in Innovationsprozessen	Perstel P	2
PS	Nachhaltigkeitsberichterstattung	Resel K	2
PS	CSR/Stakeholdermanagement	Seebacher U	2
PS	Ausgewählte Themen des Innovations- und Nachhaltigkeitsmanagement (Energiemanagement im Unternhemen)	Rossnacher A	2
PS	Projektmanagement	Posch A	2
KS	Strategic Sustainability Management	Gelbmann U	2
KS	Sustainability Entrepreneurship	Kenik E, Pölzl M, Weber B	2
KS	Eco-Controlling	Baumgartner R, Engert S, Rauter R	2
KS	Product and Service Development	Globocnik D	2
KS	Sustainable Innovation	Rauter R	2
KS	Value Chain Management	Aschemann R	2
KS	Waste and Recycling	Gelbmann U, Schmidt G	2
KS	Environmental Decision Making	Brudermann T	2
SE	Umwelt und nachhaltige Entwicklung	Posch A	2
AG	Research Project Sustainability Management	Brudermann T, Posch A	4
SE	Seminar zur Forschungsmethodik	Baumgartner R, Posch A	2
SE	Masterseminar	Baumgartner R, Füllsack M, Gelbmann U, Poch A, Winiwarter W	2
PV	PhD Privatiimum	Baumgartner R, Füllack M, Posch A, Winiwarter W	2
SE	Applied Statistics	Best H	2

Summer term 2013			
Type	Courses	Lecturer	Contact hours
VU	Integral- und Differentialrechnungen für Umweltsystemwissenschaften	Batzel J, Hötzl E, Peichl G	4
VU	Vektorrechnung für USW	Batzel J, Prager W, Schwaiger J	3
PS	Proseminar zu Statistik für Umweltsystemwissenschaften	Feit T, Perko R	1
VO	Systemwissenschaften 2	Desch G, Füllsack M, Propst G	2
UE	Übungen zu Systemwissenschaften	Gebetsroither E, Kupsa S, Pierer M, Schröck A, WinklerT	2
VU	Systemwissenschaften 3	Granigg W	2
VO	Systemmodellierung	Desch G, Füllsack M, Propst G	2
SE	Seminar zu Systemintegration und Systembewertung	Granigg W, Winiwarter W	2
SE	Seminar zu Systemmodellierung	Füllsack M, Schmickl T	2
VO	Mensch und Umwelt: Biosphäre und Ökosysteme	Depisch B, Raspotnig G, Tschernatsch M	2
AG	IP - Mobilitätsmanagement	Dullnig K, Reiter K, Seebacher U	6
AG	IP Supermarkt oder Bio-Kistl - was sagt der Hausverstand?	Aschemann R, Karner S, Suschek-Berger J	4
AG	IP - Temporärer Wohnraum	Handler R, Tisch A, Von der Hellen C	4
PS	Angewandte Systemwissenschaften	Gobiet A, Huber A, Kislinger M, Korber M, Loibl W	2
AG	IP - Gemeinwohl-Ökonomie: Das Wirtschaftsmodell der Zukunft?	Felber C, Kozina C, Kumpfmüller K	4
AG	IP - Urban Gardening als Chance für nachhaltige Stadtentwicklung	Aschemann R, Gelbmann U, Goritschnig A, Hasler A, Reinsberger K	6
AG	IP - Silver (Scientific Writing)	Gössler W, Kreuzeder A, Mrotzek M	6
AG	IP - Konsum & Produkte: Nachhaltige Lebensstile und Nachhaltigkeitskommunikation	Klade M, Seebacher U, Von der Hellen C	4
PS	Umwelt- und Nachhaltigkeitsmanagementsysteme	Baumgartner R	2
PS	Kreativität in Innovationsprozessen	Perstel P	2
PS	Nachhaltigkeitsberichterstattung	Resel K	2

