

This is the eleventh newsletter from the steering group of the Sustainability Transitions Research Network. The newsletter is divided into the following sections:

- Words from the Chairman
- Environmental Innovation and Societal Transitions
- Network news
- Event announcement
- New research projects
- Publications

We welcome all members to submit news items for the next newsletter. You can use the website [www.transitionsnetwork.org](http://www.transitionsnetwork.org) (submit projects, output or news), or send a message to [sustainabilitytransitions@gmail.com](mailto:sustainabilitytransitions@gmail.com). The advantage of using the website for submission is that the information also becomes available online.

The STRN steering group

## Words from the Chairman

Dear transition research colleagues,

One important pillar for our community is the annual International Sustainability Transitions (IST) conference. The deadline for the 5th IST conference is approaching fast (31 March). So, there are still some days left if you want to go but have not yet submitted a paper. The IST conference, which is held in Utrecht this year, has become a central meeting place for, offering opportunities for discussing intellectual and empirical progress, networking with like-minded colleagues, and informing yourself about the rapidly expanding range of activities. So, as Marko Hekkert points out in this newsletter it is THE place to be for sustainability transition scholars. The general topic is Institutions and impact, and some of the stimulating keynote speakers are Johan Schot, Raghu Garud, Marjan Minnesma, Simon Kavanagh and Ans Kolk. I hope to see many of you there in August this year.

A second important pillar is the EIST-journal (Environmental Innovation and Societal Transitions). This newsletter contains references to the papers in the most recent special issue, which is about the global diffusion of environmental innovations and the important concept of lead markets. As you can see on the website, EIST is attracting an increasing number of high-quality papers, and has a healthy pipeline for the coming issues. The next step will be to get a good impact factor, which will make it more attractive for us to publish in EIST (since many of us are under pressure to publish in ISI-ranked journals). As Jeroen van den Bergh points out in this newsletter, you can all help to achieve that goal by citing articles from EIST in your own papers (when relevant, of course). In a way, EIST forms a collective good from which we all benefit (by providing a specialized outlet and forum for discussion, raising the profile and visibility of the transition topic). It would be great if you could contribute to that collective good by helping EIST achieve a good impact factor.

The newsletter further contains a review of a workshop on 'Spaces for Low-Carbon Innovation' in Eindhoven, two new projects, and a wide range of recently published articles. These articles show, amongst others, a continuing interest in transitions in non-Western countries (e.g. Thailand, Malaysia, Panama, Nepal), several papers on niches and niche protection (Boon et al, Berry et al, Kern et al; Hansen and Nygaard; Bhattarai and Pant), a new conceptual framework about industries-in-contexts (Geels), various political and governance oriented papers (e.g. Stephens; Laes et al; Kivimaa; Gottschick) and several socio-technical analyses (e.g. Marletto; Rosenbloom and Meadowcroft; Bolton and Foxon; Ulli-Beer). Transition-publications also continue to diversify in terms of the kinds of journals, which publications in this newsletter being published in *WIREs Climate Change*; *NJAS - Wageningen Journal of Life Sciences*; *Canadian Journal of Development Studies*; *Marine Policy*; *Agroecology and Sustainable Food Systems*.

In sum, transitions research appears to continue its upward trajectory with stable pillars (annual conference, EIST-journal, STRN community) and high numbers of interesting publications in an increasingly diverse set of outlets, while also maintaining visibility in some of the traditional core journals (Research Policy; Technological Forecasting and Social Change; Technology Analysis & Strategic Management; Energy Policy). I want to thank all contributors to this newsletter for their contributions and hope you find the news updates interesting and relevant.

**Frank Geels**, Chairman of STRN ([frank.geels@mbs.ac.uk](mailto:frank.geels@mbs.ac.uk))

## Environmental Innovation and Societal Transitions

Volume 10 of *Environmental Innovation and Societal Transitions* has just been published. It is a special issue on "Global Diffusion of Environmental Innovations", edited by guest editor Dr. Klaus Rennings. The issue addresses problems and opportunities associated with the international spread of technologies that perform relatively well in environmental terms. Global diffusion is a prerequisite for the success of any environmental technology and associated worldwide sustainability transition. An important concept in this literature, namely "lead markets", plays a central role in several of the studies in this issue. The following contributions are included:

Klaus Rennings, 2014, Introduction: Global diffusion of environmental innovations, *Environmental Innovation and Societal Transitions*, 10, 1-3

Rainer Quitzow, Rainer Walz, Jonathan Köhler, Klaus Rennings, 2014, The concept of "lead markets" revisited: Contribution to environmental innovation theory, *Environmental Innovation and Societal Transitions*, 10, 4-19

Rainer Walz, Jonathan Köhler, 2014, Using lead market factors to assess the potential for a sustainability transition, *Environmental Innovation and Societal Transitions*, 10, 20-41

Jens Horbach, Qian Chen, Klaus Rennings, Stefan Vögele, 2014, Do lead markets for clean coal technology follow market demand? A case study for China, Germany, Japan and the US, *Environmental Innovation and Societal Transitions*, 10, 42-58

