

About the SEI Science Forum

The SEI Science Forum is an annual event that celebrates and shares the research and insights of scientists across the Stockholm Environment Institute. The Forum highlights our contribution to understanding and addressing environment and development challenges. It also strengthens the quality of our research through engagement with key partners, joint learning and creative discussion.

The SEI Science Forum 2013 takes place 13-14 February in Stockholm, Sweden. On the first day, we welcome select partners from the worlds of policy, business and research to help shape our future research agenda as we advance our efforts to bridge science and policy.

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WELCOME TO THE SEI SCIENCE FORUM 2013!

The Science Forum 2013 gathers more than 80 researchers from SEI's global organization and 70 invited guests in a conversation spanning the policy landscape that makes up the new global development agenda.

We will address the challenges of today and identify tomorrow's opportunities. We look forward to lively discussions on subjects such as water, energy and food security, the prospects for international climate change negotiations and the urgency and co-benefits of reducing short-lived climate pollutants. We hope that the interactions at the Forum will lead to new and innovative research projects.

The Science Forum 2013 is inspired by 72 abstracts from all SEI centers, of which 21 cover completed research, 39 concern research in progress, and 12 are ideas for future research. We could only select 40 abstracts for presentation at the Forum due to the time constraints. However, this book of abstracts includes all 72 submitted abstracts covering a wide range of topics and is a good reflection of the Institute's activities. We hope you enjoy reading them!

Finally, as this book of abstracts goes to print, we received news that SEI has been ranked 6th in a global survey of environment think-tanks in 2012. What better than to share and celebrate this great achievement with a fun and stimulating SEI Science Forum!

*Johan Kuylenstierna, Executive Director
Måns Nilsson, Research Director
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THEME – MANAGING ENVIRONMENTAL SYSTEMS

MES

A Regional Water Resource Planning Model to Explore the Water-Energy Nexus in the Southeastern United States

Francisco Flores-Lopez, David Yates* and David Purkey

Completed research

The power sector withdraws substantial cooling water for electricity generation across the US and is thus heavily dependent on available water resources. Problems related to the energy-water nexus are not confined to only water quantities but also to thermal pollution effect on eco-systems. This research intends to inform energy decision-makers in the context of future decisions around type and location of energy generation. Different energy management strategies will have different water management implications in terms of water withdrawals and consumption for cooling, and water temperature issues. Further, the gravity of these impacts will be defined by the individual water-systems characteristics within which energy management strategies are implemented.

The WEAP model was employed to represent the water resource systems and water implications of energy production in the Southeastern US. The WEAP application models surface water availability, stream water temperature implications, and different development pathways under current and future conditions. The model also represents different energy strategies through scenarios derived from the Regional Energy Deployment System (ReEDS) analysis that is being conducted independently. Other development pathways are explored include changes in population growth projections and agriculture water demands.

A prime example of when power plant cooling water requirements and water demands interact and add stress to the system is the Atlanta-Metro-Area which has about four million people and water withdrawals for urban consumption and cooling water for electricity generation occur along the river. Results indicate that changes in stream water temperature due to releases of cooling water may become an important issue of consideration especially during summer and under low streamflows.

Keywords: Water-Energy Nexus, WEAP, energy decision-makers, thermal pollution

Publication: /

* National Center for Atmospheric Research

Modeling the Role of the Moorland Ecosystem's Hydrology under a Scenario of Climate Change

Francisco Flores-Lopez, Laura Forni and David Purkey

Completed research

This study focuses on the modeling of moorland ecosystem's hydrology under climate change and strengthens the capacities of local actors for the analysis and planning of water resources use in Peru. As a first step, a participatory workshop was carried out with key actors identified in the region under study with the purpose of obtaining information that would help to define the uncertainties, the availability of water resources, the potential strategies for adaptation to improve existing conditions, and the performance indicators to assess such uncertainty and strategies. For the identification of these factors, we used an assessment framework called XLRM (eXogenous uncertainties, policy Levers, Relationships, and Measures). The XLRM framework implemented in the water sector allows us to organize the important elements of risk analysis and vulnerability in four categories.

Within the R component, a WEAP model was implemented, which models the hydrological response of the moorland ecosystem and includes the results of the XLRM framework. With the purpose of determining the importance that the moorlands have on the system, a hydrological model's response of moorlands was implemented in WEAP. The main results of this model are headflows produced under different sensitivity scenarios of precipitation and temperature that feed a watershed management model. Results indicate that there is a vulnerability of the base flows produced by the moorlands ecosystem due to the decrease in moorlands' area. This vulnerability combined with the effects of climate change can significantly affect the supply of water resources system for the different demand sites located downstream, including rural and agricultural users that rely exclusively on a reservoir.

Keywords: Moorlands, XLRM-framework, WEAP, Peru, vulnerability

Publication: /

Climate Resilience Program for Water and Sanitation Systems in Metropolitan Areas of La Paz and El Alto in Bolivia

Laura Forni, Marisa Escobar and David Purkey

Research in progress

The context of water management in the region of La Paz / El Alto in Bolivia is emblematic of the general conditions of the Andes where multiple players compete for water supply and where climate change has the potential to have a negative impact. The challenge in this region is to improve water supply to a rapidly expanding city of El Alto and ensure that the availability of water is enough to preserve, and expand this provision to an established irrigation system where Glaciers are retreating under a changing hydrology. This study uses WEAP to support water resource planning and decision-making under uncertainty of climate change and stress in the system. The objective is to determine the reliability of water supply watersheds providing current and relevant technical hydrological information under climate change and other non-climate related uncertainties. These uncertainties are identified via the XLRM (Exogenous factors, Levers, Responses, and Measures) framework that informs iterative WEAP runs (over 700). Data from these iterations are represented in Tableau for informed suggestions of water uses for mutual benefits on future investments. Preliminary results suggest that the established strategies improve water supply to El Alto and other sectors in the short term. However, none of the strategies maintains those levels of reliability in 50 years because of disappearing glaciers after 25 years based on the WEAP simulations.

Keywords: Water, climate change, glaciers, sanitation, conservation, water and food security

Publication: /

Hydro-economic Modeling: Reducing the Gap between Large Scale Simulation and Optimization Models

Laura Forni, Brian Joyce, Francisco Flores-Lopez, Charles Young, Jack Sieber and David Purkey

Research in progress

The integration of hydrological and socio economic components into hydro-economic models has become essential for water resources policy and planning analysis. In this study we integrate the economic value of water in irrigated agricultural production using SWAP (a StateWide Agricultural Production Model for California), and WEAP (Water Evaluation and Planning System) a climate driven hydrological model. The integration of the models is performed using a step function approximation of water demand curves from SWAP, and by relating the demand tranches to the priority scheme in WEAP. In order to do so, a modified version of SWAP was developed called SWEAP that has the Planning Area delimitations of WEAP, a Maximum Entropy Model to estimate evenly sized steps (tranches) of water derived demand functions, and the translation of water tranches into crop land. In addition, a modified version of WEAP was created called ECONWEAP with minor structural changes for the incorporation of land decisions from SWEAP and series of iterations run via an external VBA script. This paper shows the validity of this integration by comparing revenues from WEAP vs. ECONWEAP as well as an assessment of the approximation of tranches. Results show a significant increase in the resulting agricultural revenues for California's Central Valley using ECONWEAP while maintaining the same hydrology and regional water flows. These results highlight the gains from allocating water based on its economic compared to priority-based water allocation systems. Furthermore, this work shows the potential of integrating optimization and simulation-based hydrologic models like ECONWEAP.

Keywords: Economic modeling, hydrologic modeling, agricultural production, mathematical programming, hydro-economic models, time and scale, fixed rules vs. social rules

Publication: /

Sustainable Intensification in Niger – Investigating the Potential of Water Harvesting and Productive Sanitation

Louise Karlberg, Linus Dagerskog, Andreas Heinemeyer, Patrick Bücker, Lisa Emberson and Kevin Hicks (Elisabeth Kvarnström, Jens-Arne Subke)

Research in progress

Sustainable agricultural intensification to meet growing food demands must avoid natural resource and ecosystem deterioration that in the long term can undermine agricultural productivity. SEI researchers have called for a triply green revolution of agriculture emphasizing increasing yields (green) using green water more efficiently in a more sustainable (green) way. In collaboration with the University of Abdou Momouni in Niger an on-station randomized block experiment was set up (2010-2012) to evaluate the combined effect of supplemental irrigation and productive sanitation - two innovations based on improved use of available resources. The impact on yields as well as variables related to water, carbon and nitrogen cycles were monitored to assess potential yield improvements and environmental impacts. A physically based ecosystems model was applied on the data to evaluate long-term effects of different management regimes. Preliminary results show a strong positive impact on crop yield of combining urine with supplementary irrigation.

Parallel to the field trials, sharing seminars organized by the project resulted in the setup of a national working group on productive sanitation aiming to share knowledge, build capacity, identify research gaps and investigate how productive sanitation eventually could fit into sanitation and agriculture policies of Niger. Productive sanitation has a large win-win potential in Niger where sanitation coverage is low and the majority of the population is engaged in small holder farming. By supporting part of the working group activities the Triple Green project contributes to the first important steps for a wider uptake of productive sanitation in Niger.

Keywords: Productive sanitation, supplemental irrigation, sustainable intensification of agriculture, ecosystems modeling, field experimentation

Publication: /

CLEANED LVCs - Comprehensive Livestock Environmental Assessment for Improved Nutrition, a Secured Environment and Sustainable Development along Livestock Value Chain

Mats Lannerstad, Jennie Barron and Eric Kemp-Benedict

Research in progress

The ongoing demand-driven ‘Livestock Revolution’ presents genuine opportunities for livelihood improvement for resource limited smallholder farmers in SSA and SA. However, intensified animal rearing affects key environmental parameters, possibly undermining of the resilience of ecosystems at multiple scales. Smallholder livelihoods directly depend on a healthy local environment. Thus, it is imperative to show how more meat and milk can be produced with fewer negative impacts on local and regional ecosystem services, i.e. optimizing livestock intensification and environmental sustainability.

The overall vision is to contribute towards a pro-poor, environmentally responsible livestock sector in developing countries. Through a pilot study with smallholder dairy farmers in East Africa the project will show proof of concept of a new environmental assessment framework. This new approach is intended to ensure that current and proposed actions designed to improve incomes and food security in livestock systems has a minimum environmental footprint while at the same time lifting people out of poverty.

Key objectives:

I. Addresses key knowledge gaps around the environmental tradeoffs and synergies associated with dairy intensification, which will allow for the identification of best practices that mitigate negative impacts and enhance win-win outcomes for productivity and the environment.

II. Support the strategic priority of agricultural development investors to ensure an environmentally sustainable dairy productivity increase in East Africa.

The project partners, i.e. ILRI, SEI and CSIRO, in this BMGF funded project will partner strategically with local institutions, both for testing during the pilot study and for an envisioned later full large scale implementation.

Keywords: Livestock, dairy, environmental framework, smallholder farmer, sustainability

Publication: /

Chemical Legislation and Company Relocation

Patricia Vilchis Tella, Linn Persson and Annika Varnäs

Completed research

The aim of this study, commissioned by the Swedish Chemicals Agency (KemI), was to look at whether and how chemicals legislation may influence companies in the chemicals industry, primarily chemical producers, to relocate parts of their activities to another region or country. We reviewed the literature on relocation factors in general as well as studies looking more specifically at effects of environmental regulation and chemicals management regulation. A number of industry association representatives were also interviewed. The conclusions were that there is no academic consensus when it comes to effects in general of environmental legislation on company relocation. In spite of the scattered results, there is however evidence enough in the literature to conclude that legislation in general is not among the top factors influencing the relocation decisions of companies. When looking more specifically at effects of chemicals management legislation, the studies reviewed found that regulations will always to some extent impact the competitiveness of a sector or sub-sector, but the relative importance of this impact for relocation is not considered in these studies. The mid-term evaluation of the European REACH regulation however, indicates that the relative importance of regulations for relocation is small. This conclusion is also verified by the industry association representatives interviewed, who unanimously voted access to markets and feedstock as the most important factors for relocation and new investments.

Keywords: Chemical legislation, relocation, investment

Publication: /

Citizen Science and the OPAL Project

Sarah West

Completed research

Citizen science is a burgeoning research field, bringing scientists and volunteers together to answer real-world scientific questions. This presentation will introduce citizen science, looking at its history, the reasons behind its recent rise in popularity, and different models of participation. The OPAL project at SEI York has been running since 2008, and case-studies from this and other citizen science projects will be used to illustrate the advantages and disadvantages of this approach. Issues of data quality, storage and ownership will be considered, as will participants motivations for involvement in such projects.

Keywords: Citizen science, participation

Publication: /

THEME – REDUCING CLIMATE RISK

RCR

Indexing Quito's Vulnerability: A Useful Policy Tool?