PS	CSR-/Stakeholdermanagement	Seebacher U	2
PS	Ausgewählte Themen des Innovations- und Nachhaltigkeitsmanagement (Energiemanagement im Unternehmen)	Rossbacher A	2
KS	Strategic Sustainability Management	Gelbmann U	2
KS	Sustainability Entrepreneurship	Kenik E, Pölzl M, Weber B	2
KS	Eco-Controlling	Baumgartner R, Engert S, Rauter R	2
KS	Product and Service Development	Globocnik D	2
KS	Sustainable Innovation	Rauter R, Weber M	2
KS	Value Chain Management	Aschemann R	2
KS	Waste and Recycling	Gelbmann U, Klampfl-Pernold H	2
KS	Environmental Decision Making	Brudermann T	2
KS	Integrated Management Systems	Hölzl M, Rauter R	2
KS	Selected Topics of Sustainability and Innovation Management	Guevara Chaves P	2
AG	Research Project Innovation Management	Brudermann T, Guevara Chaves P, Posch A, Reinsberger K	4
KS	Environmental and Technology Assessment	Aschemann R	2
SE	Seminar zur Forschungsmethodik	Baumgartner R, Posch A	2
SE	Masterseminar	Baumgartner R, Füllsack M, Gelbmann U, Posch A, Winiwarter W	2
SE	Sustainability and Environmental Management	Posch A	2
SE	DissertantInnenseminar	Baumgartner R, Füllsack M, Posch A, Winiwarter W	2
DQ	PhD Doktoratskolloquium II	Baumgartner R, Füllsack M, Posch A, Winiwarter W	2
SE	Scientific writing in English	Tiede K	2

4.3 Completed master theses

Baier, Margit: *The Effects of EU Energy Regulations on the Energy Policy Systems of Styrian Municipalities - a case study analysis with special focus on the three Styrian municipalities Weiz, Gabersdorf and Liezen,* (Posch, Alfred)

Bauer, Wolfgang: *Efficient and effective plant management in the waste management - Analysis of influencing factors,* (Gelbmann, Ulrike-Maria)

Benedikt, Tamara: *Corporate Social Responsibility and the Emergence of Competitive Advantage – A Dynamic Capabilities Perspective,* (Posch, Alfred)

Böhm, Nina: *TAPPING THE POTENTIAL OF THE IN-HOUSE CROWD. Evaluating intra-organisational online ideas competitions,* (Posch, Alfred)

Enzi, Claudia: *Consideration of new energy systems on categorization and calculation methods regarding energy coverage and energy demand in residential buildings,* (Winiwarter, Wilfried)

Fankhauser, Maria: *Indicators of urban sustainability for electricity, heating and mobility,* (Posch, Alfred; Aschemann, Ralf)

Fink, Julian: *Analysis of Material Flows in Production Processes of the Electronic Industry - A Case Study at Europe´s largest Manufacturer of Printed Circuit Boards,* (Baumgartner, Rupert J.)

Fruhmann, Claudia: *Policy interactions and its influences on stakeholder behaviour using the example of small hydropower utilization in Austria,* (Posch, Alfred)

Gramer, Daniela: *CO2 emission trading in the aluminium sector: Evaluation of CO2 reduction measures,* (Posch, Alfred; Braschel, Nina)

Gruber, Bernadette: Comparative Analyses of Vulnerability Frameworks and their Applicability as Organisational Risk Management Instruments in the Steel Industry, (Posch, Alfred)

Guo, Siping: Chasing the Wind: An evolving China offshore wind power technological innovation system, (Posch, Alfred)

Haid, Thomas Andreas: *Regional energy autarky analyzed by methods of system science - the case study of the "Energieregion Weiz-Gleisdorf",* (Posch, Alfred)

Hatzl, Stefanie: *Energy awareness and behaviour in the context of energy municipalities,* (Brudermann, Thomas; Prosch, Alfred)

Huetter, Christian: *Phase Model of Waste Management - Adaptation and Expansion,* (Gelbmann, Ulrike-Maria)

Jug, Anja: *Packaging at the farmers´ market - Assessment of selected alternatives and empirical analysis of the pilot phase,* (Gelbmann, Ulrike-Maria)

Köck, Bianca: *Prioritization and evaluation of environmental aspects in styrian companies,* (Posch, Alfred)

Kriechbaum, Michael: *Barriers to the diffusion of distributed photovoltaic technology in the Western Cape Province - a Technological Innovation System analysis,* (Posch, Alfred)

Kulmer, Karin: *Implementation of Corporate Sustainability in an ISO 14001-certified industrial company: Connection of organizational culture, perception of sustainability, sustainability strategies and indicators,* (Baumgartner, Rupert J.)