Jonathan Köhler, Rainer Walz, Frank Marscheder-Weidemann, Benjamin Thedieck, 2014, Lead markets in 2nd generation biofuels for aviation: A comparison of Germany, Brazil and the USA, *Environmental Innovation and Societal Transitions*, 10, 59-76

Jan Peuckert, 2014, What shapes the impact of environmental regulation on competitiveness? Evidence from Executive Opinion Surveys, *Environmental Innovation and Societal Transitions*, 10, 77-94

On another issue, note that Elsevier mentions a so-called SNIP (Source Normalized Impact per Paper) value for EIST and other journals in the relevant journal entry of the Scopus database. Although this is not the same as an Impact Factor (IF), the score for EIST is not bad compared to other journals in the fields of environment, energy and innovation (even though still lower than most other journals). Note that the SNIP is defined as the ratio of a journal's citation count per paper and the citation potential in its subject field. This captures the phenomenon that the impact of a single citation is higher in subject areas where citations are less likely. This clearly differs from the IF calculation.

We would like to remind all STRN members once more that in order for EIST to obtain an official impact factor in the coming years, necessary for survival in the long run, it is useful to cite articles in EIST in your work (of course, only when this is relevant). From Elsevier we know that since there is more competition and new journals are started on an almost monthly basis, it is becoming increasingly difficult to quickly receive an IF. So please consider this issue seriously in order to contribute to a sustainable future of EIST. Since its start, EIST has published on many different themes, so a connection with your own work and particular EIST articles should not be difficult to find. Please consider this issue when finishing or submitting your latest articles, particularly for other journals.

**Jeroen van den Bergh**, Editor-in-Chief [jeroen.bergh@uab.es]

## Network News

*Any news related to ongoing activities of STRN*

## Event announcements

*Calls for upcoming relevant events such as workshops and conferences*

### **5th International Sustainability Transitions (IST) Conference August 27-29, 2014 Utrecht, The Netherlands**

The yearly IST conference is organized this year by Utrecht University. This is THE yearly event for transition scholars to meet and exchange ideas. The theme this year is Impact and Institutions. The call for papers closes on March 31st. Visit [www.IST2014.com](http://www.IST2014.com) for information and quickly submit a paper if you have not done so already.

### **2<sup>nd</sup> Climate-KIC PhD Thematic Summer School (1-12 September, 2014): Low Carbon Energy Systems: Implementing Transitions in Frankfurt**

In the first two weeks of September 2014 (01.09.-12.09.14) Provadis School will organise on behalf of the Climate-KIC Making Transitions Happen Platform the second edition of its thematic Summer School for PhD students. Up to 40 PhD students from all over the world will be hosted in September 2014 in Frankfurt am Main to learn and support the vision of the city to transform its energy system by 2050 to 100% renewable energy. The last year PhD Summer School in Frankfurt was focused on concept development regarding the local Energy Transition in Frankfurt and its *Masterplan 100% Klimaschutz*. As this Masterplan will be adopted in May this year, the forthcoming edition of the PhD Summer School will focus on the implementation of this Masterplan. The main areas of interest during the PhD Summer School will be: New Financial Instruments, User Engagement and Area Experiments. Based in Frankfurt-Höchst at Provadis School, the participating PhD students will attend lectures, workshops, excursions and discussions; meet world renowned experts, visit companies as well as city representatives and enjoy leisure activities showcasing the sights and tastes of Frankfurt and the Rhein-Main-Region. The Summer School boasts a busy and well-coordinated programme – but it not just about delivering knowledge – it is also about connecting people and ideas. Last year the 36 participants came from 23 different countries located across the globe and both hemispheres. Engineering, architecture, economics, urban planning and environmental science – these were a few of the disciplines from this diverse group. For more information on the Summer School 2013 please visit: [www.ckic-phd-ffm.net](http://www.ckic-phd-ffm.net). For specific questions please contact: **Ms. Nanja Nagorny** (Nanja.Nagorny@provadis-hochschule.de).