Amanda Fencl, Lisa Schipper, Marisa Escobar, Vishal Mehta, Juan Hoffmaister and Daniel Morchain

Research in progress

Understanding vulnerability to climate change is one of the most important steps toward preparing a plan for dealing with climate change. The Metropolitan District of Quito (DMQ) has been on the forefront of cities thinking about climate risks and in 2009 it adopted the Quito Climate Change Strategy (EQCC). In support of the EQCC, and with funding from CDKN, SEI and its local partners undertook several different research efforts aimed at enhancing and deepening the DMQ's understanding of its vulnerabilities to further develop the city's climate strategy. The city has a target to reduce a certain amount of vulnerability by 2020 and the SEI 'Quito Vulnerability Study' is helping the city establish a vulnerability baseline. The project involves the design and implementation of a climate impacts and vulnerability assessments, a study on residents' perceptions of vulnerability, narrative scenarios of future vulnerability, and the innovative integration of these results with existing data to support an online, spatially referenced vulnerability index for the city. Vulnerability indices are a contentious way to assess vulnerability, however, through the integration of different research methods and results into the index and the building of capacity among our local partners to support undertaking future vulnerability assessments, the DMQ will have sufficient information to begin targeting key areas and sectors of the city to reduce vulnerability and contribute to the city's ongoing adaptation efforts. For the broader urban policy making community, the Quito Vulnerability Study will illustrate the advantages and limitations of an index approach.

Keywords: Urban, adaptation, vulnerability index, climate

Publication: /

Climate Negotiations Inside, Outside and Beyond the UNFCCC – Prospects for the Future

Magnus Benzie, Bo Kjellén, Harro van Asselt, Richard Klein and Karl Hallding

Research in progress

The UN-backed international climate negotiations arguably provide the most legitimate forum within which to negotiate a global deal on emissions reduction and the creation of new climate finance institutions. However, progress within the UNFCCC is currently too slow to avoid dangerous climate change. A number of explanations have been given to explain the slow rate of progress, ranging from the domestic to the geo-political scales. For a variety of reasons, countries and other influential actors are pursuing agreements and taking action via other multilateral, ‘minilateral’ and even bilateral channels and fora. This raises the potential for new solutions, as well as new problems, and begs questions of the UNFCCC and its appropriate role in future.

Short opening statements, followed by a moderated panel discussion, will address a number of important questions, such as:

- What is the current state of the UNFCCC negotiations after COP18?
- What channels outside the UNFCCC are being used – or could be used – to progress action on climate change?
- What role could the UNFCCC play in a future patchwork world of climate action?
- Is there a tension between legitimate process/ equity and effective outcomes?
- What are the implications for SEI?
- How does global governance of climate change reflect or differ from governance of other global challenges (e.g. trade, biodiversity)?

Keywords: Climate change, UNFCCC, governance, equity

Publication: /

Climate Change Adaptation and the Insurance Industry in Sweden and Germany

Gregor Vulturius

Completed research

The insurance industry is frequently presented by scientists as a particularly capable actor to assist governmental authorities in adapting societies to climate change. The literature suggests that insurance companies can build society's adaptive capacity to climate change by promoting risk prevention and advancing knowledge about future impacts. At the same time the insurance industry is vulnerable to the likely impacts of climate change on the intensity and frequency of extreme events. This study examines under which conditions and in what way insurances can promote climate change adaptation, in how far are these conditions met in the existing insurance system, and what strategies can help to overcome current regulative and operational obstacles. Findings are based on a comparison between the Swedish and the German insurance market. Both countries show a medium to low degree of exposure to expected climate change impacts, have privatized insurance markets for natural hazards and have recently experienced large natural disasters. The study finds that the extent of collaboration between insurances and public authorities in work on climate change adaptation differs greatly between the two countries. The German case suggests that knowledge development and raising public awareness about risks are key areas for private public partnerships. Results also highlight the threat that adaptive action taken by insurers (e.g. withdrawing coverage in high risk areas) can reduce the adaptive capacity of certain groups in society. The study concludes that policy makers need to clearly define responsibilities of the insurance industry and local governments and promote coordination between them.

Keywords: Climate change adaptation, insurance, private-public partnerships, knowledge about climate change impacts

Publication: /

Changing Land Use, Changing Climate and Increasing Vulnerability of Upland Farmers in Thailand

Malin Beckman and Sapon Naruchaikusol

Research in progress

Upland farmers in Pua district, Nan and Om Koi district, Chiang Mai are examples of the many rural communities facing increasing risks to their production and livelihoods from landslides, flash floods and drought. The research explores the vulnerability, resilience and adaptive strategies of different households and villages and discusses this in context of government policies and the strategies for natural resources management of different stakeholders. Issues inquired into are e.g. how healthy forest can be pulled away by landslides, and why people continue to grow maize on high sloping fields in Pua, even after serious landslides last year. The former appears to be related to the increasingly concentrated rainfall, with up to 100 mm per day. Answers to the latter seem to include government income guarantees for maize production, low investment costs and low labour input compared to other crops. However, interviews suggest that farmers feel stuck with producing a certain cash crop, which increases livelihood risks in several ways, because they need the income, primarily for their children's education, and they do not know any alternative source of income.

The research uses qualitative methods, including semi-structured interviews and group discussions. Fieldwork has been conducted in upstream and downstream villages. Interviews with government staff have included, sub-district, district and province agriculture- and forestry staff, Watershed Management Unit staff, and district leaders.

Keywords: Climate risk, land use, vulnerability, upland, policy context

Publication: /

Transitioning Away from Large-scale Power Projects: A Simple and Effective Fix for the CDM?

Michael Lazarus and Pete Erickson

Completed research

With the future of the Kyoto Protocol uncertain, and rock-bottom CER prices imperiling carbon markets, the Clean Development Mechanism faces a critical moment. It is a key pillar of the global effort to mitigate climate change. Yet in order to survive and be more effective, it needs internal and external reforms to address the growing supply-demand imbalance and ongoing integrity concerns. We propose a simple solution: to transition the CDM away from large-scale power supply projects. We arrive at this suggestion based on SEI research conducted for the High Level Panel of the CDM Policy Dialogue. This work shows that the value and integrity of the CDM may hinge on the net emissions impact of the large-scale power supply projects, which are expected to generate the majority of CDM credits going forward. For these projects, additionality is hard to demonstrate with high confidence. Indeed, if mostly non-additional, as research suggests, they could increase cumulative global greenhouse gas emissions by over a gigaton of CO₂e through 2020. We describe how a transition away from such CDM projects could help address the over-supply of certified emission reductions (CERs), support projects that truly depend on CERs, and improve the CDM's overall mitigation impact. We suggest options for such a transition, bearing in mind governance and legal aspects and the need for investor confidence.

Keywords: Carbon markets, climate change, greenhouse gas emissions, power sector

Publication:

SEI Policy Brief: <http://sei-international.org/-news-archive/2505>

National Climate Adaptation Planning: Bringing Together Relevant SEI Expertise - A Panel Discussion

Richard Klein, Aaron Atteridge, Magnus Benzie, Sukaina Bharwani, Maria Osbeck and Åsa Swartling

Ideas for future research

Adaptation to climate change requires action at multiple levels. After a period in which most research and policy effort was directed at either global institutions or local communities, the role of national governments is now coming to the fore. Both developing and developed countries are engaging in national adaptation planning activities, either of their own accord, supported by donor agencies, or stimulated by the new process for preparing national adaptation plans under the United Nations Framework Convention on Climate Change.

National adaptation planning has never been a specific research topic for SEI, yet over the past few years several SEI staff, in different centres and themes, have worked on projects that either directly or indirectly contributed to national adaptation plans. The growing external focus on national adaptation planning makes it strategic for SEI to (i) take stock of our current relevant expertise, (ii) discuss how best to present this expertise to those who might benefit from it, and (iii) identify priorities for future research.

To this end we propose a panel discussion on national adaptation planning at the SEI Science Forum, involving five SEI staff with relevant recent research experience in Indonesia, the UK, several African countries, the Baltic region and Sweden. The panel discussion would mark the start of an SEI-internal process involving a larger group of colleagues, aimed at positioning SEI to assume a leading role in the emerging field of national adaptation planning.

Keywords: Climate change, adaptation, national planning, research strategy

Publications:

<http://sei-international.org/publications?pid=2190>

<http://sei-international.org/publications?pid=2089>

<http://sei-international.org/publications?pid=1751>

<http://sei-international.org/publications?pid=1881>

<http://sei-international.org/publications?pid=2070>

Climate Equity and Equitable Burden-sharing: SEI's Contribution

Sivan Kartha, Eric Kemp-Benedict, Pete Erickson and Frank Ackerman

Completed research

After simmering in the background of the international climate negotiations for twenty years, equity has recently burst to the fore. Equitable burden-sharing has become a primary topic of discussion, debate and contention in the ongoing Durban Platform negotiations on a post-2020 arrangement. The past year has seen an explosion in workshops, forums, strategy summits, civil society initiatives, and formal negotiations relating to climate equity. Climate change, after all, is a classic “commons problem”. It simply cannot be resolved without a global cooperative response, which will be difficult if not impossible to sustain unless it is firmly based on principles of equity.

For several years, SEI has provided leadership on the theme of climate equity. We have provided new ideas, relevant research, analytical tools, and a specific burden-sharing approach – the Greenhouse Development Framework – that has attracted widespread interest and has helped shape the discussion. Civil society organizations as well as Parties have drawn heavily on SEI's work to inform their thinking and their formal positions. This presentation will review the work that SEI has done on equitable burden-sharing. It will cover the key ideas that SEI has contributed to the debate, provide an overview of the Greenhouse Development Rights framework, and reflect on the ways in which this work has influenced civil society and government actors in the climate arena.

Keywords: Climate, equity, burden-sharing, right to development

Publications:

<http://sei-us.org/publications/id/24>

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Hands-on Session: What Can weADAPT Do for You and Your Research on Climate Adaptation (and the synergies with mitigation)?

Sukaina Bharwani, Tahia Devisscher, Anna Taylor, Ruth Butterfield, Richard Taylor, Monica Coll Besa and Michael Rastall

Research in progress

weADAPT can be used to grow, manage and deliver information to support climate adaptation decision-making processes. The concepts, principles, tools and guidance in weADAPT will be briefly introduced. This will be followed by an interactive hand-on session allowing exploration of climate data and adaptation projects from around the world.

weADAPT launched its new integration with the Climate Information Portal (CIP) developed by the University of Cape Town, at COP18 in Doha. This allows the visualization of downscaled climate data and projections of future climate change from multiple GCMs, for sites across Africa and Asia. In parallel, we will explore the rich, collaborative experience collated on weADAPT, linking climate information to adaptation decision-making and projects on-the-ground. Other recent improvements and plans for the technical development of the portal will also be discussed. Web 3.0 technology (specifically the semantic web) offers new opportunities to find synergies across several areas in the field of climate adaptation, to communicate science in innovative ways and to develop new partnerships and collaborations.

The weADAPT community has grown considerably over the last 12 months, with close to 2000 members and 400+ organisations represented on the platform. This is an opportunity for staff to identify ways in which weADAPT can support their work and that of their partners and networks, through the sharing of lessons learnt, the identification of similar adaptation challenges being faced elsewhere and through applications of context-relevant methodologies and tools to address climate adaptation issues.

Keywords: Climate adaptation, climate change, adaptation decision-making, vulnerability, climate information

Publication:

www.weADAPT.org/placemarks/maps

Adaptation for Whom? Governing Equity and Efficiency under the Adaptation Fund

Elise Remling and Åsa Persson

Completed research

Given the great need and limited resources available to support adaptation to climate change impacts, it is crucial that funds be deployed equitably and efficiently. While the Adaptation Fund under the UNFCCC Kyoto Protocol has several innovative features and has made quick progress in starting to disburse funds, the extent to which its allocation criteria have been applied to date is unclear. This paper evaluates the allocation of Adaptation Fund resources to date in terms of equity and efficiency. A review of the 48 proposals submitted as of June 2012, including 25 that were approved, shows countries with a wide range of socio-economic conditions and physical exposure to climate change have sought and obtained finance. While all proposals are subject to technical reviews of project quality, there is no formal and transparent methodology for allocating funds between countries or between projects at the sub-national level. It is left to project proponents to define vulnerability and estimate the economic, environmental and social benefits of the project. As a result, the proposals take very different approaches and cannot be easily compared with one another. This undermines the pursuit of both equity and efficiency. First, the paper compares the way that ‘particular vulnerability’ is justified in the approved proposals, especially in light of the minimalistic guidance available. Second, it examines statements (or lack thereof) on economic, social and environmental benefits arising from the proposed projects and which beneficiaries they would accrue to. Lessons learned will also be important for the development of the Green Climate Fund.

Keywords: Adaptation Fund, allocation, equity, efficiency, beneficiaries, vulnerability

Publication:

SEI Policy Brief: Equity and Efficiency in the Adaptation Fund: Prioritizing Among the ‘Particularly Vulnerable’

<http://sei-international.org/publications?pid=2208>

Equity and Efficiency in Adaptation Finance: Initial Experiences of the Adaptation Fund

Åsa Persson and Elise Remling

Completed research

The Adaptation Fund, established under the UNFCCC Kyoto Protocol, has by now been approving funding for adaptation projects for two years. Given its particular institutional status and specific focus on concrete adaptation, it is particularly relevant to study the initial experiences of operating it for any future up-scaling of international adaptation finance (e.g. under the Green Climate Fund), although its own resources are getting scarce. This paper tests alternative rationales for allocating funds, based on equity and efficiency concerns at both international and subnational levels, against the criteria and priorities of the Fund and decisions made on project approval. Equity concerns appear to be the primary motivation and allocation is de facto made between states rather than by considering inequity between subnational communities. However, the currency of vulnerability has not been formalised for determining equitable outcomes in allocation decisions, despite its central importance to the Fund. Instead, uniform national caps have been introduced. Such an equality approach can be considered inequitable. Finally, it is noted that the Fund is an innovative funding mechanism in several respects and the Board has developed its proposal review practices and adopted a learning-by-doing approach. However, it is still unclear what rationale informs allocation of its scarce resources. Further enhancement of transparency in the review process would clarify core priorities for current and future project proponents.

