



LIAISE

Linking
Impact
Assessment
Instruments to
Sustainability
Expertise

Discussion Paper

Compendium of Test Cases

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Preamble

The LIAISE project includes various test cases that serve as real-life test ground for impact assessment (IA) Test cases or testing in LIAISE is about acting, participating in, supporting and observing concrete policy processes which use or could use IA tools. In this way test cases enable mutual learning about policy-makers' and researchers' needs, as well as learning on opportunities and barriers for interaction on IA tool use and development. Test cases involved researchers, tool-developers and IA practitioners. Test cases provided lessons from the use or non-use of tools in IA process, and from tool development which can be employed to improve the development and use of tools in the future. These lessons are important for the achievement of LIAISE's goals, namely increased awareness on IA tools, improved communication between policy and research, and stimulating tool use and IA research. The lessons learned also feed the development of main end product IA Toolbox, recently named as LIAISE KIT.

The first version of D6.3 Results from test cases (M18) concentrated on the preparation and planning phase of the test cases. Second version (M24) presented more results from the first test cases and also introduced two new test cases. In the third version (M36) all six test cases were presented. The D6.3 presented preliminary results from test cases, but as they were in different phases, the amount and level of the detail of the results varied greatly between them. The preliminary results emphasised the importance of information exchange between tool providers and developers (supply side) and policy-makers and tool users (demand side). They also emphasised how context matters in interaction and tool use. Test cases have proven to be very variable depending on the thematic fields, stage of the policy process and level of jurisdiction. This deliverable (D6.6 Compendium of test cases) reflects the test case lessons from the knowledge exchange and knowledge brokering perspective and provides further contribution to the discussion and practise of evidence-based policy.

The LIAISE test case package included six test cases ranging from the EU-level to national and regional levels. In addition one test case is located in China providing information and experiences on the science-policy interaction in China on the one hand, and on the interaction between European and Chinese researchers and experts. The test cases also cover several policy areas, namely, energy and climate policy, agricultural policy, resource efficiency policy and land use policy. The LIAISE test cases provide concrete results on IA tool use, user requirements and science-policy interface at various thematic and governance levels. Test case experiences and results can be utilised not only by the LIAISE Community of Practice (CoP) in the field of Impact Assessment Research for Sustainable Development (i.e. LIAISE post-project entity), but also by IA experts and researchers broadly outside LIAISE consortium.

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Executive Summary

LIAISE's test cases of impact assessment comprise of six real-world cases varying from EU-level to national and regional level and include also a regional level case in China. The test cases aimed at creating a realistic understanding of the requirements of knowledge users in relation to possibilities of knowledge production in IA. Testing was inspired by knowledge brokering approach, which challenges the 'linear' knowledge exchange by allowing exchange, co-evaluation and joint construction of knowledge with the aim of enriching decision-making. In particular, the test cases were interested in finding out in what circumstances, contexts, certain knowledge brokering approaches are fit for purpose in IA? In addition, the test cases aimed at investigating procedures for interaction between researchers and policy-makers. Thus, from the IA perspective it is important to find out when a step-wise approach of interaction in IA is suitable and when more dynamic and iterative processes are needed? Furthermore, the test cases examined current use versus possible uses of existing impact assessment tools.

In order to consolidate the test case framework and practicalities, WP6 developed a set of Support Modules. They provided practical instructions and flexible guide for test cases and also provided a shared conceptual background. Even though the Support Modules are presented as a step-wise process, they allow flexibility in individual test cases. Interaction between experts and policymakers was important in all test cases. Test cases were carried out by test case teams, which involved a leading partner from WP6 and associated members from other WPs or from the partner institutions. In addition, a test case steering group, comprising of representatives from WP1, WP2, WP3, WP4 and WP5 followed all test cases and to increased discussion between different WPs.

The test cases played an important role in LIAISE, because they provided practical information both on tools in practice and user needs. Interaction between experts and policymakers was core activity in all test cases. Different LIAISE aspects were tested depending on the focus of individual test case: LIAISE-Kit (former Toolbox), IA libraries; communication: IA innovation reporting/ policy briefs/ IA bulletin; Training curricula; Shared Research Agenda; Use of tools & informed use of tools; Understanding interaction between policy & research; and Awareness of LIAISE.

Despite of the challenges related for example to the interaction with the policy makers and the time pressure, the test cases succeeded in building collaborative relationship with the policy-makers during testing. Tools with wide range of application possibilities (e.g. flexibility to accommodate new goals) appeared to be particularly useful and provide an opportunity for interaction. In addition, it appeared that face-to-face meetings with policy-officers and researchers' active role in promoting a new tool for IA in the scoping phase of the IA are very useful. Engaging active and specialised policy-makers helps researchers to get technical feedback and tailor supply-driven tool development. LIAISE Kit can also serve as a platform for exchange and networking, especially for informing and match-making

knowledge brokering. IA researchers can furthermore act as a facilitator in policy-policy interaction by organising seminars and focus group meetings related to inter-ministerial multi-dimensional problem framing and solving. It must, however, be emphasised that the success of knowledge brokering, tool application or tool improvement is possible only when the role of the IA knowledge provider or knowledge broker is clearly defined in scoping and planning phase and there is trust and credibility on both sides.

Test case results indicate that in order to improve the IA and enhance tool use in assessing the impacts more emphasis should be put on efficient knowledge exchange during different phases of IA. This could lead both to better utilization of the IA knowledge in policy making and to better designed IA knowledge production. This requires, however, that the context of a specific policy case and IA is identified and acknowledged by the researchers involved. Based on the literature and TC experiences WP6 developed a typology of different contextual factors affecting the selection and success of the Knowledge Brokering strategies and individual means and forms of activities in IA. Examples of contextual factors include organizational norms and routines, actor roles, trust, openness and knowledge sharing traditions, legal IA requirements, phase of policy and IA, complexity of the policy problem, and decision-making regime.

Collaboration in IA increases the use of IA results in policy-making but requires trust and credibility based on previous cooperation or built during (long) IA process. The IA researchers/knowledge providers must, however, be open about limitations of a tool to increase credibility. The actors (researchers and policy makers) should also carefully consider when resource intensive and time consuming knowledge brokering is needed and when more linear knowledge exchange is sufficient. Developing a new tool for real-life ongoing policy-process is rather demanding due to time and political constraints. Instead, there might be room for tool tailoring or improvement.

Based on LIAISE test cases it appears that iterative co-design of knowledge is enabled by tools that are:

- Already existing
- Easy-to-apply/ transparent
- Time-saving for policy actors
- Procedural but allowing choices, and
- Including an element of co-tailoring relevance by policy-makers' questions
- Communicative and adaptive IT platforms, like LIAISE KIT, can facilitate knowledge exchange when recognised by both research and policy actors.

'Lessons learned' and reflective conclusions of the test cases will be published in a special issue of scientific journal Environmental Science and Policy, early 2015. This deliverable presents the background of testing and an outline of the special issue. In addition, policy briefs from individual test cases are available through the LIAISE website.

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D 6.6 – Compendium of test cases

1 Introduction

Test cases (TCs) have played an important role in LIAISE, because they provide practical information both on tools in practice and user needs. In addition, the work carried out in WP6 and TCs has provided both conceptually and practically oriented knowledge on the science-policy interaction in impact assessment for the LIAISE consortium. Thus, the TCs have contributed to the main objective of LIAISE Network of Excellence to bridge the gap between the IA user community and IA research community.