Mayer, Simone: *Climate change and Energy vulnerabilities in the Austrian bread value chain,* (Posch, Alfred)

Mitterhuber, Corinna: *Energy generation in agriculture: A SWOT analysis with AHP for agricultural biogas plants,* (Posch, Alfred)

Puhr, Florian: *"Energy self-sufficient Burgenland 2020" according to the model of the city Guessing* (Posch, Alfred)

Ritt, Elisabeth: *Evaluation of the Implementation Process of the EMAS III Regulation - a Participatory Action Research on the Recognition Process of ECOPROFIT in Austria,* (Baumgartner, Rupert J.)

Rupp, Thomas: *Interdisciplinary view of energy plants in Austria,* (Bachhiesl, Udo)

Sentic, Anton: *National Framework Conditions for Repair and Re-use Potentials in Austria,* (Gelbmann, Ulrike-Maria)

Unterrainer, Barbara: *Implementation and Integration of an energy management system according to DIN EN ISO 50001 at the production site of an industrial firm,* (Baumgartner, Rupert J.)

Van Doremalen, Laurens Quirinus: *Making the Biobased Economy Work - Biomass Utilization model in South-Holland,* (Posch, Alfred)

Veigl, Bettina: *Measures of sustainable education to promote waste separation and avoidance inside Styrian households,* (Gelbmann, Ulrike-Maria)

Vita Garza, Ricardo Gibran: *Energy optimization and design of a Trigeneration system for a printing company: Insights towards a Smard Grid in Graz, Austria,* (Schnitzer, Hans)

Wagner, Stefan Thomas: *Dynamics in the governance of electricity regimes. Using the example of regional electricity supply in Austria,* (Füllsack, Manfred)

Weidhofer, Roman: *The future availability of aluminium and the significance of the secondary aluminium cycle,* (Füllsack, Manfred)

Weitzer, Katharina: *Environment-oriented CSR activities in Styria – Content analysis of the governance structures,* (Gelbmann, Ulrike-Maria)

Woldearegay, Biruk Tadesse: *Study of the Supply Risk Factors of Critical Materials for Electromobility, (*Posch, Alfred)

Zech, Elisabeth: *Life Quality Assessment using the Capability Approach - Based on a Case Study Assessing Life Quality Improvements through Ecological Sanitation in the Philippines,* (Posch, Alfred)

5 ADMINISTRATION

Aschemann, Ralf: Academic c*oordinator of the Erasmus Mundus Master programme in Industrial Ecology (MIND)*.

Aschemann, Ralf: *Erasmus coordinator at ISIS*.

Aschemann, Ralf: Internal coordination of the interdisciplinary practical training (IPs).

Aschemann, Ralf: Substitute member of the faculty committee, 01.10.2011-30.9.2013.

Aschemann, Ralf: *Organizer of the ISIS-Science Seminar Series,* coordination of a research or education programme, since 2012.

Baumgartner, Rupert J.: *Head of ISIS*, since October 2011.

Baumgartner, Rupert J.: *Vice Dean of the URBi faculty*, since Nov. 2012.

Baumgartner, Rupert J.: *Head of the doctoral school of Environmental Systems Sciences*, coordinator, since October 2011.

Baumgartner, Rupert J.: *Member of the CuKo USW*, since 2012.

Baumgartner, Rupert J.: *Member of the CuKo Sportwissenschaften*, since 2012

Baumgartner, Rupert J.: *Member of the faculty committee*, since 2010

Gelbmann, Ulrike: Member of the faculty committee*,* since 2012.

Posch, Alfred: *Vice head of ISIS,* since September 2009.

Posch, Alfred: *Dean for studies at the Faculty of Environmental, Regional and Educational Sciences*.

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

Posch, Alfred: *Member of the awarding committee of the "Buchbinderpreises"*, internal coordination, since 2009.

Posch, Alfred: *Respondent of the faculty committee*, strategic advisor, since 2009.

Posch, Alfred: *Respondent of the CuKo USW*, strategic advisor, since 2009.

Winiwarter, Wilfried: *Member of the Habil-Commision Andrea Steiner*

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