## Event Reviews

*Review of events interesting to the STRN community*

### **Workshop 'Spaces for Low-Carbon Innovation', 26-28 November 2013, Eindhoven**

Late last year, Eindhoven University of Technology's *School of Innovation Sciences* hosted a three-day international workshop around the theme of 'space'. The workshop concluded a joint research project (SPRU and TU/e) on the politics of low-carbon innovation (<http://lowcarbonpolitics.wordpress.com>). The workshop gave a platform to scholars who examined the role of space in sustainability transitions from a variety of conceptual perspectives: evolutionary/socio-technical, institutional, discursive, geographical and relational ones. Empirically, most papers covered the domain of energy (from use to production and regulation), but there were interesting exceptions, such as public transportation, universities and the pharmaceutical sector (e.g. a case study of how accelerated market approval regulations create protective spaces for the development of drugs for unmet medical conditions). Emergent themes included the creation of institutional spaces; the importance of local experimentation; voluntary and commercial initiatives; contestation and legitimacy; and the geography of transitions. Harriet Bulkeley, for example, spoke on how sustainability experiments in cities create new forms of political space through the blurring of public and private authority, and Teis Hansen delivered a geographers' critique on the use of spatial concepts in the transition studies community. Discussions continued over a nice dinner on the abandoned industrial complex formerly known as the 'forbidden city', which for three quarters of a century had itself been a protective space for electronics manufacturer Philips' R&D efforts. Unsurprisingly, the workshop participants did not reach consensus on any 'best' way to use spatial insights: opinions differed, for example, on whether space, place and scale should enrich existing perspectives such as the MLP, or whether they should constitute alternative theories for exploring transition processes (as some arguably already do). The workshop was successful in its ambition to critically reflect on the analytical advantages and limitations that thinking in terms of space(s) brings to understanding transitions. During the three days, the 'spaces' concept emerged as a boundary object: interpreted differently across academic communities but bringing them together through a common interest. This is further highlighted by many participants' ambition to produce, within the next year, a special issue around the theme.

**Bram Verhees ([b.verhees@tue.nl](mailto:b.verhees@tue.nl))**

## New research projects

*Information about ongoing research activities such as the start of new research projects*

### **Energy Vulnerability and Urban Transitions in Europe**

EVALUATE (Energy Vulnerability and Urban Transitions in Europe) is a European Research Council project that aims to investigate the manner in which urban institutional structures, built tissues and everyday practices shape vulnerability to energy/fuel poverty at a variety of geographical scales. The project uses the notion of 'energy vulnerability' – which can be seen as the propensity of a household to suffer from a lack of adequate energy services in the home – as a basis for its empirical and theoretical investigations. EVALUATE's focal point is on the relationship between patterns of energy vulnerability and the progress of energy transitions, understood as broader processes of systemic change. Using a number of Eastern and Central European cities as case studies, the project undertakes qualitative and quantitative investigations of the typologies, structures and experiences of energy vulnerability in such contexts. Its activities are placed within a broader framework that explores how energy vulnerability across developed world countries is produced and mitigated through the interaction of relevant decision-making institutions in the energy, social welfare, health and housing domains. EVALUATE is hosted by the newly-established Centre

for Urban Resilience and Energy (CURE) at the University of Manchester. For more information, please contact Stefan Bouzarovski ([stefan.bouzarovski@manchester.ac.uk](mailto:stefan.bouzarovski@manchester.ac.uk)).

### **Transition Patterns Enabling Smart Energy Systems (TRAPESES)**

How does the transition to a smart energy system take shape? What are the tensions and synergies that arise between existing organisations and structures and new parties and developments influencing the future energy system? To investigate this a consortium led by DRIFT (Erasmus University Rotterdam) and further consisting of IVM (VU University), Economics of Infrastructures Section (TPM, TU Delft) and grid operator Alliander, receive a research grant of € 600.000 from the Netherlands Organisation for Scientific Research (NOW). The research focuses on the energy transition in the Netherlands. At this stage, it is far from clear how the transition to a Smart Energy System will take shape. Demographic, economic and ecological developments lead to an increasing destabilisation of the incumbent centralized and predominantly fossil-fuel based energy regime, thereby increasing structural and systemic uncertainties for actors operating at regime, niche and landscape level. For the medium term, stakeholders need to cope with uncertainties rather than being able to reduce them, which means that uncertainties need to be dealt with in an exploratory and evolutionary manner, putting mutual learning at centre stage. Taking a transition perspective, a Smart Energy System can be understood as an emergent socio-technical system developing out of interacting dynamics between external societal landscape drivers, innovation within the current centralised energy regime and emerging, decentralised energy niches that involve technological, social innovation and/or institutional innovation. We propose to examine, in close exchange with a variety of practitioners and consortium partner Alliander, how synergies and conflicts emerge when top-down and bottom-up innovations meet. Subsequently we will explore the possible challenges and opportunities for developing towards SES along the least disruptive of the possible transition patterns (the so-called 'hybrid transition pattern') and develop ideas and suggestions for institutional designs and actor strategies. For more information, please contact Rick Bosman ([bosman@drift.eur.nl](mailto:bosman@drift.eur.nl)).