TCs have focused on several different objectives, which have been specified by individual TCs. The general objectives of TCs were to (as set in D6.1 and D6.2):

1. Establish a more realistic understanding of the requirements of policymakers.
2. Establish operating procedures and contacts for future researcher-policy maker interactions.
3. Learn how different tools may be used in practice, hence improving existing IA tools and testing the LIAISE Toolbox (currently: LIAISE KIT) concept developed in WP3 and WP4.
4. Raise awareness about LIAISE amongst academics and practitioners.
5. Facilitate conceptual learning and rethinking of the science-policy interface

Preliminary TC results have already been presented in D6.3 (M36) Results from test cases. The final outputs of TCs include:

- D6.6 Compendium of test cases and the Special Issue of the Environmental Science and Policy journal, to be published in early 2015
- Additional test case related publications:
 - De Vries et al. Agricultural adaptation to climate change under different policy environments – An integrated picture for 2050 (LIAISE working paper, to be published during spring 2015)
 - Bournaris, T., Moulogianni, C. & Manos, B. (2014) A multicriteria model for the assessment of rural development plans in Greece. *Land Use Policy* 38: 1-8.
 - Bournaris et al. (2014) Setting Up Young Farmers” – Impact of RDP Measures on Irrigated Agriculture in Greece. In: *Economics of Water Management in Agriculture*.
- Policy briefs on test cases:
 - Three already published:
 - LIAISE Policy Brief No. 2 "Impact Assessment - Assessment of National-level Policy Strategies"

- LIAISE Policy Brief No. 3 "Re-assessment of CO₂ and SO₂ Emissions in Energy Sector by Using LEAP-model: Experiences from Estonian Energy Sector Planning"
- LIAISE Policy Brief No. 4 "'Setting up young farmers' CAP measure in rural areas of Greece"

In progress (working titles):

- Land use and sustainable development in China
- Successful tool use in assessing sustainability impacts of policies
- Policy analysis as a tool for Impact Assessment: Lessons learned from the assessment of resource policies
- Does Europe need a Soil Framework Directive?

The form of publicly available D6.6 will be a special issue in an interdisciplinary journal dealing with sustainability, science-policy interface and use of tools (namely Environmental Science and Policy). This deliverable presents the LIAISE test case process and an outline for the special issue. The expected publishing time of the special issue will be early 2015.

2 Conceptual background for LIAISE test cases: Knowledge Brokerage as a guiding concept

Knowledge Brokerage (KB) (Gieryn 1995) is a well-established process-oriented approach to analysing, guiding and ultimately improving the science-policy interface (SPI). The KB approach proceeds from the assumption that processes of knowledge production and use are symbolic or communicative actions involving two or more parties who reciprocally affect the acceptance and rejection of knowledge claims through argument and persuasion (Dunn 1993). In contrast to the linear transfer model, the KB model conceptualises the science-policy interface not as a sharp line of demarcation but rather as a permeable, dynamically shifting “boundary” (Gieryn 1995; Michaels, 2009). Hence the traditional approach of one-way communication and ‘speaking truth to power’ is challenged by a more fluid, reflexive approach to the interaction between different actors. As noted by van Kammen et al. (2006: 608), the focus of KB is “Not on transferring of the results of research, but on organising the interactive process between the producers and users of knowledge so that they can co-produce feasible and research-informed policy options”.

KB recognises research and decision-making as processes not products and events (Lomas 2007: 130), and helps improve the process of eliciting policy questions and research questions from different actors, and ensuring these are mutually understood and accepted. In short, it is a way of structuring the communication process and taking it seriously, as research shows this is at least as important as the substantive knowledge generated by the process.

In LIAISE TCs we summarise KB simply as a process of communication between researchers and users.

In practise there are several different strategies of KB, ranging from simple dissemination of knowledge to complicated capacity-building – with associated increase in intensity of relationship-building and required resources (Michaels 2009, Ward et al. 2009). Each TC was asked in the beginning of testing to select an initial KB strategy for carrying out the work - see elaboration in the Table 1 below. Since not all TCs were able to choose a single KB strategy, they were encouraged to attempt to apply different strategies and test how well they worked in reality.

The choice of strategy depends on the situation - the type of policy problem, the type of people involved, the history of how that policy area has been addressed in the past, for example. The initial choice(s) guided the first iteration of the TC interaction, and the appropriateness of this choice was then reflected upon later during testing, and an alternative suggested, if necessary, for the second iteration. This evaluation of the interaction process (van Kammen et al 2006) was particularly important, since it showed how the process had changed over the course of the TC interaction; it is through these observations that key lessons can be learned. In LIAISE TCs, in most situations we did not have an independent, third-party broker facilitating the researcher-user interaction; as researchers were also playing the role of brokers.

Table 1. Knowledge brokerage strategies (Sources: Michaels 2009, Turnhout et al 2007).

KB STRATEGY	INTENT	EXAMPLES OF TECHNIQUES	HOW BROKERS CAN INTERVENE
Informing	RESEARCHER disseminates content	Fact sheets; web sites	Circulate to targeted decision-makers with brief explanation of their potential utility
Consulting	POLICYMAKER seeks out known experts to advise on problems delineated by party seeking counsel	Meetings; solicited assessments	Identify which decision-makers would benefit from talking with which experts and facilitate the appropriate form of communication; work with decision-makers and those with the needed substantive expertise to frame what should be included and how to present the findings
Matchmaking	BROKER identifies what expertise is needed, who can provide it and the best way to make the connections	Introduce people to each other who would not otherwise meet	Identify sources of information, locate or create materials useful in decision-making and pass it on
Engaging	One party (POLICYMAKER) frames the discussion through terms of reference and for the life of the required decision-making process, involves other parties in the substantive aspects of the problem as needed	Royal Commissions; Technical committees; Secondments	Identify who needs to be engaged and how; brokers play facilitator role
Collaborating	Parties JOINTLY frame the process of interaction and negotiate substance to address a distinct policy problem	Joint agreement	Facilitate collaboration with wider interests (inc. range of stakeholders)
Building Capacity	Parties JOINTLY frame the process of interaction and negotiate substance to address MULTIPLE DIMENSIONS of a policy problem while considering what can be learned from doing so that is applicable to implications of the issue, future scenarios and related concerns	Co-management; joint fact finding; co-production of knowledge	Steward long-term professional relationships; ensure institutional relationships

TCs used KB techniques when testing concepts, tools and ideas and when interacting with policy makers. As policy makers carrying out policy appraisals are dealing with a range of issues, they have needs for a variety of information. This means that there is no ideal standard form of knowledge brokering or ideal brokering strategy but the strategies are suitable for

different types of decision regimes and policy problems. For instance, complex and multi-level policy processes might need more advanced knowledge brokering than routine and simpler policy processes. In addition the information and interaction needs may change in the course of the policy process (Michaels 2009). In practice a broker can carry out a variety of 'boundary management' techniques. In short, these techniques can be summarized under three main functions: communication, translation and mediation (Cash et al. 2003). KB techniques are many and varied, but all are intended to open up communication, in different ways according to the type of KB strategy. Some are most appropriate for less intensive participation, while others require more intensive engagement. Examples of techniques include:

Managing the interactions:

- Individual meetings/emails
- Researcher-user workshops; joint forums (Sheate & Partidario 2010; van Kammen et al. 2006)
- Knowledge sharing events (Ward et al. 2009)
- Multi-disciplinary advisory groups
- Internet platforms and other online applications (Sheate & Partidario 2010)
- Interviews and focus group interviews (Sheate & Partidario 2010)