Keywords: Adaptation, adaptation finance, equity, economic efficiency, vulnerability assessment

Publication: /

THEME – TRANSFORMING GOVERNANCE

TG

The Cultural Significance of Plants and Biosecurity in the UK

Alison Dyke and Kevin Rich

Research in progress

The UK is currently reviewing its approach to plant biosecurity and in particular the regulations on what plant material individuals are allowed to bring into the country in hand luggage. The plant material that individuals do bring into the country often has cultural or religious significance. This study looks at the impact regulation changes might have and how sensitive cultural issues can be best approached with the communities involved.

To give a few examples of the sorts of issues:

- Thai curries will already never taste the same again without fresh kaffir lime leaves, banned to protect European citrus growers from the likely importation of pests;
- why do British Bangladeshis bring potatoes into the UK and could these be a threat to British potato growers?
- are plant collectors so excited by their finds that they forget the risk they might pose as invasives or the pests and diseases that might be brought with them?
- Does the cultural significance of plants change with time for migrant groups? How are biosecurity risks understood by groups and communities?

The study is giving us an insight into these kinds of questions to contribute to an effective and culturally sensitive strategy for biosecurity.

Keywords: Biosecurity, plant health, risk analysis, cultural significance

Publication: /

Sustainable Ecosystem Services and Livelihoods through Aquaculture Development

Cecile Brugere

Completed research

The development of aquaculture, in particular of shrimp farming, has critically transformed coastal ecosystems, livelihoods and the economy of Thailand. Having gone through a phase of re-organisation after disastrous disease epidemics and impacts on the environment, the sector is now striving to produce responsibly high quality shrimps whilst maintaining the ecosystem services it depends upon. Taking stock of recent developments and using a mix of quantitative and qualitative methodological approaches that could capture the complexity of the relationship between ecosystem services, sustainable livelihoods and production of a valuable aquatic commodity, we aimed to address four questions related to the overall sustainability of the sector:

- What is the impact of current shrimp farming practices on the resilience of the social-ecological system it is embedded in?
- How to account for ecosystem values and stakeholder preferences in coastal management decisions?
- What is the potential for payment for ecosystem services in the context of shrimp farming?
- What is the potential of better aquaculture management practices to positively impact on the sustainability of production systems and value chains?

It was shown that with appropriate incentives and decision-support tools, and a close examination of local contexts and system dynamics, sustainable shrimp aquaculture could allow simultaneous ecosystem services provision and livelihood improvements. While contributing to the better understanding of interactions and trade-offs between ecosystem services and economic activities, these findings have important policy implications for future coastal aquaculture development, and are of interest to policy makers, the private sector and NGOs.

Keywords: Shrimp farming, resilience, trade-offs, ecosystem services, Thailand

Publication: /

The Role of the Strategic Approach to International Chemicals Management (SAICM) in Reducing Chemical Risks in Developing Countries – the Case of Cambodia

Linn Persson, Åsa Persson and Chanthy Sam

Completed research

The number of international environmental agreements (IEAs) is growing every year, but their effectiveness varies greatly. Reducing the risks associated with production and use of chemicals is an area where a cluster of IEAs have developed over the last 20 years. The Strategic Approach to International Chemicals Management (SAICM) is the newest addition to this group, and it differs from the other chemical and waste IEAs on several key points: it is a non-binding agreement, it has a very broad scope of activities, and it has an ambitious stakeholder participation component. SAICM aims at decreasing the gap between developed and developing countries in terms of the management of chemical risks for people and ecosystems. This paper evaluates the effectiveness of the SAICM in achieving its goals through a national level case study in Cambodia, and through interviews with international stakeholders involved in the SAICM process. We assess the early implementation in Cambodia and internationally, and draw conclusions on the appropriateness of the SAICM design for the fulfillment of its goals. In addition we point at lessons learned for the continued development and implementation of SAICM as well as for the development of future IEAs.

Keywords: Cambodia, international environmental agreements, chemicals management, SAICM

Publication:

Workshop report: <http://www.sei-international.org/mediamanager/documents/Publications/SEI-WorkshopReport-ChemicalManagementInTheCambodianAgricultureSector-English.pdf>

If Pigs Could Fly – Policy Beyond Legislation in the Baltic Sea Region?

Rasmus Kløcker Larsen, Maria Osbeck, Kim Andersson and Neil Powell

Completed research

Motivated by regional cohesion objectives and concerns with environmental health a great number of projects have been funded by the European Union to address the issue of eutrophication in the Baltic Sea Region. While much funding is disbursed, the impacts of a project based approach to address deep structural institutional contingencies in a political macro-region remain uncertain. This paper reflects on three years of experience in the EU funded Baltic COMPASS project, in which SEI led the Work Package on Governance and Policy Adaptation, expected to pilot an innovative range of participatory tools for the facilitation of stakeholder engagement in creating so-called ‘win-win solutions’ on eutrophication. The findings demonstrate that multi-institutional projects represent a meso-cosmos of the regional political tensions they are expected to address. The negotiation of intra-project dynamics host the decisive moments not simply for ‘project success’ but equally the desired regional cohesion and environmental health. Structured around a series of action planning processes, policy analyses and dialogues, the work enabled the co-construction of stakeholder accounts to harness the agricultural and cultural diversity, design new incentives and funding models to reward multifunctional actions, and build cross-sectoral stakeholder platforms. During the COMPASS project, a number of dilemmas also emerged which the consortium proved ill-equipped to handle, partly owing to challenges in partnership facilitation and guiding mechanisms from the EU as principal donor. The oral presentation will be opened with the screening of a 3-minute animated film on stakeholder engagement, communicating key project lessons to a broad audience.

Keywords: Project, stakeholder, Baltic

Publication:

Draws on a large number of SEI publications from COMPASS; see for instance www.balticcompass.org

The Use of Models in Complex Social-ecological Domains: Coastal Ecosystems in Kenya and Bangladesh

Richard Taylor, John Forrester and Neela Matin

Research in progress

Funded by the 'Ecosystems Services for Poverty Alleviation' programme¹, the project Whole Decision Network Analysis for Coastal Ecosystems (WD-NACE) worked with stakeholders in applying models to help understand what shapes decision taking in 'messy' social-ecological domains. It investigated coastal production systems in Kenya (wild fisheries) and Bangladesh (shrimp aquaculture). As a 'Framework' ESPA project, the main objective was to scope and develop transdisciplinary methods and protocols for researching systems characterized by certain well-understood (and some not so well-understood) ecological and social processes, with multiple layers of organisation, cross-scale interactivity, and power and knowledge differentials.

A second goal was to understand how models could be used by local partners and stakeholders in the context of their decision taking. Because the model design included the priorities of policy-makers, policy advisors and other decision-takers, it has provided an ongoing opportunity and interaction, and there remains some interest in both case countries in WD-NACE agent-based models. This paper is focused on the second goal: presenting the uses of the models. It concentrates on pedagogic uses of the models, where the purpose is to encourage learning (making interactive, accessible models available and allowing users to construct models themselves) and the more direct uses in discussing social-environmental policy and decision-making (eliciting how current resource decisions are made, questioning and investigating possible interventions). It is concluded that both types of effort may aid in capacity building in the coastal areas.

Keywords: Coastal ecosystems, modelling, decision-making, Bangladesh, Kenya

Publication:

<http://www.sei-international.org/projects?prid=1682>

¹ see <http://www.espa.ac.uk/>

THEME – RETHINKING DEVELOPMENT

RD

Translation of the Planetary Boundaries into a Policy Framework: Risks and Opportunities

Björn Nykvist, Åsa Persson, Linn Persson and Oskar Wallgren

Research in progress

Since the Planetary Boundaries (PB) framework was proposed in 2009, the policy community has been interested in whether it is possible to downscale to national boundaries and to develop performance indicators. In this project for the Swedish EPA, we have developed such a methodology. First, we discuss whether it is at all relevant to downscale boundaries and measure performance and we assess the links between PBs and Sweden's national environmental objectives. Second, concluding that downscaled boundaries offer policy relevant information and that such a method is feasible with some reservations, preliminary national and per capita boundaries are presented for four of the original seven quantified PBs. For the remaining PBs, indicators are proposed without downscaling the boundaries, e.g., capturing contributions to the relevant global drivers. The third part of the study examines whether proposed PBs are currently matched by existing international environmental agreements, both in terms of relevant quantified targets, adequate level of ambition and implementation effectiveness. It is concluded that all but one of the PBs are addressed in some way, but only for one PB we see successful implementation, resulting in non-transgression of that PB. We conclude by reflecting on whether it is appropriate to translate the PB framework into a more operational policy framework by noting some risks and opportunities for future research.

Keywords: Planetary boundaries, national performance, footprints, environmental objectives, international environmental agreements

Publication: /

Old Economics for New Problems

Eric Kemp-Benedict

Research in progress

In a search for analytical elegance, economics during the 20th Century shifted from a methodologically diverse field that favored a balanced mix of quantitative and qualitative analysis to a methodologically narrow field based on mathematical formalism and methodological individualism. The results of the formal approach were almost uniformly disappointing, but simplifying assumptions used to obtain clean mathematical results have been converted into widely held, but questionable, beliefs, such as the representative agent and the rational actor who knows everything about both the present and the future. The “old” economics is alive and well, albeit with a small number of practitioners: Post Keynesian theory, which builds on the insights of Keynes and others; institutional economics, deriving from Veblen’s work; and evolutionary economics, inspired by Schumpeter. This presentation presents a critique of mainstream economic ideas that draws on the several critiques available in the economic literature, and summarizes alternative approaches. It then argues that the “old” economics is much better suited to understanding economic transitions than is the mainstream approach, and discusses inequality across a low-carbon transition from a Post Keynesian perspective.

Keywords: Inequality, low-carbon transition, post-Keynesian economics, heterodox economics

Publication: /

Marine Ecosystems Provision of Space – Human Benefits and Impact on other Marine Ecosystem Services

Evelin Urbel-Piirsalu, Tea Nõmmann, Aljona Karlõsheva and Sulev Nõmmann

Research in progress

Marine space and waterways provide one important provisioning ecosystem service for human beings. Nowadays human society uses marine waters in much more diversified ways than just for marine transport. Growing use of marine waters has many socio-economic benefits but also increases pressures and impacts on the marine environment. The aim of this study is to perform a socio-economic analysis of marine space as one selected provisioning ecosystem service. During the study, a clear description of marine space as a provisioning ecosystem service is provided as well as its links to good ecological status (GES) descriptors and indicators are determined. Furthermore, drivers, pressures, status, impact and response (DPSIR) are analysed for the use of Estonian marine space. As a conclusion, possible policy actions (response) are analysed to provide a sound basis for the development of programme of measures under the Marine Strategy Framework Directive. The results intend to contribute to the harmonization of Estonian, Latvian, Finnish and Swedish marine strategies for the shared marine waters.

Keywords: Marine waters, ecosystem services, provision of space, socio-economic analysis

Publication: /

RESEARCH ACROSS THEMES

WEAP and LEAP: A New Toolkit for Assessing the Water-Energy Nexus

Charles Heaps, David Purkey, Jack Sieber and Vishal Mehta

Completed research

We will deliver a short paper or poster session describing SEI's new toolkit for integrated analysis of the Water-Energy Nexus. The toolkit consists of new highly integrated versions of SEI's WEAP and LEAP modeling tools. The integrating work was developed under funding from the United States National Oceanic and Atmospheric Administration and the California Energy Commission. This new toolkit, which was launched at World Water Week in Stockholm in Summer 2012, allow for simultaneous consideration of questions such as:

- How do multiple use water system operations impact hydropower generation?
- How will other generation sources be dispatched based on hydropower availability?
- How do the water requirements of other generation sources fit within the broad water management context?
- How will the energy requirements of different water management strategies interact with the energy system?
- What are the greenhouse gas implications of different water and energy management actions?

This paper/poster session will describe the functionality and some of the key potential uses of the new toolkit.

Keywords: Energy-water nexus, LEAP, WEAP

Publication: /

Who is Responsible for Deforestation in the Amazon? New Spatially Explicit Approaches to Understand Amazonian Social-ecological Systems

Javier Godar and Oskar Wallgren

Research in progress

The on-going degradation of the Amazon threatens ecosystem services (ES) of global importance, and is mostly driven by socio-economic interactions involving a large array of actors. Current policies for rural development in the Amazon fail to fully acknowledge that different Amazonian actors produce very different economic, social and environmental outcomes. Given the magnitude of environmental impacts caused by human activities in the Amazon, policies more explicitly relying on social-ecological systems (SES) approaches to assess actor responsibility for deforestation will likely produce more equitable and environmentally sound outcomes. However a very important shortcoming of existing SES studies is the poor compatibility of methodologies and data between social and natural sciences.