### **Manchester Cycling Lab – knowledge for a cycling transition**

The Manchester Cycling Lab is a new research project coordinated by the University of Manchester that applies research findings on living labs and sustainable urban transitions to Manchester. Focusing on the transport sector and especially cycling, the project identifies the gaps in knowledge that need to be filled in order to facilitate Manchester's Velocity vision to become a cycling city by 2025, working closely with the Manchester City Council, Transport for Greater Manchester and local businesses. A suite of applied projects to address these needs has been developed with the goal to turn Manchester into a real-life laboratory for the study of cycling, harnessing the knowledge and capacity of the University to support a socio-technical transition in the city's transport sector. The current portfolio contains about a dozen research projects, tailored to the knowledge needs of our key stakeholders addressing, ranging from cost-benefit analysis for cycling investments to smart planning for bicycle infrastructure. Based on a creative stakeholder engagement strategy, the project will provide a platform for longer-term knowledge exchange activities to advance Manchester's low-carbon transition through continuous experimentation, evaluation and learning. The research will develop a methodology to transfer the living lab model to related low carbon sectors. The Manchester Cycling Lab is hosted by the University Living Lab and funded by the ESRC Impact Acceleration Account. For more information please contact James Evans ([James.Z.Evans@manchester.ac.uk](mailto:James.Z.Evans@manchester.ac.uk)) or Gabriele Schliwa ([gabriele.schliwa@manchester.ac.uk](mailto:gabriele.schliwa@manchester.ac.uk)).

## Publications

Announcement of new publications such as article, PhD theses and books

### **Marletto, G., 2014, Car and the city: Socio-technical pathways to 2030, *Technological Forecasting & Social Change*, forthcoming**

The socio-technical approach to innovation is used to show that the future of urban mobility will depend on the competition between coalitions of innovative actors who support alternative transport systems. A new graphical tool—the socio-technical map—is introduced in order to represent the positioning of supporting coalitions with reference to three variables: business models, propulsion technologies and power. Three transition pathways to 2030 may emerge from the current situation of urban mobility: 1) 'AUTO-city', i.e. the reconfiguration of the 'individual car' dominant system through the stable integration of producers of batteries; 2) 'ECO-city', i.e. the further empowering and diffusion of local coalitions which already integrate all non-car modes of transport; 3) 'ELECTRI-city', i.e. a new 'electricity vehicles + smart grids' system established by a coalition led by electric operators. Because of the cumulative processes between the transformation of supporting coalition and their access to higher level of competence and power, both technologies and policies can be considered as endogenous variables to transition pathways. The resulting policy prescriptions are clear-cut: if not destabilized by policy pressure, the 'AUTO-city' will prevail; to support the 'ECO-city' and the 'ELECTRI-city', a multilevel policy for urban and transport planning and a national innovation and industrial policy are needed, respectively.

### **Boon, W.P.C., Moors, E.H.M. and Meijer, A.J. 2014, Exploring dynamics and strategies of niche protection, *Research Policy*, 43(4), 792-803**

This paper focuses on the processes and strategies of advocates and opponents in creating, maintaining and/or contesting the protective spaces in which 'urgently needed' but 'risky' pharmaceutical innovations are managed. Drawing on transition literature and recent work on niche protection, this paper adds to the conceptualisation and empirical grounding of niche protection by studying the dynamics of protection, in particular the different phases of niche development. Moreover, the links between niche protection processes and protection strategies pursued by niche players are explored. Dynamics of niche protection are explored in two case studies: the monitoring of treatments for HIV and of a vaccination against pandemic influenza. We conclude that niche protection depends on interactions between network building, empowerment activities and the construction of a positive niche narrative vis-à-vis anti-narratives raised by actors outside the niche. Furthermore, the nature of learning within a niche and the niche's robustness are determined by whether the strategies are predominantly accommodating or restrictive.

### **Geels, F.W., 2014 'Reconceptualising the co-evolution of firms-in-industries and their environments: Developing an inter-disciplinary Triple Embeddedness Framework', *Research Policy*, 43(2), 261-277**

This inter-disciplinary theory-building paper is motivated by the debate on grand societal challenges and by calls in the innovation studies literature for frameworks that offer a better understanding of the co-evolution of industries and their economic, political, cultural, and social environments. In response to these debates, the paper develops a new triple embeddedness framework (TEF), which conceptualizes firms-in-industries as embedded in two external (economic and socio-political) environments and in an industry regime which mediates strategic actions towards the external environments. The TEF's theoretical logic draws on the adaptation-selection debate, which suggests that the co-evolution phenomenon can be approached from two angles. With regard to (population-level) *selection* theories, which highlight pressures on industries from external environments, the TEF accommodates insights from evolutionary economics, neo-institutional theory, and economic sociology. With regard to (firm-level) *adaptation* theories, the TEF accommodates insights from externally-oriented strategy schools (economic positioning strategy, innovation strategy,

corporate political strategy, discursive strategy, issue management) and internally-oriented strategy approaches (linked to knowledge/capabilities and cognition/sensemaking). The combination of insights produces a multi-dimensional framework with bi-directional interactions between firms-in-industries and their environments. Implications for the grand challenge agenda are discussed in a separate section and illustrated with examples.