Tools for aiding interaction within the groups, or elaborating policy/research questions:

- Structured questionnaires to elicit policy questions (Campbell et al 2011)
- Group mapping
- Mapping of potential implications of different research and policy outputs (Ward et al 2009)
- Synthesising research in very clear simple language
- Group model building
- Policy gaming (scenario creation and elaboration) - creating an atmosphere "full of fun and respect " (Haug et al 2011)
- Strategic options discussion (Sheate & Partidario 2010)
- Network analysis (Sheate & Partidario 2010)
- Scenario analysis (Sheate & Partidario 2010)
- SWOT analysis (Sheate & Partidario 2010)
- Simulation games
- Participatory GIS (Cutts et al 2011, Sheate & Partidario 2010)

The KB activities can be institutionalized in 'boundary organizations', organizations mandated to act as intermediaries between knowledge producers and users (Cash et al. 2003). The incentives for these organizations can originate both from research and policy making side (Michaels 2009). Quite often boundary organizations are hybrid forms in many ways as they can integrate various interests and activities (Hellström and Jacob 2003). Some of the important features for boundary organization serving as a knowledge broker include (modified from Cash et al. 2003, Lomas 2007):

- Entrepreneurial (networking, problem solving, innovating)
- Trusted and credible
- Clear communicator

- Understands different cultures of research and policymaking
- Able to find and assess relevant research
- Facilitates, mediates, and negotiates
- Understands the principles of adult learning
- Involves specialized roles
- Has clear lines of responsibility and accountability

3 Testing protocol and process

3.1 IA support modules and practical instructions

To ensure consistency across the TCs, a generic module-based approach to each TC was developed before the beginning of the TCs. Support Modules (SMs) (described in detail in D6.2) were initially designed to assist TC teams in practical planning, carrying out, learning and researching science-policy interface and tool use in TCs. Although the SMs were presented as a step by step process, they were developed to be flexible enough to be employed in different ways in each different TC.

The SMs function as:

- output of testing: description of modules to support future users when undertaking IA;
- systematic approach of tool use process building trust and openness;
- “instructions” for tool use process in IA, mainly for LIAISE internal use in operational testing;
- outcome/ impact of testing: result of conceptual learning on SPI during testing at the end of runtime of the LIAISE project phase; and
- input and support to LIAISE KIT best practises database development.

These correspond closely to the different purposes of the TCs. SMs also include crucial aspect of evaluation of the KB approach – how KB worked, what factors influenced it and how effective it was (Ward et al. 2009). Support Modules are presented in Table 2.

Table 2. Sequence and relationship between the generic steps of the IA process (EU Guidelines, see COM 2009), the LIAISE Support modules and the LIAISE Phasing of these modules.

Generic steps in IA Process	LIAISE Support Modules	LIAISE Phasing
I Problem Identification	1) Test Case Formulation and Scheduling	Formulation Phase
II Defining Objectives	2) Identification of Test Case Team and Target Groups	
III Develop main policy option	3) Policy Storylines and Optios	Scoping and Planning Phase
	4) Impact Areas and Scales	
	5) IA Scoping and Planning	
IV Analysing Impacts	6) Tool Selection and Technical Specification	Instrumental Phase
V Comparing Options	7) Data Requirements and Sources	
	8) Analysing the results of the tool application	
VI Monitoring and Evaluation	9) Reflection and evaluation of the research-policy interaction: iterative IA Tool testing	Conceptual Learning Phase

SMs 1-3 deal with planning of the TCs (including background information and recognising key actors). The SMs 1-3 were therefore relevant to all TCs. They sum up what has been done or planned and reflect this against best science-policy interface practise. The best practices are based on the IA and KB literature and the experiences from other projects. SMs 4-8 are strongly dependent on the context of the TC. Therefore, their role in a TC varied from case to case. Applying SMs and KB approach included some key elements:

- collaborative workshops with different foci;
- meetings;
- interviews;
- document analysis;
- reports for variety of purposes;
- communication between WP6 and other WPs → establishment of a test case steering group;
- communication between key actors; and
- LIAISE participation in relevant meetings, seminars and workshops around policy field.

Although the SMs were designed in a modular structure in order to ensure as much flexibility as possible, it became evident already in the beginning of

TCs, that it is rather difficult to apply them in real-world science-policy interface. There were several reasons for that:

- the policy processes were not mature enough for the LIAISE activities (i.e. the policy makers felt that it was too early to engage with LIAISE researchers=;
- LIAISE – or almost any research activity – fit only to some minor parts of the whole process, although the SMs were designed for the whole IA process;
- the policy processes are relatively closed – it takes time to build trust enabling real involvement in the policy-making and IA process; and
- the roles of key actors vary, sometimes LIAISE researchers provide the support according to the SM plan, sometimes outside consultants or policy-makers carry out the same tasks.

For these reasons, it was decided that the TCs could follow the SMs even more flexibly and concentrate to the modules most suitable for the specific context. Instead of taking the SMs as a restriction, they were treated as opportunities to consider different phases in the TCs. Thus the roles of researchers and key actors were not necessarily predetermined. The roles of different actors (core actors from public, e.g. central agencies and private sector, e.g. consultants) and more peripheral actors such as committees and non-government sector, (e.g. research networks, business associations) varied according to the TC context.

3.2 Test case selection

WP6 explored a number of sources for possible ongoing policy processes. The schedules, modellers' interest, user demand from policy makers and thematic relevance for LIAISE's activities were the key determinants in selecting possible TCs. In addition, thematic and technical tool-related competence had an important role.

The LIAISE Management Board (MB) selected first four TCs to be launched in January 2011: Finnish energy and climate strategy TC (Climate TC), Agri-adaptation TC, Resource Efficiency TC and Rural Development Plan TC (Agri farmers TC). Two additional TCs, namely China TC (Land Use TC) and Estonian Energy policy TC (Energy TC), were initiated and started in October 2011. MB allocated resources from WP6 non-allocated budget to all six TCs. Table 3 summarises the key issues of each TC.

Table 3. LIAISE test cases

Test Case	Agri adaptation TC	Resource efficiency TC	Climate TC	Energy TC	Agri farmers TC	Land use TC
Policy area	Climate change adaptation in agricultural policy	Resource efficiency policies	Energy and Climate policy	Energy policy	Agricultural policy	Land use policies
Type of test case	Exploratory	Exploratory/ Ex ante	Ex ante, ongoing – renewal of energy and climate strategy	Ex post/ Ex ante – evaluation of the last national energy plan and renewal of the new one	Ex post	Ex ante/ Exploratory
Jurisdictiona	EU	EU/National	National	National	Regional	National/ Regional/