To address this shortcoming this study seeks to improve the effective up-take of recent methods, scientific findings and databases. We apply new graph-based spatial approaches integrating recently available socio-economic databases at the census scale with multi-temporal land use information, assessing actor-specific socio-environmental tradeoffs. Maps obtained through morphological spatial pattern analysis, as well as selected landscape metrics, are used as proxies for ES provision.

This research contributes to disentangle complex Amazonian SES dynamics that were hidden in previous research due to methodological constraints. In particular, it quantifies the actor-specific historical responsibility for deforestation and decrease of ES in the Brazilian Amazon. Against a background of new efforts for agrarian reform, ongoing deforestation and climate change, we discuss the implications of our findings for climate mitigation and adaptation policy. On a more general level, we propose a quantitative and analytical methodological framework that could enrich the basis on which decisions between alternative rural development strategies are made.

Keywords: Deforestation, Amazon, social-ecological systems, graphs, climate policy

Publication: /

From Virtual Land Footprint of Food Consumption to Spatially Explicit Ecosystem Subsidies: Is it Methodologically Possible?

Javier Godar and Oskar Wallgren

Ideas for future research

It is widely acknowledged that food consumption and agricultural production in most developed countries is highly dependent on inputs from agricultural areas of resource-rich but finance-poor countries. This dependence has been measured in terms of land footprint (area), carbon/GHG footprint and more widely in economic terms. These and other similar indicators have two major shortcomings. First, they are not spatially explicit, so they do not account for the intra-regional variability of ecosystem services provision and of socio-environmental impacts in the areas of agricultural production. This shortcoming is particularly prominent when disentangling if traded agricultural commodities are linked to agricultural expansion and LULC change, often in areas of great socio-environmental value. Secondly, they do not explicitly consider the varying socio-economic implications for local rural populations of the transfer of ecosystem services.

To promote scientific discussion and collaboration among SEI researchers in these topics, we present a practical example to discuss the design of potential quantitative approaches to link agricultural expansion in forested areas of South America and food consumption in the Nordic countries. The preliminary approach is based on: i) Crossing fine resolution agricultural production data, socio-economic censuses, trade/consumption data and detailed multi-temporal LULC maps in a GIS environment ii) Applying coarse indicators of ES provision at the landscape level iii) Understanding the trade of agricultural commodities as a flow of ecosystem services from the provisioning region, which thus can be modeled. Selected modeling tools that potentially consider the full pathway of ecosystem services from South America to the Nordic countries, as well as the mutual interactions and tradeoffs between different ecosystem services, will be reviewed.

Keywords: Land footprint, ecosystem subsidies, food, rural development, South America

Publication: /

Politics, Governance, Experiences and Responses to Flooding in ASEAN – A Case Study of Selected Villages

Albert Salamanca

Research in Progress

Flooding is a common experience in monsoonal Southeast Asia. In some places, floods are beneficial to households as they enrich fishing grounds and replenish sediments such as the inland fisheries of Cambodia. In other areas, it can bring destruction to industries, settlements and livelihoods such as the massive flooding experienced by Thailand in 2011 and recently in the Philippines.

This paper will outline the results of the case study to understand how flooding and migration intersect in Lao PDR, where areas of sudden onset and long duration floods occurred were investigated. The overarching goal of the research is to develop a theoretical understanding of the linkages between flooding and migration in ASEAN derived from a range of empirical case studies involving Lao PDR, Cambodia, Indonesia, Myanmar, the Philippines, Singapore, Thailand and Vietnam.

As “social and natural assemblages”, flooding is underpinned by environmental conditions and politics, policies, and decisions. The intersection of flooding and migration may take place both in situations where floods have ‘beneficial’ impacts on households and when floods disrupt livelihoods and community life. But such intersection is not sufficiently straightforward in the case of Lao PDR where vulnerability is contingent on ethnicities and historical policies on infrastructure development and upland development. In other words, the governance of identities, spaces and natural resources impinge on the vulnerability of [case study] households to flooding and that migration only appears to occur when tipping points are reached. What these tipping points are needs to be further investigated.

Keywords: Flooding, migration, Lao PDR, ethnic minorities, disaster

Publication: /

Should I Bring an Umbrella? Applying Insights from Decision Science to Water Management

David Purkey, Marisa Escobar, Francisco Flores, Laura Forni and Brian Joyce

Research in progress

Within the water management profession the recognition that changes in climate and hydrology will impact the practice of water resources planning has called into question the legitimacy of the deterministic toolkit that has been the analytical workhorse of the trade. Once the assumption of hydrologic stationarity was questioned, other assumptions regarding population growth, patterns of land-use change, economic development and political context also began to appear uncertain. This talk will present general insights gained in three settings where SEI has attempted to apply techniques emerging from research on strategic decision making under uncertainty (DMUU) to the practice of water resources planning: California, Peru and Bolivia. In these settings decision makers are grappling with issues such as infrastructure investment, watershed conservation, and environmental flow requirements. The talk will be structured around a process that begins with efforts to identify key actors in a decision space, continues with problem formulation based on the XLRM decision analysis framework, moves to the construction of a modeling platform, typically using WEAP, run under a large ensemble experimental design, and culminates in the visualization of model output in concert with key actors as part of an iterative decision analysis process. The talk will attempt to distinguish DMUU from more common risk assessment and scenarios analysis techniques and to suggest way that DMUU could be useful in other research areas undertaken by SEI. The goal is to stimulate a discussion of how SEI could benefit from more intentional consideration of insights from decision science in our research.

Keywords: Uncertainty, decision science, water, climate

Publication: /

Long-term Monitoring of a Bioenergy Project in Bagomoyo, Tanzania

Stacey Noel, Francis X. Johnson, Jacqueline Senyagwa, Matthew Fielding and other SEI- staff (not specified)

Ideas for future research

This proposal is for a long-term monitoring project to assess the impact of a large-scale agricultural investment in sugarcane production due to be undertaken by EcoEnergy that is expected to begin in 2014 in the area of Bagomoyo, Tanzania. The aim of this project is to provide the evidence base to support Government of Tanzania decision making and policy processes on this and similar investments and to inform other pertinent stakeholders (including EcoEnergy itself, other investors, local communities, civil society organizations as well as individual farmers) of social and environmental changes resulting from the large-scale agricultural investment. The results could also be applied to similar projects throughout sub-Saharan Africa. The monitoring will focus on 4 key areas of sustainability: (i) livelihoods; (ii) energy and greenhouse gas balance (iii) water resources and (iv) biodiversity. The work would be led by the Stockholm Environment Institute's Africa Centre, supported by staff from SEI centres in Sweden, UK and US, and involve a consortium of local partner organisations, including academic and civil society organisations.

Keywords: Sustainability, monitoring, bioenergy, Tanzania, investment

Publication: /

Ecosystem-based Strategies and Innovations in Water Governance Networks for Adaptation to Climate Change in Latin American Landscapes

Tahia Devisscher, Monica Coll Besa and Sukaina Bharwani

Research in progress

In the next three decades, tensions and social conflicts around watershed services in Latin America are likely to arise due to the combination of future development and climate change impacts. This is one of the key insights that stem from regional consultation with Latin American civil society organizations (CSO) and scientists in 2010. The EcoAdapt project was developed to address this challenge. This project, which started in 2012 and will run until 2015 in three Latin American landscapes, engages local communities, CSOs, policy-makers and scientists in interdisciplinary action-research to increase their collective capacity to adapt to climate change by focusing on watershed ecosystem services.

In the first year, the project focused on generating relevant information to support climate adaptation decisions in the project sites. Several methods were applied using a participatory approach to integrate local knowledge into the analysis so that research is more likely to be credible and legitimate for the particular socio-institutional context within which it is used. This approach not only enabled co-generation of information and knowledge, but also contributed to collective learning and helped to strengthen science-policy-civil society networks interacting at multiple scales.

During the first project phase, we applied participatory network mapping to explore multi-scale relationships between different actors that shape the management of watershed ecosystem services in the three project sites. The results capture the different actors' perspectives, power dynamics, central players in the social networks, and barriers and opportunities to improve collaboration between the actors that directly or indirectly influence water governance. The analysis resulting from network mapping and other methods implemented in this phase will inform subsequent phases, which include participatory modelling, hybrid forums for social validation and implementation of pilot actions.

Keywords: Water governance, climate adaptation, participatory network mapping, collective learning, knowledge co-generation, Latin America, ecosystems

Publication: /

Climate Change and Forests in the Congo Basin: Synergies between Adaptation and Mitigation

Tahia Devisscher, Sukaina Bharwani, Monica Coll Besa, Richard Taylor and Ruth Butterfield

Research in progress

In the last decade, growing interest in reducing carbon emissions from avoided deforestation and forest degradation has created the opportunity for new synergies between adaptation and mitigation strategies in the context of forests and climate change. The COBAM project started in 2011 with the aim of exploring these opportunities and possible conflicts in the Congo Basin. The ultimate goal is to contribute to an appropriate response to climate vulnerability in this region and the formulation of forest policies that promote equitable impacts and co-benefits, including poverty reduction and protection of local livelihoods and rights.

This paper draws on the first phase of the COBAM project, which studied the current vulnerability of local communities in three landscapes of the Congo Basin. The research work followed a participatory approach to explore differentiated vulnerability to multiple stressors, focusing on past trends and disturbances, present conditions, social capital and coping strategies. The participatory methodology was complemented with semi-structured interviews and household surveys.

The second phase of the project will then be discussed showing how qualitative information from the first phase will be integrated with tacit knowledge on adaptation decision-making formalized by applying computer-aided knowledge elicitation tools. This integration will provide input for the development of an agent-based model to explore synergies and conflicts between different adaptation and mitigation strategies under a range of future scenarios. This phase will also include participatory scenario building and validation to identify synergistic strategies that are relevant and credible in this context. In the last phase of the project, the different outputs will be further analysed to generate recommendations that will inform national- and regional-level policies on forests, climate change and development.

Keywords: Vulnerability, decision-making, knowledge elicitation tools, agent-based modelling, mitigation, adaptation, synergies, forests, Africa

Publication: /

Building Resilience in Disaster Risk Reduction (DRR): Towards a New SEI Initiative

Arno Rosemarin, Guoyi Han and Åse Johannessen

Ideas for future research

It has been widely recognized that the gap between existing knowledge and actions on the ground is a main cause underlying the escalating natural, man-made and climate-related disaster losses worldwide. This also involves gaps in capacity, governance, learning and management of the systems we depend on for food, water, energy, transportation, etc. Experience with disasters shows that available scientific knowledge is not being made available nor fully utilized and social and institutional learning is not taking place fast enough. There is an ongoing discussion that is re-examining the way we respond to disasters and what impacts this response has on recovery and long-term development. Central to building resilience in disaster risk reduction (DRR) is the transfer of knowledge to help make large-scale changes in the way we value and manage our socio-ecological systems. How then can SEI add capacity and value to the process of bridging sustainable development and humanitarian response in disaster situations? What are SEI's own capacities to work in this zone and what can SEI and its institutional networks provide in terms of expertise at the global level? What are the main topics to focus on? What are the needs and opportunities and next steps that can be taken in order to develop an SEI-wide programme? This presentation is to report on the ongoing discussion, initiated recently at the Stockholm Center, to develop this new initiative.

Keywords: Disaster risk reduction, resilience, translation mechanism, coordination mechanism

Publication:

Social learning towards a more adaptive paradigm? Reducing flood risk in Kristianstad municipality, Sweden, Åse Johannessen and Thomas Hahn: <http://www.sciencedirect.com/science/article/pii/S0959378012000933>

Addressing Sustainable Development Challenges in the Mekong Region: Sustainable Mekong Research Network in Action

Chayanis Krittasudthacheewa, Ornuma Polpanich, Pin Pravalprukskul, Agus Nugroho and Annette Huber-Lee

Research in progress

Decision makers and policy developers in the Mekong Region are facing great challenges in finding ways to maximize benefits from development, while maintaining ecosystem integrity and minimizing the impact on the livelihoods of marginalized people, who are heavily dependent on ecosystem services and thus more vulnerable to abrupt changes in the management and allocation of available resources for development. This paper demonstrates the efforts made by the partners of the Sustainable Mekong Research Network (SUMERNET), a long-term research network dedicated to addressing these challenges. The SUMERNET was established by 14 founding members in 2005 and its Secretariat is being hosted at Stockholm Environment Institute –Asia. It has an ambitious vision to achieve sustainable development through stronger knowledge-based policy processes. With a support from Sida and CDKN, SUMERNET continues to expand its partnerships with over 40 organisations and supports more than 100 Mekong riparian nearly 20 cross-border collaborative projects. From the wide vista of sustainable development challenges, SUMERNET currently focuses on 5 areas: ecosystem services; trans-boundary issues; poverty and livelihoods; urbanisation; and energy and climate change. Ten collaborative projects are at the stage of delivering their final results to address specific policy needs, which were identified jointly by their boundary partners and policy makers. Through the synthesis of current findings of these ten projects, this paper will address the complexities of resource management and governance issues and assist further in-depth understanding of the politics and discourses of resource use, sharing and management, and livelihood concerns in the Mekong region.