**Berry, S., Davidson, K. and Saman, W., 2013, The impact of niche green developments in transforming the building sector: The case study of Lochiel Park, *Energy Policy*, 62, 646-655**

Energy use in residential buildings is a significant contributor to global carbon emissions. The South Australian Government responded to concern for anthropogenic greenhouse gas emissions by creating a model development of near zero energy homes in a near zero carbon impact estate. The creation of the Lochiel Park Green Village challenged a collective of industry experts and policy makers to set objectives, performance targets and regulatory guidelines outside existing institutional and professional norms. Literature suggests that the creation of niche events can help the transition away from dominant technologies, practices and beliefs, and lead to organisations embracing new tools, construction practices, technologies, standards and policies. By applying a multi-level socio-technical framework, and utilising evidence collected from a series of interviews with key government and industry leaders, this paper examines how, under the influence of landscape pressures, structural change at the regime level can come from the incubation of ideas and experiences at the niche level. The available evidence finds that the creation of the Lochiel Park Green Village has allowed many individuals and organisations to gain a more detailed and practical understanding of sustainable housing, and has given organisations the confidence to change industry practices, government policies, and regulatory standards.

**Kern, F., Smith, A., Shaw, C., Raven, R. and Verhees, B., 2014, From laggard to leader: Explaining offshore wind developments in the UK, *Energy Policy*, forthcoming**

Offshore wind technology has recently undergone rapid deployment in the UK. And yet, until recently, the UK was considered a laggard in terms of deploying renewable energy. How can this burst of offshore activity be explained? An economic analysis would seek signs for newfound competitiveness for offshore wind in energy markets. A policy analysis would highlight renewable energy policy developments and assess their contribution to economic prospects of offshore wind. However, neither perspective sheds sufficient light on the advocacy of the actors involved in the development and deployment of the technology. Without an account of technology politics it is hard to explain continuing policy support despite rising costs. By analysing the actor networks and narratives underpinning policy support for offshore wind, we explain how a fairly effective protective space was constructed through the enrolling of key political and economic interests.

**Sengers, F. and Raven, R., 2014, Metering motorbike mobility: informal transport in transition?, *Technology Analysis & Strategic Management*, forthcoming**

Vast numbers of people in rapidly growing cities throughout the developing world depend on informal transport services for their mobility needs. Thus far the field of transition studies has addressed the dynamics of socio-technical change in situations where regimes of automobility and sanctioned public transport constitute the dominant order, but not in contexts of cities in the developing world, where informal transit thrives. In this paper we enquire about stability and prospects for change in these kinds of socio-technical systems. To this end, we trace the evolution of Bangkok's motorcycle taxi industry including recent efforts to introduce a potentially radical innovation: an information and communications technology (ICT) platform used as a taximeter. The paper concludes that innovations in informal urban transport are opening up alternative mobility pathways for the developing world, which might even spread far beyond their original confines into the West; and that the persistence of informal transport systems and the proliferation of innovations within those

systems in developing countries prove to be relevant phenomena for defining prominent topics on the agenda of (sustainability) transitions research.

**Rosenbloom, D. and Meadowcroft, J., 2014, The journey towards decarbonization: Exploring socio-technical transitions in the electricity sector in the province of Ontario (1885–2013) and potential low-carbon pathways, *Energy Policy*, 65, 670–679**

This article employs the multi-level perspective on socio-technical transitions to explore the historical evolution of the electricity regime in the province of Ontario from 1885-2013 and to interpret the potential for future movement towards decarbonization. With an emphasis on the political and social dimensions of transitions, this analysis traces the key features influencing change within Ontario's electricity system over the past century. This paper uses multiple criteria (the phase of electrification; role of the electricity system in economic development; structures of ownership, market and regulation; dominant technologies; and the relative stability of arrangements) to characterize distinct regime configurations and periods of instability which separate relatively stable system orientations. Lessons are drawn from the historical case with implications for future decarbonization in the province, including the importance of: (1) residual momentum; (2) embedded guiding principles; and, (3) politico-economic coalitions.

**Ulli-Ber, S. (ed.), 2013, *Dynamic Governance of Energy Technology Change: Socio-technical transitions towards sustainability*, Springer**

Formulating effective responses to the global challenges of mitigating climate change and securing a sustainable energy future requires a clear understanding of the interdependent causalities between institutions, local decision making, strategic alliances and eco-innovations, as well as policies. It has been acknowledged that the linear “Manhattan project” model is not an adequate governance model for mastering the dynamic complexity of socio-technical transitions; therefore this book aims at advancing research on systematic transition management models. It offers qualitative and quantitative analyses of socio-technical transitions in road transportation and housing, bringing together tailored theorizing on sustainability transitions and applied system dynamics modeling. It highlights the interconnected causal feedbacks that are required to overcome the lock-in situation in road transportation and housing fueled by fossil energies. Showing which concerted actions and framework conditions are required in the transition phases in order to initiate and sustain socio-technical transition, it serves as a guide to model-based strategy making, policy design and analyses in support of sustainable futures.

**Hansen, U.E. and Nygaard, I., 2014, Sustainable energy transitions in emerging economies: The formation of a palm oil biomass waste-to-energy niche in Malaysia 1990–2011, *Energy Policy*, 66, 666–676**

The economic development in emerging economies in Southeast Asia has significantly increased the use of fossil fuel based energy. This has severe implications for global climate change, and against this background, scholars within the sustainable transition tradition have taken an interest in addressing how transitions towards more sustainable development pathways in this region may be achieved. This paper contributes to the abovementioned literature by examining the conducive and limiting factors for development and proliferation of a palm oil biomass waste-to-energy niche in Malaysia during the period 1990–2011.