I level		(Germany)	(Finland)	(Estonia)	(Central Macedonia, Greece)	Sub-Regional (China, Inner Mongolia, West Ujimqin Banner)
Main actors/ participants	Research actors: University of East Anglia, University of Bonn, Alterra, WU Policy actors: DGAGRI	Research Actors: Free University of Berlin (FUB), ZEW Policy actors: EU and member state level actors	Research actors: Finnish Environment Institute SYKE Policy actors: Ministry of Economy and Employment, Ministry of the Environment, Ministry of Traffic and Communication	Research actors: Stockholm Environment Institute (SEIT) Tallinn Policy actors: Ministry of Economic Affairs and Communications (MoEAC), Estonian Development Fund (EDF), Environmental Board as national SEA authority (finally accepting IA)	Research actors: Aristotle University of Thessaloniki (AUTH) Policy actors: Region of Central Macedonia, the Ministry of Rural Development and Food, Greek Young Farmers Association	Research actors: Leibniz-Centre for Agricultural landscape research (ZALF), Chinese researchers from Institute of Geographic Sciences and Natural Resources Research (IGSNRR, part of Chinese Academy of Science), international scientists Policy actors: local policy-makers of West Ujimqin Banner, Inner Mongolia
Main conceptual focus for testing	Developing KB process enhancing the use of models in IA of agricultural policy making by the EC.	Exploring how policy analysis/discourse analysis can help researchers interact with policy-makers and provide relevant knowledge to IA, test how far knowledge platforms can contribute interaction.	Exploring and developing interaction between modellers and policy-makers in national climate policy IA.	Exploring how policy developers choose quantitative models for IA and understanding knowledge production processes of national level IAs.	Developing “best practice” systematic interaction process utilizing KB strategies for planning and carrying out IAs of regional policies.	Testing how participatory tool combined with scientific knowledge can enhance KE and support policy formulation in absence of institutionalised IA.
Main instrumental focus for the case	Linking four biophysical/agro-economic models so that they would generate more integrated information.	Modelling/developing model on rare earths metals, develop LIAISE KIT as interaction forum and IA knowledge and tools provision platform, using resource efficiency TC to explore knowledge needs and possible solutions.	No separate instrumental focus, same as conceptual one.	Evaluate ex post impacts of the alternative energy supply and consumption scenarios of last national energy plan (e.g. CO ₂ and SO ₂ emissions) and produce new knowledge for the ex ante assessment of the next plan.	Assess impacts of individual policy measure of “Setting up your farmers” of Rural Development Plans (RDPs) being, impact analysis of 13 prefectures of the region.	Identify main land use related research topics and develop indicator and local preference based land use scenarios for Inner Mongolia by applying FoPIA tool, fill research.
Main Support Module approach besides the conceptual	Instrumental phase	Scoping and planning phase, Instrumental phase	Scoping and planning phase, Instrumental Phase	Formulation phase, Scoping and Planning phase, and Instrumental phase	Formulation phase, Instrumental phase	Formulation phase, Scoping and Planning phase, and Instrumental Phase (regarding IA tool)

learning phase				(regarding ex post)		
Tools used in the instrumental phase	FFSIM, CAPRI, INTEGRATOR & SIMPLACE	A model for the economic impacts of rare earth metals developed by ZEW during the LIAISE project.	No tools used by TC, other tools used in Finnish climate policy IA include several nationally developed models e.g. for national economy and emissions.	LEAP – Long-range Energy Alternatives Planning model.	Economic, environmental and social indicators and MCDA – Multicriteria Decision Analysis.	FoPIA – Framework for Participatory Impact Assessment.

3.3 Test case teams and testing process

Each TC had its own TC team, which consisted of TC leader, other researchers and related modellers (if applicable). Policy officers dealing with an individual policy case had a possibility, but were not obliged, to be participants of a TC team. The TCs teams planned their TC activities independently or with relevant policy makers. Communication and discussion between TCs was ensured by regular meetings, but otherwise the TC teams were allowed to work independently.

In addition, a general test case steering group, including all TC leaders and members from other WPs, was founded during first months of testing. The purpose of this team was to ensure co-operation and information exchange between individual TCs and other WPs, consolidate common TC objectives, and contribute to discussion about the KB approach. The test case steering group had six meetings in 2011-2013: one meeting via Skype and five physical meetings (Berlin 2011, Tallinn 2011, Bilbao 2012, Tallinn 2013, London 2013). TC teams reported their activities, future plans and hitherto conclusions by filling a shared TC questionnaire before every physical test case steering group meetings. Filled questionnaires were circulated among meeting participants prior to the meetings and were utilised when each of the TC was presented and commented.

In addition to internal TC meetings, TCs have been introduced in several international and national conferences and workshops, where TC teams received valuable comments from other researchers and experts.

In March 2013 when actual testing activities were almost completed and the reflection phase had begun, WP6 launched an internal review process for the D6.6 TC articles. This supported the actual writing process and ensured that different TC articles are in balance (in order to be submitted to the same journal). In practice the review process meant that each TC had a commenting TC, who supported the article process of the receiving TC. Commenting TCs acted as preliminary reviewers of the receiving TC's article and commented the drafts.

Commenting TC	Receiving TC
UEA	AUTH
ZALF	SEIT
SYKE	UEA
FUB	SYKE
SEIT	FUB
AUTH	ZALF

The role of WP6 partners not directly involved in the TCs (ZEW and Tecnalía) was to comment and review the general sections of D6.3 for the special issue introduction and conclusions.

4 Compendium of abstracts for a special issue of Environmental Science and Policy journal

Results of test cases will be published in a special issue of Environmental Science and Policy journal under working title ‘Knowledge Brokerage at the Science-Policy Interface: – tools and policy impact assessment’ (edited by Tarja Söderman, John Turnpenny and Jari Lyytimäki, expected publishing early 2015). The special issue focuses on *how and to what extent can the relationship between tools and policy-making in IA be developed?* The special issue presents LIAISE test cases at different geographical scales, using different assessment tools, different strategic approaches to KB, and different policy fields. Each case examines three elements. First, each case describes how the knowledge-policy interaction happened, for example:

- What is the scope of policy impact assessment in terms of problem definition, anticipated impact areas, data needs and time horizon?
- Which phase of impact assessment requires which type of expertise? Will this be needed throughout the whole process or only for certain steps?
- How can the adequacy of the knowledge and tools that are being offered be judged? Are there good-practice cases to learn from?
- What factors affect knowledge exchange and the use of impact assessment knowledge?

Second, evaluation of the KB approach – how different strategies of KB work, what contextual institutional policy-making settings and personal factors of actors influence the success of the outcomes, and how effective the KB process is (Ward et al. 2009). A principal part of this evaluation involved analysis of the different ways that the KB process unfolded, and the roles taken by research advice, particularly tools, in each test case.

Third, following from this is the challenge to better understand the circumstances under which influence of evidence – particularly the evidence produced by IA tools - is most pronounced. Studies of experiences of KB in practice (e.g. Ward et al. 2009) emphasize crucial areas influencing knowledge transfer.

Because the success of knowledge brokering is dependent on interpersonal and communication skills (Ward et al. 2009) it is also important to know how knowledge brokering is interpreted among researchers. The researchers involved in the test cases so far have defined knowledge brokering as "interaction and dialogue, better understanding, sharing, moments of communication, negotiation and organising".

Articles 1-7 (abstracts below) are based directly on the LIAISE test cases. Articles 8-10 (abstracts in Appendix 1) link to LIAISE themes and contribute to the knowledge brokering literature, but their research was carried out without LIAISE funding. *Review process* will be organized by quest editors Tarja Söderman, John Turnpenny and Jari Lyytimäki. Reviewers for each paper will be identified and chosen outside the LIAISE project partners so that reviewers are not affiliated to the authors or the project. Reviewers will be academics participating scientific debates on tool use in policy processes, knowledge brokerage and science policy interface. Below the initial abstracts of the proposed articles are presented in order to outline their main content.

Article 1

Title: Introduction.

