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The CRESSI project explores the economic underpinnings of social innovation with a particular focus on how policy and practice can enhance the lives of the most marginalized and disempowered citizens in society.

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How Can Resilience Theory Inform Social Innovation for the Marginalized?

By Justus Lodemann and Rafael Ziegler

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Creating Economic Space for Social Innovation

How Can Resilience Theory Inform Social Innovation for the Marginalized?

D1.1 Chapter 6

By Justus Lodemann[1] and Rafael Ziegler

6.1 Introduction to resilience thinking

The ecologist C.W. Holling introduced the term resilience to describe the characteristic of ecological systems to withstand disturbances:

> "Resilience determines the persistence of relationships within a system and is a measure of the ability of these systems to absorb change of state variable, driving variables, and parameters, and still persist" (Holling 1973).

According to Charles Perrings (1998), the introduction of the concept was triggered by three observations: First, the (sometimes) discontinuous or non-gradual change in ecological systems; secondly, the existence of different equilibria for functionally different states of a system; and third that, by trend, dynamics and stability of an ecological system vary with the scale of the system in a non-linear way.

Since Holling's seminal article, the resilience terminology has been used and developed further by many research disciplines, e.g. by economics (Arthur 1999; Mäler etc.), developmental psychology (Garmezy etc.), network theory (Calloway et al. 2000 etc.), supply chain management (Petitt) and also as an approach for the study of social innovations (Westley et al. 2006).

As a result, 'resilience' has come to be used in quite different ways: it is used inter alia as a conceptual framework for understanding how persistence and transformation coexist in living systems (a.o. Folke et al. 2011), as a measurable quantity and as a metaphor related to sustainability (Carpenter et al. 2001). Not surprisingly, the definitions of resilience differ according to perspective and use. For example, the EU has approached resilience thinking in the context of food security crises and focuses mainly on social systems: "Resilience is the ability of an individual, a household, a community, a country or a region to withstand, to adapt and to quickly recover from stresses and shocks" (European Commission 2012). However, the most widely used definition of resilience is due to the Resilience Alliance[2] (Brand et al. 2011, Janssen et al. 2006). It defines resilience as

> "the capacity of a system to experience shocks[3] while retaining essentially the same function, structure, feedbacks, and therefore identity" (Walker quoted in Brand *et al.* 2011).

As this brief overview indicates, resilience is not so much a theory but rather a bundle of concepts that have been adopted from various perspectives. In this paper, we will focus on the Resilience Alliance.[4] Therefore we will briefly explain the assumptions and concepts related to this definition. In this definition 'system' is (mainly) used in the sense of 'social-ecological system', taking a co-

[1] justus.lodemann@uni-greifswald.de

[2] A research organization of scholars and practitioners who work on resilience in social-ecological systems (since 1999).

[3] Synonyms: disturbances, stress; characteristics include uncertainty of incidence, magnitude, frequency, duration, areal extent of hazard (see Adger 2006).

[4] This paper forms Chapter 6 of: Houghton Budd, C., Naastepad, R. and van Beers, C. (Eds.), *Report on Institutions, Social Innovation & System Dynamics from the Perspective of the Marginalised*, CRESSI Project Deliverable D1.1. Available at: http://www.sbs.ox.ac.uk/ideas-impact/cressi/publications-0

evolutionary viewpoint (Norgaard 1994). As Thomas Kirchhoff et al. (2010) have shown, this concept of system is based on the assumption of self-organizing units in analogy to organisms. The system is assumed to have (several) thresholds or tipping points. Crossing these thresholds can lead to changing the system and establishing a new system´s state (a new basin of attraction).

The scholars of the Resilience Alliance generally connect resilience to the concept of the adaptive cycle, which has been developed for describing the evolution of ecosystems. The adaptive cycle consists of four phases: rapid growth and exploitation (r), conservation (K), collapse or release ("creative destruction", Ω), renewal or reorganization (α) (Carpenter et al. 2001).

Lance Gunderson and Holling (2002) situate the adaptive cycle as nested in a system of cycles with different levels that constitute a panarchy: each level operates at its own pace, protected from above by slower, larger levels (system memory) and invigorated from below by faster, smaller cycles. According to Holling (2001), the possibility of transfer between levels is crucial for keeping the integrity of the whole system. The scale dimension enables the simultaneity of perpetuation and transformation (Folke et al. 2010): 'revolt and remember' (Holling 2001). The interactions between smaller and larger scales define the opportunities of regeneration and renewal in case of disturbances (Scheffer 2009). Keeping the balance between the capacity to learn and adapt in the front loop (r, K) and the ability to self-organize in the back loop (Ω, α) is crucial for building and maintaining resilience (Gunderson and Holling 2002, Gilsing and Duysters 2008).