Keywords: SUMERNET, Mekong, sustainable development, cross-border, livelihoods

Publication:

<http://sumernet.org>

Does SEI's Right Hand Keep a Check on its Left?

Clarisse Kehler Siebert, Marion Davis and Robert Watt

Ideas for future research

Can (should?) SEI strengthen the coherence of our policy messages? Do we give and seek expertise from colleagues (at 'home' and in other centres) when appropriate? When SEI Researcher A draws different conclusions from SEI Researcher B, do they identify this fact and have a robust debate about it? For the most part, we'd like to answer 'yes' to the above, while in reality, time, budget and internal communications turn the answer into 'sometimes' at best, and 'no' at worst.

This is not so much an abstract for a future research idea, but rather an opportunity at the SEI Science Forum 2013 to contemplate how we identify or miss synergies in an institute with one name but diverse geography, cultures and disciplinary approaches. The purpose is not to assess what has and has not worked, but rather to take advantage of cross-centre participation to discuss coherence in the policy messages we develop. We propose that encouraging regular exchange of diverse SEI perspectives on various topics will help achieve some of this coherence. One candidate format to do this is a live (online between SEI centres) debate among SEI researchers, to be tried within a few weeks of the Science Forum. What should the topic be? How can we capture the insights and distill these into coherent 'SEI' messages? The intended, longer-term outcome is a facilitated, cross-centre and cross-thematic initiative throughout 2013, the results of which will be published as a newsletter, series of discussion papers, online web package... all ideas welcome!

Keywords: coherence, introspection, One Institute

Publication: /

SEI Research on Short-Lived Climate Pollutants and Inputs to CCAC

Johan Kuylenstierna (York), Kevin Hicks, Lisa Emberson, Harry Vallack, Robert Watt, Aaron Atteridge and Måns Nilsson

Research in progress

On the back of the UNEP Assessment report and the paper in Science (Shindell et al, 2012, Science 335), SEI has been very active in the development of the Climate and Clean Air Coalition, from attending the launch at the State Department to participation as one of 8 members of the CCAC's Science Advisory Panel, and supporting the CCAC through the development of various initiatives including a project on National Action Planning (630,000 USD project) which links closely to US EPA work on co-benefits, the awareness raising Initiative, brick kiln initiative as well as developing regional dialogues with the CCAC on SLCPs (two held – Accra and Bogota – next one in Bangkok) under a grant with the US State Department. SEI is also helping CCAC/UNEP develop a science initiative, which intends to undertake global updates and regional assessments, and having input to the cookstove initiative being planned. Underpinning this is the SEI internal NOVA project which initiated many of the ideas being taken forward, including linking the policy research of SEI to the scenarios of implementation of key measures to reduce SLCPs. Ideas being taken forward include an SLCP scenario tool based upon LEAP that will allow countries to assess their benefits and strategies for reducing short-lived climate pollutants (SLCPs). This talk will introduce the main findings of the Assessment as a springboard to the further development of the science and the potential of the tools and approaches under development to enhance SEI's research.

Keywords: SLCP, health, climate, toolkit, scenarios

Publications:

UNEP WMO Integrated Assessment of Black Carbon and Tropospheric Ozone

UNEP report on Near-Term Climate and Air Quality Benefits: Actions to Control Short-Lived Climate Forcers

Shindell et al (2012) 'Simultaneously mitigating near-term climate change and improving human health and food security', Science 335

Birth Deficiencies, Health Effects and Escalating Pollution in China

Karl Hallding, Linn Persson and Guoyi Han

Ideas for future research

Over the past decade the birth defect rate at birth for hospital births has increased from just below 1% in 1996 to almost 1.3% in 2004 – a rate that was moreover higher in rural compared to urban areas. If birth defects detected later are included the rates are as high as 4 to 6 percent. Wang Bin, director of the Ministry of Health's Women's Health Division, has linked environmental pollution to a 25% increase in birth defects that was recorded between 2001 and 2003. The situation is particularly bad in Shanxi province where newborn birth defect rates of almost 1.9% in 1996 are among the highest in the world.

The type and rate of birth defects provide an indication on the seriousness of environmental problems, but as information from China is still scarce, filled with obscure statistics, and either based on sweeping statements or episodic evidence of very high levels in specific areas, it is hard to really argue about the possible health effects and social consequences of increasing environmental pressures in China. Our idea therefore is to put together an interdisciplinary project team to review the situation in China from a social, environmental chemistry, as well as human health perspective, drawing on our in-house strength in each of these aspects.

Keywords: Pollution, health, China

Publication: /

Preparing for a Low-growth Society

Karl Hallding

Ideas for future research

This research topic is not about arguing in favour of de-growth or a zero growth future. In fact growth is good and has given us a lot of what we understand as a welfare society. Instead it is about the consequences of lower growth - globally and in the global north in particular. There are many indications of growth slowing down, partly as a long-term trend. But more importantly it is likely to be the result of crumbling ecosystems and increasing costs for extracting fundamental resources, particularly energy. Actually it is the logical outcome of the law of diminishing returns, particularly a lower energy return on investment (EROI). So the fundamental idea with this project is to explore different scenarios for adapting to a low-growth future. Stagnation or de-growth is likely to be very painful processes, so the policy question here would be how to ensure some sort of well-being in a world of stagnating economic activity. How would we get energy? How to manage the environment? What could we do today to prepare for a lower growth future?

Keywords: Economy, energy, EROI, ecosystem services, scenarios

Publication: /

Agro-energy Investment and Low Carbon Development: a Scoping Assessment on the Makeni Project in Sierra Leone

Francis X. Johnson, Matthew Fielding and Jacqueline Senyagwa

Research in progress

Agro-energy projects in Least Developed Countries bring much needed investment and infrastructure, while at the same time they bring rapid changes in the affected region, including displacement and social transformations. We have conducted a scoping study in Sierra Leone, a extremely poor post-conflict country in which a new sugarcane energy project has been developed. We have conducted a scoping assessment based on a visit to the project site and interviews and meetings with policy makers, local residents, and the private company that owns the project (Addax). We identify some key factors and uncertainties related to the development shifts that are occurring from this project, and consider how they might support long-term low carbon pathways.

Keywords: Low carbon development, bioenergy, West Africa, social transformation

Publication: /

A Framework for Disaster Risk Reduction in Water Sanitation and Hygiene (WASH): Enabling Public and Private Partnership through Social Learning

Åse Johannessen, Arno Rosemarin, Åsa Gerger Swartling, Guoyi Han and Gregor Vulturius

Research in progress

Resilient Water Sanitation and Hygiene (WASH) provision is identified as a major priority for Disaster Risk Reduction (DRR) in cities (UNISDR 2012). While much effort in the past have focused on providing access to WASH, the need and importance for integrating DRR into the WASH system development are now increasingly realized. Not integrating certain elements to ensure DRR, investments can be undone by hazards, risk blind development or mal-adaptations at city or river basin level. In this paper, we constructed a multi level governance framework adapted from the PAR model (Blaikie et al 1994, 2004) to illustrate how disaster risk is formed by WASH system hazards impacting on vulnerable populations. We then situate the PPPs in such framework and examine the role of social learning, as a key ingredient in resilience building, in exploring and fostering innovative and effective PPPs. The central question is: “what are the key social learning barriers and opportunities for private and public partners to boost DRR in WASH?” Through literature review, empirical evidence from case studies and semi-structured interviews with key practitioners, we identify some of the gaps where social learning can provide step changes and strategic innovative capacity. Our results indicate that PPPs which: 1) provide access to WASH through empowering community providers 2) promote multiple robust sanitation options through improved cross-learning 3) acknowledge the role of ecosystem management in the river basin and 4) enable pro-poor sharing mechanisms - are key building blocks for resilient WASH systems.

Keywords: Public private partnerships, water, sanitation, innovation, disaster risk reduction

Publication: /

Spatial Scenarios – Giving Space a Place in Decision Making

Annemarieke De Bruin, Jennie Barron and Steve Cinderby

Research in progress

What will happen in ten years if the irrigation scheme is greatly enlarged in the Mkindo watershed in Tanzania or if Dutch elm disease continues to be managed in the same way as the last five years? Both these scenarios can be answered through an interview; however this fails to capture the interaction between place and decision making.

The methodology that combines focus group discussions with maps to develop spatially grounded scenarios was developed for the project AgWater Solutions and is currently used to investigate the options for managing elm disease in a changing economic and environmental climate. The method has been useful in capturing the impacts of a particular environmental management change as well as the areas that would benefit, remain unaffected or be negatively affected.

Having a map as part of the discussion has proven to ground the discussion in physical and social realities of the location and has highlighted the differences between areas within the study context. For example, when stakeholders talked about impacts of an increase in electrical pumps on tea growers in India, effects were especially concentrated in tea growing areas downstream. Suggested factors to mitigate negative effects could then focus on the stakeholder group in that particular area, allowing a more targeted approach to decision making.

Keywords: scenarios, participation, environmental change, decision making

Publication:

The scenario work of the AgWater Solution project is described in: Cinderby et al, 2011. Participatory geographic information systems for agricultural water management scenario development: A Tanzanian case study. *Physics and Chemistry of the Earth, Parts A/B/C*, 36:14-15, 1093-1102.

<http://sei-international.org/publications?pid=1787>

Exploring the Nexus of Water, Food and Energy Investment in Thailand

Chayanis Krittasudthacheewa, Orn-uma Polpanich, Eric Kemp-Benedict and Pin Pravalprukskul

Completed research

Continually increasing energy and food demands are driving a marked change in land-use in Northeast (NE) Thailand. As the long-term national energy policy continues to promote ethanol and biodiesel production, there is a trend of local farmers altering their food cropping to either sugarcane or cassava. This study explored the possible futures of NE Thailand resulting from the energy policy and water diversion from the Mekong River. A combined top-down physically-based model (Water Evaluation and Planning System, or WEAP) and a bottom-up livelihood model (Bayesian Belief Network, or BBN) was applied to assess the implications to hydrology, land-use and poverty level. Results from WEAP show that streamflow and unmet water demand are not significantly affected in land-use change scenarios. However, unmet water demand does significantly increase with an expansion of irrigated rice and other crops. With additional water transferred from the diversion scheme, it can significantly affect the water balance and fully satisfy the increased water demands. For small-scale water storage scenario, it can help transfer water from the wet season to supply the dry season crop to certain extent within the sub-basins, but still insufficient to fulfill all additional water demands. There are poverty strategies that do not significantly affect the water balance, and current shortages can be alleviated using water resources in the basin to a certain extent. Water resource development plans should include the promotion of small irrigation projects in farmlands and villages as far as possible for more sustainable project implementation in the long run.

Keywords: northeast Thailand, nexus, WEAP, BBN, bioenergy crop

Publication: /

The Impact of Trade on Biodiversity Overseas

Elena Dawkins, Chris West and Simon Croft

Research in progress

Research and policy questions are becoming increasingly focused on the global implications of local and regional activities. Global climate change is a key example, but the research agenda is rapidly expanding to cover other environmental systems and impacts such as biodiversity loss, water use, environmental toxins, and the phosphorus and nitrogen cycles.

Increasingly complex supply chains, and the widening gap between the point of consumption and the impacts of production, means that any local environmental impacts can occur far from where the demand for a good or service originates.

Whilst methods and models for mapping the environmental impacts international trade have developed considerably over the past decade, particularly in the field of consumption-based emissions accounting, other impacts such as biodiversity loss or nitrogen cycles are yet to be fully explored. The reasons for this are partly due to data limitations and also the variation in impacts by locality, neither of which are as relevant to carbon, but very important for regionally variable indicators like biodiversity or water.

This research presents a first step toward improved insight into links between trade, consumption and biodiversity loss – the impacts that demand in one country indirectly have on land use, resources and production, and potentially biodiversity in another. To assess the direct and indirect impacts of consumption across a range of products simultaneously we are developing a global financial trade model, which will be linked to physical production and use data (from FAO) and indicators of biodiversity.

This model will build on the latest developments in consumption-based accounting, tracking virtual or embedded flows of land and other resources across the globe. The approach aims to overcome two of the key difficulties with current ‘footprint’ approaches (1) the lack of information about the local effects – linking an aggregate indicators to a local-level impact and (2) the limited product level detail available within the models.

This research should improve understanding of how global economic growth and consumption puts increasing pressure on resources at home and abroad; contributing evidence to the debate on responsibility for environmental impacts and support to reduce those impacts.

Keywords: trade, biodiversity loss, consumption

Publication: /

A Relational Approach to Understanding Complex Water Management Problems

Christian Stein* and Jennie Barron

Research in progress

There is an increasing need to develop research tools to analyse the multi-actor, multi-sector and multi-scalar governance arrangements that are inherent in water resources management. In this paper we will demonstrate how social network analysis (SNA), a well-established technique from sociology, can be used to empirically map social networks relevant for governing water resources. The objective is to contribute to a better understanding of how to support a structured, yet context-specific approach to reforming existing institutional arrangements for water resources governance.