Authors: John Turnpenny (UEA), Jari Lyytimäki (SYKE) and Tarja Söderman (SYKE)

Content: Article 1 gives an introduction to the special issue: it describes research gaps and aims for the special issue. It introduces knowledge exchange and use of knowledge in policy, focusing especially on the relationship between policy appraisal, appraisal tools and policy-making and knowledge brokerage approach in science-policy interface. Article 1 sketch out the Special Issue outline.

Article 2

Title: Contextualising tool development for policy appraisal in climate change adaptation of agricultural policy

Authors: Camilla Adelle and Andy Jordan (UEA)

Abstract: Contextualising the tool development process through a knowledge brokerage approach: the case of adaptation of EU agriculture to climate change. Agricultural research that considers complex cross-cutting policy problems, such as climate change adaptation, has a history of employing computer modeling. The variety in computer-based models, or tools, generated by researchers in this field, however, has led to complaints about the poor up take of agricultural and land-use modelling as well a lively debate about how to better design or develop these tools so that they are of greater use to policy makers, including at EU level. One way to promote the better design and use of tool development suggested in the literature is to involve policy makers and other stakeholders in development of these tools. However, few attempts to test and elaborate on this suggestion through real life examples of tool development have been reported and even fewer grounded in the literature and techniques of policy sciences. This article aims to address this gap in the literature by applying a 'knowledge brokerage' approach to contextualise the development of an integrated computer modelling tool into the real world policy context of adaptation of agriculture to climate change at the EU level. In particular, the article tests a number of knowledge brokerage strategies and techniques described and theorized, but seldom empirically tested, in the knowledge brokerage

literature. The article finds that the science policy interface was in practice harder to pinpoint than first conceived with various actors from both ‘policy makers’ and ‘researchers’ side playing a knowledge broker role at different times in the exercise. The range of strategies employed was met with varying degrees of success. However, all of these struggled to over-come entrenched ‘business as usual’ approach in the way that research was conducted. An important factor in determining the most appropriate knowledge brokerage strategy in practice was not the characteristics of the policy problem, as indicated by the knowledge brokerage literature. Rather, practical considerations of the knowledge brokerage process itself, such as whether the process is knowledge driven or demand driven, appeared to be more significant. The article also reflects on the perception that there is a poor uptake of agricultural and land-use models. In this case, the science policy interface was not characterised by an absence of information for policy makers and even less a lack of available routes to obtain it. Rather there was a high level of competition between different researchers and types of research organisations to have ‘their’ tools and knowledge used in the policy making process. What has been perceived as a problem of tool design and communication across the science policy interface may just be a side effect of a high level of competition for certain tools to be used.

Article 3

Title: Knowledge brokerage as contextualization

Authors: Klaus Jacob, Stefan Werland, Lisa Münch, Dirk Wascher (FUB)

Abstract: Improving political decision making on the basis of Impact Assessment (IA) amidst frequently complex and conflicting knowledge claims have given raise to the role of knowledge brokerage (KB) as a means of effectively improving the Science-Policy Interface (SPI). Despite the widely accepted need of developing and employing knowledge brokerage tools in the form of individual, group and institutional capacities, there are to acknowledge a range of obstacles and barriers that have prevented KB from being widely and successfully applied in IA. The reasons for the observed short comings can be found in (1) the lack of adequate KB-expertise, (2) insufficient funding and time resources, and (3) difficulties to access and manage the very data that is supposed to provide the evidence that is meant to strengthen the dialogue between stakeholders. Here is where the development of the IA Toolbox sets in. The claim of the IA Toolbox is that it can facilitate, broaden, objectify and possibly even substitute the role of KB moderation and workshop organization at large. With regard to Knowledge Brokerage we consider the following toolbox capabilities as relevant: (1) to describe political processes by means of widely acknowledged or even officially standardized taxonomies of terms and concepts that are recognized by both scientists and policy experts, (2) to link the different knowledge domains of policy and research as well as the different sectors and disciplines within these into one integrated framework, and (3) to offer substantial amounts of information, tools, data and expert contacts related to impact assessment to the users for immediate use. The aim of this paper is to examine how the Impact Assessment Toolbox can take on the role of knowledge brokerage as a means of actively supporting European and German authorities in charge for conducting impact assessments. The paper uses the case of resource efficiency policies since this is an emerging policy field with a strong demand for knowledge due to diverging discourses and problem framings. Addressing both the perspective of researchers who would

like to offer their knowledge, methods and models as well as of users who are searching for practical support when undertaking an IA, we have undertaken a sequence of targeted workshops to explore the capacities of the IA Toolbox to act as a KB instrument. The results show, that there (1) is a need for IA-specific information to be easily accessible, (2) that linking different knowledge domains by means of taxonomies and faceted search functions offers both policy makers as well as researchers to enter an informed and structured dialogue, and (3) that the KB capacities of the toolbox can be even strengthened if online group functionalities are employed at critical stages of IA. The paper ends with making recommendation for the future use of the Toolbox in IA.

Article 4

Title: Knowledge exchange in national policy impact assessment – a case of Finnish climate policy

Authors: Sanna-Riikka Saarela and Tarja Söderman (SYKE)

Abstract: One of the key instruments for generating knowledge about the impacts of a policy proposal is impact assessment. Climate policy impact assessment is dominated by quantitative modelling on the impacts of the policy proposals. However, professionalized knowledge generation and linear transfer of the knowledge do not guarantee that the knowledge will be used in the policy process. Hence, focus should be on how the knowledge is exchanged and how it influences policy processes. In this paper, we focus on national climate policy and present how the knowledge is exchanged (including knowledge generation, share and use), describe the role of impact assessment in knowledge exchange and discuss how interactive knowledge exchange could improve the impact assessment process. We followed, and partly supported, the revision process of the Finnish energy and climate strategy from the beginning until the end. Material included workshop for the key policy officers, interviews and a document analysis. We identified typical features of knowledge exchange in national climate policy impact assessment. These include dominance of quantitative information, importance of previous engagements, long-lasting interactions and trust in knowledge production, unpredictability of the policy process and outcome, and different roles of knowledge in the impact assessment and policy process. Furthermore, our results indicate that there are several deficits in knowledge exchange such as poor scoping of the impact assessment studies, routine use of the same knowledge provider, slowness and resistance of change in the ministries, and the lack of interaction in knowledge exchange. We suggest that the challenges can partly be overcome by adding various knowledge exchange practices in IA and coordinating the process better in the future. Optimally this would lead in co-production of knowledge and co-operation of impact assessment, and hence to better use of the knowledge in climate policy.

Article 5

Title: Applying quantitative models in energy policy impact assessment and knowledge brokerage in Estonia

Authors: Piret Kuldna^{a)}, Kaja Peterson^{a)}, Reeli Kihi-Thafeldt^{b)}

^{a)} Stockholm Environment Institute Tallinn Centre, Estonia

^{b)} Tallinn University of Technology, Estonia

Abstract: Strategic Environmental Assessment (SEA) of policies provides a platform for bringing together researchers, policy developers and other

stakeholders. Quantitative computer models may facilitate exchange of knowledge between different parties of this platform, aimed at linking scientific evidence and policy making. Knowledge exchange between science and policy can be implemented in several stages of the modelling cycle, especially in building scenarios and communication of results. This paper explores the use of Long-range Energy Alternatives Planning (LEAP) model in SEA where significant environmental and socio-economic impacts of a national energy plan are in depth assessed and communicated, with the aim to find out how policy developers make choices on suitable quantitative models for the SEA of energy policy. We identify the strategies that we as researchers applied to transfer modelling knowledge to and exchange it with the policy developers and the role of the LEAP model in knowledge brokerage during the national energy plan development process. The research findings suggest that the used knowledge brokerage strategies worked for their specific purposes throughout the SEA process. Applying models not only for *ex ante* impact assessment, but also for *ex post* re-assessment can contribute to systematic knowledge exchange between researchers and policy developers through cyclic impact assessment of policies with the aim of better informed decision-making.