Rising oil prices, strong pressure on the palm oil industry from environmental groups, and a persisting palm oil biomass waste disposal problem in Malaysia appear to have been conducive to niche proliferation, and on top of this national renewable energy policies and large-scale donor programmes have specifically supported the utilisation of palm oil biomass waste for energy. However, in spite of this, the niche development process has only made slow progress. The paper identifies reluctant implementation of energy policy, rise in biomass resource prices, limited network formation and negative results at the niche level, as the main factors hindering niche development.

**Bhattarai, K. and Pant, L., 2013, Patriarchal bargains in protected spaces: a new strategy for agricultural and rural development innovation in the western hills of Nepal, *Canadian Journal of Development Studies*, 34(4), 461-481**

This paper integrates the theory of patriarchal bargains and strategic niche management theory to study whether or not creating strategic niches of struggle and negotiation as opposed to indiscriminate gender mainstreaming can help secure rural women's rights. Empirical data for this study were collected on rural women's tasks, resources, and benefits in the Kaski district of western Nepal using mixed methods. Findings suggest that unless women find a protected niche in which they can struggle and negotiate for their rights, patriarchal bargains would not be successful, partly because of women's lower control over land and services associated with land.

**Gottschick, M., 2014, Reflexive capacity in local networks for sustainable development: Integrating conflict and understanding into a Multi-Level Perspective transition framework, *Journal of Environmental Policy and Planning*, forthcoming,**

One core element of Reflexive Governance is the reflexive capacity building of actors. To improve governance arrangement actors have to be empowered to study and understand these arrangements (second-order reflexivity). As a contribution to this challenge a heuristic framework is developed out of two complementary Reflexive Governance approaches: the Multi-Level Perspective (MLP) and the Conflict-Orientated Understanding (CU) approach. The framework serves as a workshop-structure to participatively study local networks or multi-stakeholder arenas with its participants. The framework is applied to two case studies of local networks. It is demonstrated to what extent the framework helps to analyse and interpret the network processes (reflexive capacity building). The paper concludes with recommendations for advancement of MLP, CU, and the concept of Reflexive Governance.

**Bolton, R. and Foxon, T.J., 2014, Infrastructure transformation as a socio-technical process — Implications for the governance of energy distribution networks in the UK, *Technological Forecasting and Social Change*, forthcoming**

This paper seeks to uncover and examine the complex set of governance challenges associated with transforming energy distribution networks, which play a key enabling role in a low carbon energy transition. We argue that, although the importance of such infrastructure networks to sustainability and low carbon transitions in the energy, water and mobility sectors is clear, there is relatively little understanding of the social and institutional dimension of these systems and appropriate governance strategies for their transformation. This may be because the prevalent model of infrastructure governance in the energy and other sectors has prioritised short term time horizons and static efficiencies. In this paper we draw on the social shaping of technology literature to develop a broader understanding of infrastructure change as a dynamic socio-technical process. The empirical focus of the paper is on the development of more flexible and sustainable energy distribution systems as key enablers for the UK's low carbon transition. Focusing on electricity and heat networks we identify a range of governance challenges along different phases of the 'infrastructure lifecycle', and we draw lessons for the development of governance frameworks for the transformation of energy infrastructure more generally.

**Hassink, J., Hulsink, W., Grin, J., 2014, Farming with care: the evolution of care farming in the Netherlands, *NJAS -Wageningen Journal of Life Sciences*, 68, 1 - 11**

The aim of this paper is to describe and understand the evolution of the care farming sector in one of its pioneering countries, the Netherlands. Care farms combine agricultural production with health and social services. Care farming is a phenomenon that faces specific challenges associated with connecting two different domains. Organizational ecology, social movement theory and the multi-level perspective are helpful concepts in interpreting and contextualizing the developments that have taken place. Organizational ecology explains how the number of care farms, and the legitimacy and diversity of the care farming sector, have increased rapidly over time. Strategic actions of dedicated boundary spanners have

played an important role in the development of the sector. Social movement theory explains the impact of collaborative action in the pioneering and later stages. The multi-level perspective explains changes in the care regime, like the introduction of the personal budget of patients and the liberalization of the Dutch health care sector, helping to provide access of foundations of care farms to the collective health insurance for the costs of long-term care. Media exposure, contacts with ministries and politicians and the development of a quality system have contributed to the legitimacy of the sector. Changes in the care regime and collective action promoted a further expansion of the sector and provided direction to the ways the sector developed qualitatively, especially in terms of the emergence of structures aimed at facilitating existing and promoting new care farming practices. Our framework sheds light on changes in agriculture and transsectoral collaboration.