We applied social network analysis (SNA) to systematically analyse cross-scale and multi-stakeholder governance networks from four meso-scale watersheds (100-10.000 km²) in Sub-Saharan Africa. Our analysis is based on empirical social network data from rapidly transforming agricultural landscapes in Burkina Faso, Ethiopia, Tanzania and Zambia. Using questionnaires and semi-structured interviews, we generated social network data on collaborative relations between state agencies, NGO's, private companies, farmers groups and traditional authorities. With the help of SNA software, we assessed how existing social structures provide opportunities and constraints for individual actors, groups, as well as the whole networks to manage water resources.

SNA has proven valuable for analysing complex water governance arrangements. Furthermore, there is scope to adapt this method to other settings where numerous stakeholders are involved to jointly manage interdependent social-ecological systems.

Keywords: Water resources management, governance, social network analysis, Sub-Saharan Africa, nexus

Publication:

Stein, C., Ernstson, H. & Barron, J., (2011). "A social network approach to analyzing water governance: The case of the Mkindo catchment, Tanzania." *Physics and Chemistry of the Earth, Parts A/B/C*, 36(14-15), pp.1085–1092.

* Consultant/former SEI and SRC

European Footprints – Opportunities for Sustainable Consumption and Policies Coherence

Holger Hoff, Ellie Dawkins, Åsa Persson, Nina Weitz and Chris West

Research in progress

This feasibility study (for a larger WWF project on “European Policies for One Planet”) addresses the effects of EU policies and consumption on external resources and environment. Existing ecological, water, or other footprints (e.g. Hoekstra, Wackernagel) can’t adequately guide sustainable consumption, production and trade, since neither

- local impacts in the producing regions, nor
 - complex supply chains with their intermediate processing steps and locations, nor
 - final consumption
- are represented at the required level of detail.

We develop and test an improved footprint method, initially for two pilot regions – Amazonia/Cerrado and Heart of Borneo, by

- characterizing natural capital (land/soil, carbon storage, nutrients, water, biodiversity/ecosystems) dynamics, vulnerabilities and “sustainability boundaries”, as impacted by export agriculture and foreign direct investment
- tracing flows of “virtual natural capital” through the supply chains to consumers by means of multi-regional input-output analyses (based on EUREAPA).

WWF is also interested in downscaling planetary boundaries to the pilot regions for identifying critical thresholds and possibly inter-linking different footprints. As part of this feasibility study, we screen EU policies for their potential direct and indirect impacts on natural capital, via consumption, substitution, trade, investment and production. With that we expect to also identify opportunities for improved policy coherence, e.g. for trade policies to support rather than counter-act EU environmental standards in other countries.

We have started from the Common Agricultural Policies and Renewable Energy Directive for the initial phase, expecting to expand to a thorough impact analysis of a wider range of policies and more regions in 2013.

Keywords: footprints, natural resources, supply chains

Publication: /

Agricultural Water Management Development to Scale: Past Bright Spot Impacts and Future Strategies to Safeguard Multiple Sustainability Goals

Jennie Barron, Annemarieke De Bruin, Stacey Noel, Howard Cambridge, Steve Cinderby, Victor Kongo, Christian Stein*, Monique Mikhail[^] and Devaraj de Condappa^o

Completed research

In sub-Saharan Africa, parts of Asia and Latin America where poverty-affected rural livelihoods largely depend on local food production for income and livelihood benefits, there is an urgent need to ensure agricultural improvements occur that generate income as well as environmental sustainability. Agricultural development, in particular related to water resources, is often associated with both positive and negative impacts at local, regional and global scale. Yet, there is little systematic analysis of what gains and what dis-benefits emerge due to agricultural water management interventions in both rainfed and irrigated farming systems.

The AGWATER SOLUTIONS initiative funded by the Bill & Melinda Gates Foundation (2009-2012 <http://awm-solutions.iwmi.org/>) looked at the evidence across multiple cases of the social and biophysical impacts of AWM interventions taken to landscape scale. The evidence was found to be biased towards social or biophysical impacts (Barron et al 2010). Enabling multiple AWM interventions at a location resulted in more positive impacts than a single intervention.

A synthesis was also done of the available frameworks to monitor and evaluate (M&E) multiple impacts of AWM interventions. M&E frameworks turned out to be similar but biased towards the development agenda of the organisation that designed it (de Bruin et al 2011). These findings were cross-checked with 3 watershed studies in Burkina Faso, Tanzania and West Bengal (de Bruin & Barron 2012). In this presentation a set of recommendations for best practises in M&E for AWM investments at the landscape scale are proposed.

Keywords: agricultural water management, rural poverty alleviation, landscape sustainability, development, interdisciplinary monitoring and evaluation of impact

Publications:

AWM case database: <http://waterdata.iwmi.org/gates/>

AWM publications:

M&E Policy brief <http://awm-solutions.iwmi.org/Data/Sites/3/Documents/PDF/publication-outputs/learning-and-discussion-briefs/monitoring-and-evaluation-july-2012-final.pdf>

De Bruin et al 2012 <http://awm-solutions.iwmi.org/Data/Sites/3/Documents/PDF/publication-outputs/learning-and-discussion-briefs/review-of-awm.pdf>

Barron et al 2010: <http://awm-solutions.iwmi.org/Data/Sites/3/Documents/PDF/publication-outputs/partnerpublications/final-awm-watershed-me-paper.pdf>

Barron et al 2010 <http://awm-solutions.iwmi.org/Data/Sites/3/Documents/PDF/publication-outputs/learning-and-discussion-briefs/awm-interventions.pdf>

* Consultant/former SEI and SRC, [^] Former SEI staff, ^o Consultant

Targeting and Scaling Out Agricultural Water Management Successes in Volta and Limpopo

Jennie Barron, Eric Kemp-Benedict, Annemarieke De Bruin, Steve Cinderby, Amanda Fencl, Joanne Perry and Guozhong Wang

Research in progress

A critical issue in rural development and agriculture is to fast-track existing knowledge of best practises for increased production, productivity, income and sustainability in current low yielding rainfed and irrigated agriculture in sub-Saharan Africa. Under the Challenge Programme Water and Food (CPWF)/CRP5, SEI leads two projects on ‘Targeting and scaling out’ which encompass several innovative features in research for development and research for policy:

- The project developed an online decision support tool for targeting and scaling-out agricultural water management interventions (AWM) in areas where they are likely to succeed using a Bayesian approach that integrates social and ecological factors, national data, and basin expertise
- The project is using elicitation tools to build the Bayes model and triangulated with participatory GIS data to strengthen evidence behind the model
- The project is part of the overall CPWF process design of research-for-development (R4D) and policy (R4P) impact, with explicit identification of targeted stakeholders and proposal design

This presentation will provide initial draft results of the Bayes decision support tool development, and the key AWM development trajectories as identified in Volta and Limpopo by the project research. It will share the SEI learning on the research-process-for-impact as undertaken with partners in Volta and Limpopo basin, and propose lessons learned for engagement in building research evidence for policy and development impact in the particular field of agricultural and rural development in Sub-Saharan Africa.

Keywords: agricultural water management, rural development, sub Sahara Africa, Bayes, decision support

Publications:

<http://waterandfood.org/basins/volta/>

<http://www.fanrpan.org/projects/lbdc/cpwf/> and <http://waterandfood.org/basins/limpopo-2/>

The Planetary Boundary of Chemical Pollution - Does it Exist?

Linn Persson

Research in progress

In a 2009 study, the United States Centre for Disease Control (CDC) found all of the 212 substances investigated to be present in the bodies of parts of the US population. Chemicals used in everything from building materials to toys, clothes and food, do not only end up in human bodies but also in other organisms and in the physical environment. Some of the widespread chemical pollution has predictable effects, e.g. increased cancer incidence caused by certain carcinogenic substances. Sometimes, the effects are not predicted at all and society is faced with a “chemical surprise”, like when the CFCs were discovered to cause thinning of the stratospheric ozone layer, or when the use of the boat paint additive TBT was discovered to result in population collapse of snails.

From the risk assessment of chemicals with known effects, to the risk of new chemical surprises, society is struggling to improve the chemicals management and reduce the overall risks associated with the chemical use. When the concept of planetary boundaries was introduced in 2009 (Rockström et al), it included chemical pollution as one nine boundaries, although the boundary was not at that time quantified. This project has looked at the concept of a planetary boundary of chemical pollution with the aim to assess if it with current knowledge is possible to specify such a boundary. The project also studied the policy implications of the findings, both for standard risk assessments as well as for the preparedness of the unexpected in terms of potential future chemical surprises.

Keywords: chemicals management, planetary Boundaries, risk assessment

Publication: /

Grand Policies and Poor Implementation: Understanding the Fine Print of Hydropower Regulation and Biodiversity Restoration in Sweden and Comparing it with the US

Peter Rudberg, Måns Nilsson and Marisa Escobar

Research in progress

There are numerous policies and legislation in place for biodiversity protection. These range from the Convention on Biological Diversity, the EU Habitats and Water Framework Directives and the Swedish Environmental Quality Objectives and Environmental Code. The strategic and implementation plans and high level political commitments accompanying these documents are too numerous to even keep track of.

Despite these impressive policy and legislative efforts during the last decades the negative trend of biodiversity loss shows no sign of reversing. This occurrence represents an interesting and urgent paradox to understand in order to suggest modifications allowing us to move towards ecological sustainability.

Estimates suggest that at least 10,000–20,000 freshwater species are extinct or at risk of extinction which makes freshwater ecosystems a key system to study to understand global biodiversity loss. River fragmentation from dam construction and modification of the hydrological flow regime - in Sweden to a large extent related to hydropower production - represent human activities with among the highest negative impact on freshwater ecosystems. Hydropower regulation and change is therefore key for biodiversity preservation and restoration in Swedish freshwater systems.

This presentation depicts the biodiversity restoration efforts carried out in Sweden related to hydropower production and analyzes the substantive as well as procedural rules framing the process of hydropower modification. Comparisons will be made to the US system in order to analyze and compare the fine print of hydropower regulation and change in both countries and draw relevant conclusions that help explain the observed paradox.

Keywords: Policy implementation, biodiversity, hydropower modification

Publications:

<http://sei-international.org/publications?pid=1884>

<http://sei-international.org/publications?pid=2180>

<http://sei-international.org/publications?pid=2087>

Cities as Tightly Coupled Social-ecological Systems: the Water-energy Nexus of Bangalore city, India

Vishal K. Mehta, Eric Kemp-Benedict and Douglas Wang

Research in progress

India's 370 million urban population exceeds the total population of all countries except China. Water supply has not kept up with increasing demand. No city receiving 24x7 water supply. As utilities reach farther out to increase supply, their energy consumption and costs are increasing, even as private self-supply from groundwater pumping increases apace. These dynamics dramatically impact local hydrology, water availability, energy consumption and emissions.

In this paper, we illustrate the tight coupling of social-ecological systems in Bangalore city, India. Bangalore is one of Asia's largest urban agglomerations. In addition to over 900 million liters per day (MLD) of utility-supplied distant river water, residents tap groundwater. We developed a framework to allocate water, energy and carbon emissions associated with domestic water consumption between the 9 million residents of Bangalore. We first analyzed spatial patterns in population growth and utility water supply. Self-supply from groundwater was estimated and used in coupled social-hydrological models of the urban water budget. Results show that despite artificial recharge from leaking pipes and return flows, private groundwater pumping is the largest component of the groundwater balance, leading to an overall groundwater overdraft of 130%. Finally, we estimate energy and emissions spatially, allocating them between utility supply and private self-supply.

We conclude with recommendations, including the importance of systematic collection of groundwater depths, and water extraction data from all sectors and sources. A household survey currently in progress will provide a comprehensive water demand function for the first time, filling in one of the major knowledge gaps.

Keywords: urban metabolism, water, Bangalore

Publication: /

Assessing Rapid Arctic Change - Setting the Stage for Discussing SEI's Role

Annika E. Nilsson and Katarina Axelsson

Research in progress

Late September 2012. Chinese icebreaker 'Snow Dragon' returns to Shanghai after a journey across the Arctic Ocean. The National Snow and Ice Data Center announces that the sea ice extent has reached another record low, while researchers project that ice free summers are expected within only 30 years. The International Herald Tribune reports about 'raw minerals diplomacy' as the EU tries to ensure that China will not get exclusive access to Greenland's rich deposits of rare earth minerals. Trade, climate change, and increasing demand for natural resources are some of the ingredients in the current restructuring of the Arctic. Add to the mixture renewed focus on national security and increasing competition for land, along with large expected changes in the landscape due to higher temperatures and melting permafrost. The outcome of this potent mixture will become increasingly apparent in the next decade. The Arctic has been called a bellwether of climate change. It could also be a bellwether of how global, national and local actors will behave when the world changes. This presentation will discuss how current Arctic activities at SEI can contribute to understanding Arctic futures. They include an interdisciplinary book project on media, politics, and Arctic climate change, the Mistra-funded project Assessing Arctic Futures. Voices, Resources and Governance, and the Arctic Resilience Report.

Keywords: Arctic, assessment, resilience, adaptation, NeoGeo

Publication: /

The Gender and Climate Debate: More of the Same or New Pathways of Thinking and Doing?