Article 6

Title: Assessing impacts of the Setting Young Farmers policy measure: A knowledge Brokerage Approach

Authors: Thomas Bournaris, Chistian Moulogianni, Stratos Arampatzis, F. Kiomourtzi, Basil Manos, Aristotle University of Thessaloniki

Abstract: This study explores Knowledge Brokerage (KB) aspects of an ex-post impact assessment for the Regional Development Programme (RDP) measure “Setting up Young Farmers” under the Common Agricultural Policy (CAP) at the regional level of Central Macedonia in Greece. The assessment bridges the gap between knowledge producers developing scientific output to be applied in a specific context, and knowledge users, who want clear messages regarding the policy challenges they face. The aim of the study was to test a different set of KB approaches for improving the interaction between researchers and policymakers. Our analysis focused on the role of the LIAISE-KIT, a newly developed, web-based contextualisation platform to support IA, and on so-called Support Modules that have been specifically developed to enhance the Science-Policy-Interface (SPI) in impact assessment. Offering a structured approach towards IA, both LIAISE-KIT and the Support Modules allow to frame the context, organisation, scheduling and method selection in the light of KB objectives. An evaluation of how Support Modules influence SPI in the case of the ex-post assessment of the measure “Setting up Young Farmers” demonstrated the high relevance of KB activities for facilitating the interaction between researchers and regional policy makers. Other conclusions include the need for specific guidelines and training for knowledge users, especially with regard to the use of tools. According to our findings, a consequent application of KB activities as laid down in the Support Modules is a crucial pre-condition for successfully implementing IA future RDP measures.

Article 7

Title: Testing knowledge brokerage factors – what matters in knowledge exchange when applying sustainability impact assessment tools?

Authors: Sanna-Riikka Saarela^{a)}, Tarja Söderman^{a)}, Jari Lyytimäki^{a)} and John Turnpenny^{b)},

^{a)}Finnish Environment Institute (SYKE)

^{b)} University of East Anglia (UEA)

Abstract: Success in Impact Assessment (IA) can mean both instrumental success of applying IA results directly in decision-making and conceptual success linked to learning about policy problems more generally. Both instrumental and conceptual success can be claimed to be reliant on the knowledge exchange context of the IA, shaped by factors such as the complexity of the policy problem, type of policy area, organisational norms, actor constellations and durability and openness of knowledge exchange traditions. Although these context factors may be pre-set, depending on more or less established science-policy interrelationships, they are nevertheless contested and reformulated during each IA process. This paper ties together lessons from six different IA processes, performed in 2011–2013. The cases include agricultural policy at the EU and regional level in Greece, national level climate change and energy policy in Finland and Estonia, resource efficiency policy at the German national level, and sustainable land use policy in Inner Mongolia, China. The paper introduces and applies a typology of knowledge brokerage context factors. The paper asks how knowledge brokerage is shaped by different contexts and what determines the consequent application (or non-application) of IA tools and the use of IA results. The paper also suggests recommendations to researchers on suitable practices in different knowledge exchange contexts.

Article 8 (abstract in Appendix 1)

Title: The Social Academic? Scientists' new role in local ecosystem service management - some insights from the Encostas da Serra Geral in the Santa Catarina region, Brazil

Authors: Barbara Schröter ^{a)*}, Claudia Sattler ^{a)}, Bettina Matzdorf ^{a)} and Gisele Alarcón ^{b)}

^{a)} Leibniz-Centre for Agricultural landscape research (ZALF)

^{b)} Universidade Federal de Santa Catarina, Brazil

Article 9 (abstract in Appendix 1)

Title: The integrated Impact Analysis Tool (iIAT-EU) for assessing impacts of urbanization in Europe on the sustainability of regions: a participatorily developed tool for multi-level policy decision making

Authors: Annette Pierr, Ingo Zasada, Dirk Pohle, Regine Berges, Wolfgang Loibl, Jan Peters-Anders, Piotr Korcelli - Leibniz-Centre for Agricultural landscape research (ZALF)

Article 10 (abstract in Appendix 1)

Title: Co-constructing inclusive knowledge in converging fields: Environmental and health care

Authors: Timo Assmuth^{a)} and Jari Lyytimäki^{a)} et al.

^{a)} Finnish Environment Institute (SYKE)

5 General lessons learned from the test cases

All TCs have been linked to either actual ongoing policy formulation or revision processes and their appraisal (e.g. national climate policies), broader development of the knowledge base of policy areas (e.g. EU resource policy and questions around adaptation of agriculture to climate change) or implementation and its impact assessment of broader EU policies on a regional level (e.g. regional implementation of individual Common Agricultural Policy measures).

All TCs followed the SM approach but not as rigidly as it was first anticipated since the role of LIAISE and TC teams was somewhat different than expected. Roles and tasks were much more diverse and TCs and the TC teams' role in them varied widely between TCs. The role of the TC team also appeared to be dependent on the jurisdictional level. At the EU level policy processes are more closed – or at least actors do not know each other beforehand – than on national level. This makes interaction processes on the EU level more exploratory and thus the emphasis is on awareness raising and getting to know actors and their needs. On national and regional level, in many cases there are already more or less established relationships between TC team LIAISE partners and policy-makers. It was easier to progress through the SMs (scoping and planning and analysing impacts with tools and tool co-development), when the relationship had already been established.

One lesson was that testing of IA tools and related knowledge brokering strategies can be very versatile. Testing can include communication on tools on specific policy area, developing tools in certain policy areas, involvement in IA process in the form of making impact analysis or just observing the IA process and opportunities or challenges it provides for tool use. The main idea of testing is to create interaction between researchers and tool-users to contribute to the LIAISE goals. Testing cannot be interpreted narrowly as consultancy-type service provision of using tools in an ongoing policy-process. However, when testing is a very broad activity and can include many smaller actions, all TCs had to clarify their objectives in relation to the LIAISE's goals.

Furthermore, it became evident that the relevant research questions vary between the EU level TCs and others. At the EU level the IA practices are already rather established and several tools are already in use. The LIAISE contribution had to be adjusted to this. On national level this may not have been the case. At the EU level it might be more appropriate to find out and respond to long-term user requirements than immediate needs of ongoing policy processes. An important lesson learned from the TC experiences was that improving tools during IA process is very challenging due to e.g. time constraints. More realistic approach during ongoing process is improvement of the use of the tools or certain level of tailoring of tools for the special use.

It appeared that the SMs and KB act more as a learning process of a science-policy interface than a testing protocol which could be followed step by step. SMs rather provided ideas or a check-list on what might work or be worth considering in a successful IA and tool use process. The TC offered a forum

to participate in and examine policy processes and tool use, and, by implication and to contribute shared LIAISE goals: creating a durable Network of Excellence, initiating dialogue on tool use between researchers and tool users, developing the LIAISE Toolbox and creating the shared research agenda.