**Pel, B., 2014, Intersections in system innovation: A nested-case methodology to study co-evolving innovation journeys, *Technology Analysis & Strategic Management*, 26(3), 307-320**

Current persistent sustainability challenges are widely understood to require transitions and system innovations. As these systemic changes typically emerge from multiple co-evolving innovations, Schot and Geels [2008. Strategic niche management and sustainable innovation journeys; theory, findings, research agenda, and policy. *Technology Analysis and Strategic Management* 20, no. 5: 537–54] urge to study the interactions between innovation journeys. Their call for multiplicity has been met through several studies. Yet considering that these analyses still leave the attendant navigational challenges underexposed, this article demonstrates the usefulness of nested-case methodologies. Focusing on the ‘intersections’ between interpenetrating case histories, in-depth investigation is combined with broader attention to next-order changes. The relevance and implications of these intersections are illustrated through four innovation journeys in the Dutch traffic management field: unfolding largely in parallel, but sometimes intersecting, they yield a mixed picture of trajectory formation and fragmentation. The phenomenon of emergent incoherence is identified as a key strategic challenge in system innovation processes.

**Kivimaa, P., 2014. Government-affiliated intermediary organisations as actors in system-level transitions. *Research Policy*, in press.**

The article draws from two theoretical fields, innovation intermediation and sustainability transitions, to examine the role of government-affiliated intermediary organisations in system-level transitions. The role of intermediaries working between actors – producers and users, entrepreneurs and adopters, idea generators and funders – has seldom been specifically addressed in the transitions literature. Thus, the role of intermediary organisations in enacting change in socio-technical regimes, particularly of intermediaries falling between traditional public sector and private sector actors, is of interest in this article. Empirical analyses of two Finnish organisations, Sitra and Motiva, show that government-affiliated intermediaries are likely to engage in strategic niche management processes in diverse ways, each organisation having its own distinct characteristics. The analysis also points out that to get from niches to transition, sustained systemic intermediaries are crucial in articulating new visions and expectations. Government-affiliated intermediaries may make an important contribution to sustainability transitions by initiating and managing new policy or market processes and by acting as an impartial contact point or voice for new networks of actors. While independence from public administration is likely to facilitate networking, too neutral a stance or limited temporal engagement may reduce the transition-facilitating effects.

**Stephens, J.C., 2013, Time to stop investing in carbon capture and storage and reduce government subsidies of fossil-fuels, *WIREs Climate Change*, early view online**

Government investment in carbon capture and storage (CCS) is a large and expensive fossil-fuel subsidy with a low probability of eventual societal benefit. Within the tight resource constrained environments that almost all governments are currently operating in, it is irresponsible to sustain this type of subsidy. CCS has been promoted as a 'bridging' technology to provide CO<sub>2</sub> reductions until non-fossil-fuel energy is ramped up. But the past decade of substantial government investment and slow progress suggests that the challenges are many, and it will take longer to build the CCS bridge than to shift away from fossil-fuels. Optimism about the potential of CCS is based primarily on research on technical feasibility, but very little attention has been paid to the societal costs of governments perpetuating fossil-fuels or to the sociopolitical requirements of long-term regulation of CO<sub>2</sub> stored underground. Deep systemic change is needed to alter the disastrous global fossil-fuel trajectory. Government investment in CCS and other fossil-fuel technologies must end so that the distraction and complacency of the false sense of security such investments provide are removed. Instead of continuing to invest billions in CCS, governments should invest more aggressively in technologies, policies, and initiatives that will accelerate a smooth transition to non-fossil-fuel-based energy systems. We need to divest from perpetuating a fossil-fuel infrastructure, and invest instead in social and technical changes that will help us prepare to be more resilient in an increasingly unstable and unpredictable future.

**Laes, E., Gorissen, L. and Nevens, F., 2014, A comparison of energy transition governance in Germany, The Netherlands and the United Kingdom, *Sustainability*, 6, 1129-1152**

This paper reviews and analyzes the challenges of energy transition governance towards a low-carbon society as a political achievement. The main research question is how specific "transition governance approaches" (as advocated by transition theory) can be embedded/anchored in the policy-making logics and practices. We analyze three country cases, known for their path-breaking efforts in the area: Germany (due to its pioneering role in the development and diffusion of renewable energy technologies), the Netherlands (due to its pioneering role in launching the transition management framework), and the United Kingdom (due to its pioneering role in adopting a long-term legislative commitment to a low-carbon future). The paper identifies best governance practices and remaining challenges in the following areas: (i) connecting long-term visions with short- and mid-term action; (ii) innovation (technological as well as social); (iii) integration (of multiple objectives and policy areas and levels); (iv) societal engagement; and (v) learning/reflexivity.