Annette Huber-Lee and Bernadette P. Resurreccion

Ideas for future research

The social sciences offer promising pathways to further understand the processes and governance of climate change adaptation through their sensitivity to the uneven human experiences of climate change. Gender – as it intersects with class and ethnicity – provides an analytical platform that unpacks the ways that climate change ‘enters a stratified world,’ where risks, costs and responses are highly differentiated and unequal.

Since the 1990s, the discourse that women are intrinsically closer to nature, are hardest hit by environmental degradation, and have special knowledge of natural resource systems has gained considerable currency in development programs. Despite criticism leveled on the discourse’s potential risk of passing on the burden of environmental care only onto women, the discourse still holds strong sway in current climate change debates. Women are once again being singled out as climate victims and/or powerful agents of adaptation, as they are seen to care for climate-affected communities.

Few scholars however caution against making generalizations about women’s vulnerability and adaptive agency, which may increase women’s responsibility (e.g., for adaptation programs) without corresponding rewards. These generalizations also focus on only women as victims and dismiss the possibility of types of vulnerable men. It is argued that vulnerability to climate stresses is not an intrinsic feminine characteristic but is instead shaped by historically and culturally specific patterns of practices, processes and power relations that render some more disadvantaged by climate hazards than others. These contingent and unpredictable social dynamics are often lost in the climate and gender discussions, which tend to oversimplify women’s roles vis-à-vis climate change, thus underscoring the need for more cautious and nuanced applications to adaptation programming.

Keywords: climate adaptation, gender, development policy

Publications:

Book chapter: <http://www.routledge.com/books/details/9780415684897/>

Journal paper under review: Women’s Studies International Forum (Elsevier)

Steel Trajectories in a Low-carbon World

Eric Kemp-Benedict, Peter Erickson, Chelsea Chandler and Pin Pravalprukskul

Completed research

Steel has been produced for thousands of years, and remains a uniquely useful building material; strong in both tension and compression, flexible enough to allow buildings and bridges to withstand high winds, and efficiently recyclable, it will make an essential contribution to a low-carbon world. Indeed, it will gain importance as machines, vehicles, and infrastructure are refurbished and replaced as part of climate change mitigation strategies. Yet steel production is also an energy- and carbon-intensive process that generates significant greenhouse gas (GHG) emissions in its manufacture. The net effect on emissions is ambiguous, for at least two reasons. First, the lowest-emitting alternatives to steel involve scrap recycling, and if infrastructure is being rebuilt then a great deal of scrap steel may become available. Second, GHG emissions intensities from steel production vary widely around the world, and so the location of production will influence future emissions from the global steel industry. We report the results of a modeling exercise that explored capital investment and steel consumption under an emissions trajectory designed to keep the world within a 1.5 deg C temperature increase. In the model, steel consumption rises sharply in the early years of the low-carbon transition, but increased emissions from steel production are partly or fully offset by increased use of recycled scrap steel. We show that changing the geographic location of steel production can also lower GHG emissions, and we discuss the equity implications of such a change.

Keywords: low-carbon transition, climate change mitigation, investment, embodied emissions, steel

Publication: /

Benefits of Climate Action beyond Emissions Reductions – Ongoing Work

Oskar Wallgren and Måns Nilsson

Research in progress

In ongoing work, SEI is providing the Swedish government with background analysis increasing the government's ability to internationally argue for ambitious climate action (investments, policy instruments etc.) creating benefits other than those directly related to reducing carbon emissions as such. In 2012 SEI carries out a pre-study providing an overview of such benefits, and by the time of the Research Forum the full study will most likely have been initiated, in collaboration with other countries.

Examples of positive benefits of climate action are health impacts from improved air quality, increased agricultural production, reduced dependence on imported fuels and increased energy security, industrial renewal and innovation, and efficiency gains (from subsidy removal). Our work has also touched upon the possibilities to measure growth and employment effects of climate mitigation policy.

Benefits are analyzed paying attention to the amounts of benefits generated depending on level of development of the economy; the amount of benefits generated depending on the degree of international cooperation; and, the cost effectiveness in climate policy terms – i.e. what we know about costs and likely emissions reductions from different types of action. This presentation (alt. panel contribution or Q&A session) will give some insights into the state of the art empirically and theoretically in terms of assessing benefits of climate action beyond reduced climate risks. We will briefly describe the analytical methods that our work has highlighted, commenting on how robust they are what results they produce. Finally we will present the recommendations for the full international study that we have provided and reflect on the scope for further research in this area, given the nature and scope of the main international study under way.

It is anticipated that this presentation would be best scheduled during Lena Eks presence as this is her key political priority and interest.

Keywords: climate, benefits, action, methods

Publication: /

Low-carbon Development in Global Cities

Peter Erickson, Michael Lazarus and Chelsea Chandler

Research in progress

City-scale actions can play a significant role in reducing global greenhouse gas (GHG) emissions. One and a half billion new urban residents are expected globally in the next two decades, mostly in the developing world. The way that cities are built and renovated can dramatically determine the GHG emissions footprints of these residents. Although cities are increasingly engaged in climate change action planning, including estimation of their annual GHG emissions, very little attention has been paid to quantifying the potential impact of city-scale actions on global emission reductions. In this presentation, Peter Erickson will present a typology of city-scale technologies and practices for reducing GHG emissions and present new SEI research on the relative GHG abatement potential of these options. This new research, conducted in partnership with C40 Cities, will be presented at a World Bank workshop in Singapore in April 2013, and will inform the development of an analytical framework for quantifying GHG emission reductions at the city scale. Preliminary results indicate that the largest abatement potential for cities lies in the buildings and transportation sectors, though city influence over these sources varies. The greatest potential may be in cities' ability to influence urban form through land use and transportation planning, measures that have often been overlooked in major international assessments of global GHG abatement potential or pathways. SEI research on these topics will continue throughout 2013 and 2014, in partnership with C40 Cities and the World Bank, and with additional Program Support from Sida.

Keywords: cities, climate change, greenhouse gas emissions, transportation, buildings

Publication: /

Regional Perspective on Adaptation Mainstreaming in Asia

Skye Turner-Walker and Albert Salamanca

Completed research

The Regional Climate Change Adaptation Knowledge Platform for Asia (AKP) undertook action research across 5 countries to understand needs and priorities for climate change adaptation (CCA), and scoping assessments for adaptation integration into policy and planning in 8 others. This research was intended to inform the mainstreaming of adaptation into development planning, whilst building a network of researchers that could gather and share new knowledge, while working closely as, or with, policy makers and practitioners.

Developing countries have been encouraged to implement National Adaptation Programmes of Action (NAPAs) and pursue mainstreaming into development planning. Yet, how to go about effectively mainstreaming adaptation, remains relatively unknown by many, including to local policy makers. This paper reviews the findings from the studies undertaken by AKP, within the broader setting of knowledge on adaptation mainstreaming. These studies provide key insights on the dynamics of mainstreaming and highlight that the uncertainty of climate change impact is a strong incentive to deepen the mainstreaming of adaptation into development planning and policy, so that development does not create new vulnerabilities. The findings suggest that existing governance structures tend to impede effective adaptation, and instead indicate key entry points for mainstreaming. Adaptation mainstreaming needs to be cross-sectoral, multi-scale and multi-level. New mechanisms need to be developed to facilitate planning processes that combine top-down and bottom-up approaches, whilst also ensuring that regional, national and local level policies and decisions effectively reflect the needs of those on the ground.

Keywords: climate change adaptation, mainstreaming, Asia

Publications:

<http://www.sei-international.org/projects?prid=1785>

<http://www.climateadapt.asia/>

Quo Vadis Adaptation? Lessons and Insights from the Implementation of the Regional Climate Change Adaptation Knowledge Platform for Asia (AKP)

Albert Salamanca and Skye Turner-Walker

Completed research

SEI together with RRCAP and UNEP-ROAP has just completed the implementation of a three year program on climate change adaptation funded by the Government of Sweden through Sida. Its ultimate goal was ambitious - to facilitate climate change adaptation primarily in 13 countries in Asia at local, national and regional levels and strengthen adaptive capacity through the establishment of a regional knowledge sharing system; the generation of new knowledge; and, the application of existing and new knowledge.

After three years of implementation, AKP has developed a constituency for adaptation in the region. It responded to a need for adaptation knowledge. It has offered both a framework and a course of action. It facilitated the exchange of adaptation knowledge and regional experiences with other countries. It provided easy access to relevant and high-quality adaptation knowledge, and it added value to other national and regional climate change initiatives. Still, these are only the so called “quick wins” or “low hanging fruits”. The ultimate goal of AKP is not yet achieved and won’t be until appropriate governance systems are in place, existing inefficiencies of national bureaucracies are changed, more funding are provided, and adaptation is pursued as an important concern by all stakeholders, among others.

This paper will reflect on the achievements of AKP using the framework of social learning. It will ask to what extent AKP has facilitated learning and whether such learning is durable? Also, what can we learn from it and how should this inform future efforts on climate change adaptation?

Keywords: climate change adaptation, social learning, Asia, knowledge, adaptive capacity

Publication: /

Governing Sea-level Rise Risk in Cities of the Global South: the Case of Cape Town, South Africa

Anna Taylor and Anton Cartwright

Completed research

Globally the risk of sea-level rise has been identified as a significant threat to coastal cities. While there are a growing number of studies comparing levels of exposure between cities, there are very few that focus on the governance dimensions of addressing such risk within a city. There are especially few studies that focus on cities of the global South, where high levels of socio-economic inequality and informality, together with relatively young democratic institutions, present particular challenges for governing such coastal risks. Cape Town in South Africa has 307 kilometers of coastline, supporting rich biodiversity and numerous economic activities, notably tourism and fishing, and exposing the city to storm surges, coastal inundation, erosion and the deposition of wind-blown sand that damage private properties and public infrastructure. The combination of urban development pressures and global climate change present the need for new forms of urban risk management and climate adaptation. One response, widely advocated in the international literature, has involved legislating a coastal setback line, demarcating an area within which to limit new development and protect remaining ecosystems to create a buffer from inundation, erosion and the movement of sand. The process of positioning and establishing such a line is both technical and intensely political, especially in an urban space where there are competing claims over the value of the coast and forceful competition over the use of available land. This paper discusses the application of risk management and nodal governance frameworks to understand where and how Cape Town's coastal setback line has been delineated, documenting how conflicts over access to land, development rights, liability and decision-making authority have shaped the outcome.

Keywords: urban governance, coastal risk management, sea level rise, South Africa

Publication: /

“All Adaptation is Local” – Or Is It? Exploring the Indirect Impacts of Climate Change

Magnus Benzie and Oskar Wallgren

Research in progress

In both research and policy, climate change adaptation has so far mainly been framed as a domestic concern within a particular territory. However, for many sectors or countries it is likely that the impacts of climate change will primarily manifest themselves indirectly via (more severe) impacts elsewhere in the world.

These indirect impacts will, together with shifts in the global economy, create changes in flows of goods, capital and people. They will have security implications and create new economic opportunities. All considered, these impacts present decision makers with a very difficult analytical task and raise questions about what sorts of adaptation to invest in. The topic has, however, been little studied.

We will present early findings from SEI research on this topic. We will assess the current coverage of indirect effects in different types of adaptation strategies and offer an initial overview of the methods that are – or could be – used to assess and compare indirect effects. We will suggest an initial conceptual framework for defining indirect effects and present plans for future research to assess indirect effects from the perspectives of both developing countries and Sweden.

Indirect effects have important implications for the governance of adaptation and in some ways challenge the logic of the emerging global adaptation regime, which is built around finance for individual countries to implement domestic adaptation actions responding to local climate change. The presentation will therefore have relevance across various SEI research themes.

Keywords: adaptation, “indirect effects”, “adaptation governance”

Publication: /

Extreme Outcomes: Prospects for Major Tipping Points and Socially Contingent Effects

Ruth Butterfield, Richard Taylor, Neela Matin, Sukaina Bharwani, Paul Watkiss and Tom Downing

Completed research

Extreme outcomes refer to near-catastrophic events and processes that would push the climate system into undesirable states. While highly uncertain, major discontinuities of this nature are poorly represented in most assessments of the economics of climate change.

Biogeophysical tipping elements in the Earth system include a number of events that could have serious consequences within 50 to 100 years: ClimateCost has explored the consequences of some of these events.

In the EU funded ClimateCost project SEI's role in the analysis of extremes was to analyse the socially contingent effects and tipping points. This was approached through security and state fragility, narratives of forced migration and identification of challenges of multiple stressors in south Asia, an area susceptible to both physical and social extremes.

A case study in South Asia has shown that security, conflict and the physical impacts of climate change could contribute to a socially contingent tipping point. South Asia is a major concern given the instability of the Indian monsoon and potential drought risk that might limit agricultural adaptation options.

The science base for understanding extreme outcomes and planning adaptive responses requires international cooperation and is an area where European policymakers have a leading role. This is obvious for international water resources, trans-boundary health threats, migration and security. Further science-policy dialogues are warranted, linking across thematic areas.