A clear challenge for most of the TCs was the interaction with policy makers. One reason for this might be that most – if not all – TCs were rather ‘supply-driven’ meaning that they had been initiated and mainly also planned by LIAISE researchers. TCs were rather forced to carry out their activities during a certain period (the TC period) which was necessarily not tied in with the real-world policy processes or policy makers’ needs. In addition, policy officers have established tendering processes and contacts to the other information producers (e.g. consultants and academia). Thus it appeared that several contextual factors affected the TCs.

Test cases faced also some other challenges during the testing process. ‘Match-making’ knowledge brokering approach, for example, was proven to be non-sufficient to embed research-driven tool development process in policy area. It, however, opened up a route for communication between researchers and policy-makers. It might also be difficult for researchers to follow in-house routines of policy-making (e.g. there might be delays in interaction due to bureaucratic reasons). ‘Collaboration’ knowledge brokering approach was less successful for jointly framing the tool development exercise because open policy questions did not fit within the limitations of the existing models. For researchers this appeared as ‘lack of demand for a tool or knowledge’. Furthermore, both researchers and policy-makers might have been reluctant to move beyond ‘business as usual’ in the knowledge exchange during IA. Some researchers also felt that linear IA is process it is too rigid for complex and multi-level policy problems and processes.

Barriers for successful knowledge exchange in IA identified in test cases include:

Policy-makers:	Researchers:	General:
<ul style="list-style-type: none"> • Diverse needs • Thematic thinking vs. SD • Ownership of IA – no room for out-house researchers • Monopoly, non-open models • Timing of knowledge supply • Power struggle between policy sectors • Few knowledge producers (national and regional level) • No second opinions available (national and 	<ul style="list-style-type: none"> • Supply-driven models and tools • Disciplinary instead generalist approaches • Competition between researchers, models and dialogs in science • Gap in use because of publication process • Different approaches in science/ methods/ disciplines/ ontologies/ worldviews 	<ul style="list-style-type: none"> • Selective use of proof • Pre-defined agendas • Business as usual relations between actors • Organizational changes • Lack of continuity – project based culture • Broking between tools and policy questions missing • Very technical focus of IA and use of evidence • Lack of openness and flexibility • Non-focus of

regional level)	<ul style="list-style-type: none"> Endangering trust is avoided – results not given until final – lack of testing 	motivation and objectives of SPI
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Despite of the challenges, the test cases succeeded in building collaborative relationship with the policy-makers during testing. Tools with wide range of application possibilities (e.g. flexibility to accommodate new goals) appeared to be particularly useful and provide an opportunity for interaction. In addition, it appeared that face-to-face meetings with policy-officers and researchers' active role in promoting a new tool for IA in the scoping phase of the IA are very useful. Engaging active and specialised policy-makers helps researchers to get technical feedback and tailor supply-driven tool development. LIAISE Kit can also serve as a platform for exchange and networking, especially for informing and match-making knowledge brokering. IA researchers can furthermore act as a facilitator in policy-policy interaction by organising seminars and focus group meetings related to inter-ministerial multi-dimensional problem framing and solving (match-making and capacity-building knowledge brokering). It must, however, be emphasised that the success of knowledge brokering, tool application or tool improvement is possible only when the role of the IA knowledge provider or knowledge broker is clearly defined in scoping and planning phase and there is trust and credibility on both sides.

Opportunities for future knowledge exchange in IA identified in test cases include:

Policy-makers:	Researchers:	General:
<ul style="list-style-type: none"> Many needs Support for holistic thinking, trade-offs Enhanced use of existing proven tools Consistent approach preferred – procedural tools Engaging with other policy sectors in complex issues More knowledge producers needed (national and regional level) Second opinions needed (national and regional level) 	<ul style="list-style-type: none"> Early engaging in model and tool development - increase in use Generalist approaches useful in complex problems Meta models - interdisciplinary approaches Publication of policy briefs on ongoing activities – expectation management Openness about modelling (assumptions etc.), increase in trust and credibility Researchers' achieving better broking skills 	<ul style="list-style-type: none"> Comparative use of proof Flexible, changing agendas New opportunities for boundary organisations and brokers Network culture – durable IT or personal ad hoc support Matching tools with policy questions Co-design of knowledge instead of linear transfer Constant (con)testing of knowledge: no 'orphan' knowledge Open co-tailoring

Key test case lessons learned, highlighted also in the conclusive test case policy brief include:

1) Knowledge brokering strategies capable of overcoming the competition between different models are needed

Availability of models and other assessment tools is highly variable across policy sectors and in certain sectors various tools are used. Agricultural and energy sector are examples of policy areas where researchers are reaching out to the policy-world with a variety of different ready-made models

2) Meta-tools combining knowledge on different impact assessment tools and approaches are needed

Addressing complex and conflicting knowledge claims may require additional science-policy interfaces not based on persons serving as knowledge brokers. In addition to persons, or even instead of them, integrative online knowledge platforms or toolboxes can act themselves as knowledge brokers.

3) Official procedures strongly shape the science policy relationship and tool use

Established practices of impact assessment can create opportunities for efficient knowledge production and use, but they also can exclude the inclusion of different types of information. Climate policy is an example of an area dominated by quantitative modelling, at the expense of qualitative information.

4) Critical views to and from earlier assessments can be highly useful

Re-evaluating the results from earlier assessment can help tool development. It can also highlight how earlier communication and interaction processes contribute to subsequent analyses and decisions. The changes in political settings should be always taken into account on the deployment of knowledge brokerage strategies.

5) Personal relationships and trust between researchers and politicians or government officials are often decisive

The role of researchers themselves as knowledge brokers between policy-makers and those applying policy can be vital for the use of tools in impact assessment. Building of trust takes time and depends on prior interactive relationships

References

- Campbell, D., Donald, B., Moore, G., Frew, D., 2011. Evidence Check: knowledge brokering to commission research reviews for policy. *Evidence & Policy* 7(1): 97-107.
- Cash, D.W., Clark, W.C., Alcock, F., Dickson, N.M., Eckley, N., Guston, D.H., Jager, J., Mitchell, R.B., 2003. Knowledge systems for sustainable development. *Proceedings of the National Academy of Sciences* 100 (14), 8086-8091.
- Cutts, B., White, D., Kinzig, A. 2011. Participatory geographic information systems for the co-production of science and policy in an emerging boundary organization
- Dunn, W.N., 1993. Policy Reforms as Arguments, in F. Fischer and J. Forester (eds), *The Argumentative Turn in Policy Analysis and Planning*, London: Duke University Press, pp. 254–290.
- Gieryn, T.F., 1995. Boundaries of Science, in: S. Jasanoff, G.E. Markle, J.C. Peterson and T. Pinch (eds), *Handbook of Science & Technology*, New Delhi: Sage Publications, Thousand Oaks, pp. 393–443.
- Haug, C., Huitema, D. and Wenzler, I. 2011. Learning through games? Evaluating the learning effect of a policy exercise on European climate policy. *Technological Forecasting and Social Change* 78:968-981.
- Hellström, T., Jacob, M., 2003. Boundary organisations in science: from discourse to construction. *Science and Public Policy* 30 (4), 235-238.
- Michaels, S. (2009), 'Matching knowledge brokering strategies to environmental policy problems and settings', *Environmental Science and Policy*, 12: 994-1011.
- Sheate, W., Partidario, M.R., 2010. Strategic approaches and assessment techniques - Potential for knowledge brokerage towards sustainability. *Environmental Impact Assessment Review* 30, 278-288.
- Turnhout, E., Hisschemöller, M., Eijsackers, H., 2007. Ecological indicators: Between the two fires of science and policy. *Ecological indicators* 7, 215-228.
- van Kammen, J., de Savigny, D., Sewankambo, N., 2006. Using the knowledge brokering to promote evidence-based policy-making: the need for support structures. *Bulletin of the World Health Organisation* 84 (8), 608-612.
- Ward, V., A. House and S. Hamer, S. (2009), 'Knowledge brokering: the missing link in the evidence to action chain?', *Evidence & Policy*, 5(3): 267-79.