**Lachman, D.A., 2014, A combination of existing concepts and approaches to take on energy system transitions – The Republic of Panama as a case-study, *Sustainable Energy Technologies and Assessments*, 5, 84-94**

The impact of our energy systems on the climate mandates an energy system transition. In this paper a combination of existing concepts and approaches to take on such transitions is discussed. This combination starts with first defining the unit of analysis, after which actors in the socio-technical energy system are charted through literature research and interviews. Next, using social network analysis, regimes and niches are identified to depict the unit of analysis in a more useful manner for managing transitions. The step hereafter consists of creating internal and external scenarios based on critical uncertainties to insure transition management efforts against uncertainty in and outside the unit of analysis. Moving to transition management, robustness analysis is then used to evaluate strategies and policies in all combinations of these internal and external scenarios to get to an optimum set of strategies and policies which are used to form a normative scenario. This will be used to get stakeholders behind the transition effort. This combination of approaches and concepts is used in the case of the Republic of Panama. It results in a clear overview of the energy

system, impediments and opportunities regarding transition, possible futures, and the validity of strategies and policies in different scenarios.

**Westly, F.R., Tjornbo, O., Schultz, L., Olsson, P., Folke, C. Crona, B. and Bodin, O., 2013, A theory of transformative agency in linked socio-ecological systems, *Ecology and Society*, 18(3), 27**

We reviewed the literature on leadership in linked social-ecological systems and combined it with the literature on institutional entrepreneurship in complex adaptive systems to develop a new theory of transformative agency in linked social-ecological systems. Although there is evidence of the importance of strategic agency in introducing innovation and transforming approaches to management and governance of such systems, there is no coherent theory to explain the wide diversity of strategies identified. Using Holling's adaptive cycle as a model of phases present in innovation and transformation of resilient social-ecological systems, overlaid by Dorado's model of opportunity context (opaque, hazy, transparent) in complex adaptive systems, we propose a more coherent theory of strategic agency, which links particular strategies, on the part of transformative agents, to phases of system change.

**Merrie, A. and Olsson, P., 2014, An innovation and agency perspective on the emergence and spread of Marine Spatial Planning, *Marine Policy*, 44, 366-374**

The roles of governance and technological innovation have been widely recognized as important parts of sustainability transitions. However, less attention has been paid to understanding the mechanisms of the emergence and spread of innovative ideas for stewardship of social-ecological systems. This study considers how theories of innovation and agency are able to provide explanatory power regarding the spread and impact of such ideas. This includes how innovations may contribute to resolving the mismatches between the scale of ecological processes and the scale of governance of ecosystems. The emergence and spread of Marine Spatial Planning (MSP) is used as an illustrative case study. The study shows that individuals embedded in informal networks have played a key role in driving the emergence of MSP across scales and in constantly re-framing the tool in order to overcome obstacles to adoption and implementation. In a number of cases, MSP has been decoupled from the ecosystem despite being framed as a tool for ecosystem-based management. Finally, this study is important to understand the process of emergence of new integrated tools for ecosystem stewardship at the global level.

**Pant, L., 2014, Critical systems of learning and innovation competence for addressing complexity in transformations to agricultural sustainability, *Agroecology and Sustainable Food Systems*, 38, 336-365**

Technological innovation is necessary but not sufficient to achieve food security. This article uses interlinked social, ecological and technical systems theory to investigate why agricultural biodiversity-rich developing countries fail to utilize "agroecological competence," particularly natural resource-based competitive advantage, to achieve food security despite substantial investments in "technological competence" development. Empirical study involves a critical examination of two food security strategies: improving subsistence agriculture to contribute to Nepal's national food security strategies, and promoting high value agriculture integrating Indian farmers into global commodity supply chains. Findings from these countries at very different stages of economic agricultural development suggest that low and middle-income countries, irrespective of their economic growth, cannot succeed unless technological competences are complemented by critical systems of "learning competence."

**Hurtado Munoz, L.A., Huijben, J.C.C.M., Verhees, B. and Verbong, G.P.J. (2013). The power of grid parity: a discursive approach. *Technological Forecasting and Social Change*, forthcoming**

In the debate around solar photovoltaic (PV), the concept of 'grid parity' has emerged as the dominant benchmark for competitiveness, while some even argue that it will determine the

point in time after which the PV industry will boom. But more recently, others have called into question the usefulness of the grid parity concept. Yet despite its pervasive use and increasing contestation, the grid parity concept has not been systematically interrogated to date. This paper makes two contributions towards that: first, to show how the grid parity concept emerged and how it is calculated and second, to explore the role of the grid parity debate in the solar PV field. The first contribution takes the form of a literature study of grid parity studies. To arrive at a meaningful estimation of the grid parity point, assumptions made in each step of the calculations have to be articulated and carefully evaluated. Nevertheless, this is almost never done: the grid parity studies, presentations and reports we reviewed invariably used the simplest representation available. We argue that their authors chose a simplified model for strategic reasons, e.g. to obtain (material and/or non-material) resources. This assessment leads to our second contribution: a discourse analysis of the grid parity debate. We distinguished ten key storylines and six discourse coalitions, comprised of actors who share a specific set of these storylines. Analyzing these storylines and coalitions, we show that while these actors share a common goal of PV up-scaling, they can have drastically different ideas about strategies to achieve this goal. Opening the black box of grid parity thus reveals tensions about preferred strategies in an otherwise seemingly homogeneous PV discourse.