Keywords: extreme outcome, tipping points, socially contingent effects

Publications:

Downing, TE and Butterfield, RE (2012). "Extreme Outcomes: Prospects for major tipping and socially contingent events and associated economic and social costs." Summary of cross-sectoral results from the ClimateCost project funded by the European Community's Seventh Framework Programme. Technical Policy Briefing Note 7. Oxford: Stockholm Environment Institute.

SEI Policy Brief: <http://sei-international.org/mediamanager/documents/Publications/SEI-PolicyBriefingNote-ExtremeOutcomes-2012.pdf>

Exploring Diverse Knowledge Systems for Adaptation: the Case of Swedish Forestry

Åsa Gerger Swartling

Research in progress

Platforms for knowledge sharing and co-learning are essential for effective natural resource governance in the face of climate change. While much research is concerned with analysing the role and nature of knowledge in building adaptive capacity, there is limited understanding in how different knowledge systems converge and evolve in participatory processes in the context of climate change and adaptation.

Based on an initial case study of Swedish forestry, conducted as part of the Mistra-SWECIA programme, this paper presents a transdisciplinary approach to exploring the convergence of diverse knowledge systems in the context of climate change adaptation. The presentation will highlight initial findings that will inform the design of a multidisciplinary methodology on adaptation analysis combining state of the art risk assessment and participatory research methods. The ambition is that the methodology should be a useful tool for adaptation researchers as well as practitioners across geographical and sectorial contexts.

Keywords: climate change adaptation, participatory processes, methodology, knowledge systems

Publication: /

Participation and Learning for Climate Change Adaptation: a Case Study of the Swedish Forestry Sector

Åsa Gerger Swartling, Oskar Wallgren and Richard Klein

Research in progress

Researchers and decision-makers have begun to recognize the need to build capacity for adaptation to climate change at all relevant levels in society. The term adaptive capacity has been introduced to capture the ability or potential of a system to respond successfully to climate variability and change. A growing body of literature investigates how adaptive capacity manifests in specific localities and resource systems. However, despite recent analyses of the links between learning, adaptive capacity and governance there has been surprisingly little research on how learning could benefit adaptation decision-making and shape resilient livelihoods. This paper highlights the role of learning in advancing climate change adaptation. The main research questions are: How can participatory processes contribute to learning on climate change and adaptation? What characterizes this learning process and how, if at all, does it contribute to a self-perceived increase in the capacity to adapt to climate change? The paper uses a case study of the Swedish forestry sector to address these questions. The analysis provides the basis for a discussion of the potential for participatory processes and learning to build adaptive capacity to climate change. Conclusions are drawn with respect to: i) changes in (expressed) perceptions and learning about climate change effects over time; ii) the scientific value of taking a participatory approach to studying local adaptation processes; iii) the importance of distinguishing between the various forms of learning that take place.

Keywords: adaptive capacity, participation, learning, climate change adaptation

Publication: /

Social Learning towards a More Adaptive Paradigm? Reducing Flood Risk in Kristianstad Municipality, Sweden

Åse Johannessen

Completed research

Social learning is presented as a crucial element of adaptive capacity and resilience building. However, the mechanisms behind ‘stable’ social learning which builds adaptive capacity over time are a rather unexplored area of research. This empirical case study investigates the evidence and attributes of social learning and how it unfolded in a flood risk reduction process. What outcomes of the social learning could be identified? Was adaptive capacity enhanced? Twenty key persons were interviewed over 8 years, many of them several times, to assess the process. The analytical framework, collection and analysis of data were guided by the social learning model by Schusler et al. (2003). We adjusted the model from the results of the study. To assess the adaptability of the outcome of the process, we constructed an ‘adaptation staircase’ and reviewed literature to compare with other countries, mainly The Netherlands where a flood proofing paradigm exists (Huntjens et al., 2011).

We found a bottom up process driven mainly by a local group of municipal employees. However, this was not able to change the prevailing paradigm and feeling safe behind the embankments and continuing building on low lying land. We argue that building resilience and adaptive capacity would require a mind shift to a paradigm of “flood proofing/living with floods” and integrating with other sectors. We conclude that knowledge development is inhibited by the Swedish decentralisation approach and we call for a multilevel learning strategy including learning from international experience and emphasising more active coordination at the national level.

Keywords: social learning, adaptive capacity, flood risk reduction, decentralisation

Publication:

Johannessen, Å., Hahn, T., (2012) “Social learning towards a more adaptive paradigm? Reducing flood risk in Kristianstad municipality, Sweden.” *Global Environmental Change*: <http://dx.doi.org/10.1016/j.gloenvcha.2012.07.009>

The Realpolitik of Climate Change

Karl Hallding, Magnus Benzie, Marcus Carson, Aaron Atteridge and Sivan Kartha

Ideas for future research

This project aims to tell the story of the Copenhagen Accord - a story not yet told. Most of the policy research relating to climate change or environmental issues focus on how to solve problems by designing optimal policies. In a sense it is a naive notion based on finding the right prescription. Much less research is done with the focus to understand the political processes that actually lead to policies that make a difference. For example diplomacy and political deals are usually seen as dirty games that compromise with what is seen as necessary action. There are some examples of research into the processes that led to the agreement on the big environmental conventions during the 1990s. But there is comparatively little done to examine later years' climate negotiations. The story behind the Copenhagen Accord is riveting and full of unknown detail of particular Swedish interest. For example the process that eventually led to the Copenhagen Accord was actually started at the Swedish PM's office in July 2009, and both Sweden and Denmark was centrally involved in the whole enterprise of elaborating a Plan B before COP15. The story of the Copenhagen Accord came to our knowledge during the work on the BASIC study and it could be brought together through interviews with the people who were actually involved in the discussions in different groups during the autumn of 2009.

Keywords: COP15, climate negotiations, realpolitik, Copenhagen Accord

Publication: /

Assessing Uncertainties beyond the World Energy Outlook

Karl Hallding, Magnus Benzie and Charlie Heaps

Ideas for future research

The World Energy Outlook had become the bible of our common energy future. But it represents a idea of a world that does not really change, where static projections without any real notion of uncertainty are allowed to inform long-term energy policy decisions. This project aims to take an uncertainty based approach to examine the WEO and other similar high-level energy forecasting products. The idea is to review the assumptions underlying the WEO forecasts and instead of assuming a “most likely” trajectory rather look at a span of uncertainty given a set of critical uncertainties. The outcome would provide a different and more “threats and opportunities” based view on possible energy futures, which could be useful for policy makers and others that are interested in robustness and adaptive management.

Keywords: Energy futures, WEO, scenarios, uncertainty,

Publication: /

Minilateralism: the Way Forward through the Climate Negotiation Inertia

Karl Hallding, Marcus Carson, Magnus Benzie, Annika Nilsson and Måns Nilsson

Ideas for future research

Few believe that the UNFCCC climate negotiations will lead to a breakthrough in the near future. Most people are even of the opinion that positions are so locked that there is little chance of even moderate progress on the fundamental issue of how to reduce emissions. The EU did long think of itself as the torch carrier of the negotiations, but many now doubt that the EU would have undersigned the Kyoto protocol had there been 27 member states at the time. Over the recent couple of years, however, there has been discussions about the possibility of certain countries to move forward jointly on the basis of some agreed principles. Building on the idea of “minilateralism” this project aims to explore the prospects and consequences of bringing together “coalitions of the willing” that motivated by combinations of self-interest and jointly shared objectives would be willing to move quicker towards a low-carbon future. The project would investigate possible issues to align around, assess the modalities for joint action and discuss how such coalitions of the willing could act as a game changer in the climate negotiations.

Keywords: UNFCCC, minilateralism, climate negotiations, diplomacy

Publication: /

NETpositive: Engaging with Small and Medium Enterprise on Sustainability Issues

Chris West, Elena Dawkins and Simon Croft

Research in progress

Although small and medium-sized enterprises (SMEs) contribute to a significant proportion of global GDP (~50% in developed countries) - and thus have wide economic, social and environmental impacts - in comparison with larger corporations little effort is targeted at understanding, or promoting, sustainability in a sector with limited time and financial resources.

Over the last six months, we have been contributing to the collaborative ‘NETpositive Initiative by running workshops and other activities to reach out to the business community and explore the needs of such organisations in understanding and addressing sustainability issues. This has identified a clear requirement for the development of tools to introduce them to sustainability concepts and promote transformative change across core business. With this requirement in mind, the primary aim of the NETpositive Initiative is to be a platform for the translation of leading sustainability thinking, which includes SEI’s research, into freely-available resources for SMEs.

Our first tool is due for beta-release in February. It will allow SMEs to undertake a simple (20 minute) interactive sustainability appraisal which can be used to generate a business action plan. Underlying this tool will be functionality that will provide researchers with access to information on what SMEs believe their priority areas are for action on their positive and negative environmental, economic and social impacts. It is intended that this data will be used help us better understand the information needs of this hard-to-reach group in order to provide more targeted tools and information within the Initiative’s second phase.

Keywords: business, sustainability, SMEs, tools, outreach

Publication: /

Value Chain Development for Sustainable Livelihoods

Patricia Vilchis Tella, Matthew Fielding and Aaron Atteridge

Ideas for future research

70 percent of the world's poor who live in rural areas, depend on small scale agriculture and cash crop production as main source of income. Large companies have accelerated their control of the basic commodity markets in the last 20 years. The consequences of the growing power of distributors (the grocery or supermarket chains) and dominant global brands are persistent rural poverty and the ideological and economic devaluation of the small-scale agricultural production.

Over the past decade, the value chain development approach has increasingly been adopted by governments, donors, and NGOs to support small producers to access regional and international markets. This project will attempt to compare different models, e.g. cooperatives, fair trade and sustainable production certifications in terms of net income for producers, security of income, access to finance, and their possibilities to obtain capacity building and knowledge exchange; and discover if any of this models performs better than others in improving small scale farmers livelihoods.

The idea is to carry out a series of open interviews and focus group discussions in order to identify the perspectives of producers and the different models' effectiveness. The possibility to present at SEIs research forum will help define the cases, if global commodities as cocoa or coffee should be studied versus traditional products traded at a regional scale such as Para nuts, agave, or Acai berries.

Keywords: Trade, value chain development, small scale producers, livelihoods

Publication: /

Retasking Europe's Common Agriculture Policy: Time for a Paradigm Shift

Marcus Carson, Kim Anderson and Maria Osbeck

Research in progress

Europe's Common Agricultural Policy has been in a process of almost continual transition since it was introduced in the late 1960s, evolving from its initial purpose of being solely a support system for agricultural commodities to become a more integrated policy. While still predominantly concerned with the economic welfare of farmers, it is now explicitly embracing the much broader purposes of sustainable land management and rural development. This report explores the long-term future of the European Union's Common Agricultural Policy (CAP) from this broader perspective, with an emphasis on its potential added value for Europe as a whole. In keeping with the European Commission's primary aims for the CAP – a) viable food production to ensure food security, b) territorial balance, and c) environmental sustainability – this report examines ways the CAP can help reduce the negative impacts of agriculture on Europe's natural capital, and also contribute public goods by strengthening the provision of ecosystem services. In order to ensure long-term sustainability, the current CAP reform process needs to take into consideration major and persistent challenges related to food security, climate change and pressure on natural resources. The key conclusion of this report is that a fundamental shift in the purpose of the CAP is needed to achieve these goals – one that embraces the CAP's contribution to environmental protection and strengthening the resilience of Europe's ecosystems as its core purpose. While there is no clearly defined "roadmap" for accomplishing this shift, we argue that much more extensive development of payments for ecosystem services offers the clearest pathway. The shift in purpose being called for therefore represents no fundamentally new measures, but rather a strategic reorientation of goal priorities of the CAP to ensure that it addresses the underlying conditions necessary to maintain a productive, economically viable, regionally balanced and ecologically sustainable system of European agriculture.

Keywords: Common Agriculture Policy (CAP), ecosystem services, payment for ecosystem services (PES)

Publication: /

All Together Now? Climate Change Discourse in the Swedish Mainstream Press

Marcus Carson

Research in progress

The volume and content of media attention to a policy issue can substantially influence public perception of policy problems. Mainstream media plays a crucial role in defining the contours of social problems and their level of urgency, and in defining and legitimizing experts who provide crucial information. Media coverage also reflects the broader cultural and political norms of the society in which it is embedded, including its power relations. And while media coverage of an issue is influenced by the societal context, it can feed back over time to influence the very context in which it was originally defined.

We integrate this broader social-political context into an analysis of climate change discourses in three Swedish mainstream newspapers from 1997 through 2009 – Dagens Nyheter, Svenska Dagbladet, and AftonBladet. Articles were coded based on their position regarding four themes: a) climate science, b) appropriate or preferred remedies for the problem, c) who should be responsible for implementing those remedies and at what scale, and d) the priority accorded climate change amid other competing policy goals. Our analysis also finds that while very small, actors characterized as “climate contrarians”, “deniers”, or “skeptics” are a much more diverse group that is often appreciated. The structure of that diversity is important in terms of the types of arguments being made and targets of these arguments) Finally, while there is little disagreement in Sweden regarding climate science or policy priority, we find widely divergent views regarding remedies and who should be responsible for implementation.

Keywords: Media analysis, discourse network analysis, climate change, climate skepticism, Sweden

Publication: /

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