Appendix 1

Abstracts of the non-LIAISE articles in the test case special issue.

Article 8

Title: The Social Academic? Scientists' new role in local ecosystem service management - some insights from the Encostas da Serra Geral in the Santa Catarina region, Brazil

Authors: Barbara Schröter ^{a)*}, Claudia Sattler ^{a)}, Bettina Matzdorf ^{a)} and Gisele Alarcón ^{b)}

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Abstract: Locally adapted environmental resource management often relies on social community networks. Within these networks there are usually certain actors that are in the core of the network functioning as brokers, intermediaries, gatekeepers, innovators, or facilitators of certain processes. Furthermore, the network's existence and continuity is highly dependent on them. In this study we present an example from Southern Brazil's Encostas da Serra Geral region where local environmental resource management is driven by a group of individuals from the academic domain, who founded an initiative called the Voisin Group (GPVoisin) affiliated to the local university. The aim of the initiative is to promote the idea of introducing and spreading the Voisin System, a rotational cattle grazing system, amongst the local family farmers. Adopting the Voisin System brings economic advantages for the farmers as well as many environmental benefits (e.g. improved soil and water quality, biodiversity benefits). All members of the group act purely voluntary and all performed activities depend entirely on their honorary engagement. In the presented study we investigated the initiative with regards to the following two research questions: i) What role does the Voisin Group play for the local farming community? And ii) what motives do the members of the group have to take on this role?

Our findings show that the Voisin Group is playing a crucial role for the appropriation of knowledge and technical skills for the community members necessary to implement the technical equipment. In this sense, it functions as a knowledge broker and a driving force for change speeding up the process of farmers' adopting more innovative practices in grazing management. The initiative also helps the farmers in reducing their transactions costs and the perceived risk associated with implementing the new practices. By enabling exchange amongst farmers the group also helps the farmers in creating a so-called 'community of practice'. This leads to improved capabilities for self-organization as well as building up confidence and trust within the community.

The motivations for the members of the GPVoisin are a mixed. They are mainly driven by environmental, but very importantly also social concerns and the wish to improve the situation of the ecosystem and the farmers likewise. To some degree voluntary engagement in the group also furthers their job perspectives as several former group members now work for the local agricultural extension services offering further advice to the local farming community, building on their relation of trust to the farmers. Therefore their role is somehow comparable to so-called social

entrepreneurs. However, in this case they can rather be called social academics.

Article 9

Title: The integrated Impact Analysis Tool (iIAT-EU) for assessing impacts of urbanization in Europe on the sustainability of regions: a participatorily developed tool for multi-level policy decision making

Authors: Annette Pierr, Ingo Zasada, Dirk Pohle, Regine Berges, Wolfgang Loibl, Jan Peters-Anders, Piotr Korcelli - Leibniz-Centre for Agricultural landscape research (ZALF)

Abstract: Urban development, by far the most rapidly expanding land use type in Europe, puts peri-urban areas under particular pressure: the growth of built development in peri-urban areas is likely to become up to four times as fast as in urban areas, and takes place on the largest extent on expense of agricultural area. The risk is urban sprawl, with its many societal and environmental problems. The analysis of urbanization trends within EU-27, as well as the regional specific assessment of its economic, environmental and social impacts shows that the situation is complex and develops with large territorial differences. Subject to different policy areas and scales, decision support of multi-level policy makers is required. In order to enable effective knowledge transfer to support evidence-based decision making knowledge brokerage can help to manage the boundaries between science, policy and practice. Integrated modeling provides on this topic new insights, but also faces similar requirements and challenges as stated to land use change impacts and their projections in general: Decision makers ask for tools not for models. Particularly the development pathway from data driven research context (model) to a problem-solution oriented output with application value (end-user tool) and the related functional solutions are the knowledge brokerage related focus of this paper. Knowledge brokerage with multi-level policy decision makers determined some particularities of the final tool, the European integrated Impact Assessment Tool (iIAT-EU), and its functionalities. It also provided insight into the “black box” areas approved on and from both sides – developers and users. We describe the functionalities chosen to inform decision makers involved in multi-level governance processes about status and trends of the interrelations between urbanisation and its manifold impacts. Users can extract thematically and spatially targeted information for different scales and for different types of regions and can carry out comparisons which are visualized in spidergrams and can be downloaded as pdf files. Selection between 28 sustainability indicators, 4 scenarios, and different spatial units at different scales is the main application principle. The iIAT-EU covers 543 NUTSX regions of the EU-27. Users can query indicator values for single NUTSX regions, or average values of groups of regions of choice, or national or EU-27 average. To allow for thematic comparisons, the iIAT offers eleven typologies. The iIAT is an open access and open source tool and accessible on

<http://plurel.ait.ac.at/plurel/iiat/> or
<http://project1.zalf.de/iiat/iiat/iat.jnlp>.

Article 10

Title: Co-constructing inclusive knowledge in converging fields: Environmental and health care

Authors: Timo Assmuth^{a)} and Jari Lyytimäki^{a)} et al.

^{a)} Finnish Environment Institute (SYKE)

Abstract: Global ecological and societal transitions pose challenges of including different actors with different notions of knowledge. We focus on approaches to gaining and acting on knowledge in the converging fields of environment and health care and their border-zone, environmental health. We rethink 'knowledge', 'brokering' and 'science-policy interface' through the prism inclusiveness in these fields e.g. in holistic knowledge, in combination of individualized and collective views, and in extended ethics. Institutions and other actors increasingly participate in governance but are also sidelined by lobbies, underlying the need for inclusiveness. We move from linear to dynamic models of knowledge accumulation and loss, of authority (also of experts) and of the idealized value-neutral 'honest broker'. Specifically, the multi-actor governance and associated dynamic contestation of knowledge reshape the horizontal integration of sectors, prompting joint fact finding and other partly new forms of deliberation. We pay particular attention to the criteria for evidence of problems and solutions and to associated interpretations of precaution, based in part on different requirements for proof and competence (heavily regulated in medicine) to reality-check of claims, projections and advice. We use theoretical models, literature and document analyses, and cases at international and national level. At the international level, we investigate e.g. the EEA's 'Environmental Health Narrative' as an alternative to factual state-monitoring metrics, and the challenges in balancing evidential and precautionary judgment. At the national level, we analyze the experiences from using the open platform Opasnet.fi of the Finnish National Institute of Health and Welfare for environmental/health dispute resolution. Overall, it is concluded that there are both shared and special problems and solutions in the studied fields or settings regarding knowledge brokering, reflecting the roles of environmental and health care as ambiguous and dynamic 'Bourdieuian fields'. Methodologically, our analyses underline the importance of heuristic approaches to explicating interpretations and dealing with disagreements about knowledge, values and premises for actions.

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