Drawing on this model of the adaptive cycle, there are 'windows of opportunity' for renewal. Recognizing theses windows of opportunity can be a crucial step towards the transformation of conditions on the individual, organizational or institutional level (Uhl-Bien et al. 2007, Dorado 2005). Complementing this opportunity point, Westley et al. (2006) highlight two major pitfalls revealed by the adaptive cycle analysis: the 'poverty trap' (the system is unable to master the transition from back to front loop)[5] and the 'rigidity trap' (the system gets stuck in the conservation phase)[6]. Traps here are 'persistent maladaptive situations' (Carpenter and Brock 2009). Understanding these 'traps' might help anticipating resistance to social innovations and counteracting to it (Ney & Thompson 2000 in Peterson et al. 2003, Hahn et al. 2006, Olsson et al. 2008, Bodin and Crona 2009). Following Frances Westley et al. (2013), the selection of management strategies has to be done with a view to the phase of change.

This last point indicates the normative, perspective-dependent character of 'trap' and more generally much work done "through a resilience lens". We will return to this point in more detail below but first discuss challenges and problems more generally.

6.2 The resilience approach: challenges and problems

Events such as the "Resilience 2014" conference in Montpellier, France, or the numerous publications on the topic illustrate the attraction of the resilience approach, and suggest that further developments of it are to be expected in the near future. However, despite the high prominence of the resilience topic, there is still a lot of vagueness connected to the term (or, vice versa, this vagueness might have enabled its prominence). Accordingly, this section discusses some of the challenges facing the resilience approach.

First, research has shown that some of the core features for resilience like clear-cut basins of attraction and thresholds or tipping points only apply to a very limited range of ecosystems. Though

[5] E.g. because of a mere lack of new ideas or options though resources would available to support them or, in case that new ideas or options do exist, the inability to choose among them (Biggs et al. 2010).
[6] E.g. because of resistance to change by large bureaucracies or other powerful players (Biggs et al. 2010).

the assumption of tipping points and thresholds might be helpful for questions of management (comp. Rockström et al. 2009), their existence is in most cases difficult to prove. The assumption of alternative stable states with clear-cut basins of attraction seems to be a highly simplified image of reality in ecosystems (Folke et al. 2010; Cumming et al. 2005).

Second, the specification of the boundaries of an ecosystem, defining its size etc. is dependent on the observer and the intention (Jax 2005). The first question has to be: What is the 'system' of interest, which scale do I want to focus on? Answering this question leads to (normative) weighting of connections within and beyond the 'system'. The same holds true for social-ecological systems. Here the definition of boundaries of the system is even more complicated due to the higher complexity and connectivity of the system.

Some scholars differentiate between social and ecological resilience. So what is the link between these two? Adger (2000) points to the synergistic and co-evolutionary relationships between the two subsystems, highlighting the dependence of the social (sub-)system on the ecological (sub-)system. In this case, social resilience depends on ecological resilience, e.g. a low ecological resilience leads to low social resilience. This might be an acceptable conception for groups or communities that are strongly dependent on ecosystem services for their livelihoods. However, research in social sciences frequently focuses on power, conflicts of interest and unequal distribution as characteristics of today´s social-ecological systems (Hornborg 2009, Nadasdy 2007), and thus points to social dynamics that are at least in the medium term relatively independent of specific ecosystems and their resilience. Last but not least, some scholars question the concept of social-ecological systems as used above in general, Hans-Joachim Bürkner (2010) criticizes the underlying society-nature dichotomy, and instead suggests the actor network approach in the sense of Bruno Latour´s 'sociology of associations'. Fridolin Brand et al. (2011) show that the concept of co-evolutionary social-ecological systems as self-organizing units itself is at least partly a product of cultural imprint.

Third, a further complication appears with the resilience-inherent idea of a system retaining its 'function', 'integrity' or 'identity'. What is the 'function' of a system, what is its 'integrity' or its 'identity' – especially as these terms are often used as synonyms? Jax (2005) distinguishes four different uses of 'function' in ecology: as synonym for a process, as a sum of processes, as attribution of a role, and as service in regard to some beneficiary. The use of 'function' within the discussion of resilience often seems vague and shifting. Again, and especially in the context of sustainability debates, a normative aspect of the term seems unavoidable, and therefore in need of clarification (Ott and Döring 2004, 199ff). What is *dys*functional in nature, or in a system? The answer depends on our thoughts about how things should be, what a desired state is etc. Therefore, the decision whether the function(s) of a system are to be sustained is a critical question to be explicitly focused on when working with the resilience approach.

The same holds true for the terms 'integrity' and 'identity'. What is the identity of an ecosystem or a social-ecological system? Even on the individual level, identity is not a concrete entity but shifting with context, time etc. The attribution of identity to a person is carried out by an observer who has a specific perspective, or by the person itself. Cummings et al. (2005) propose that the (human) actors in social-ecological systems should define their identity by themselves. Apart from the problem of ignoring many elements that constitute the social-ecological system this approach might lead to a definition of identity which is overlaid by personal motivations and wishes.

To clarify 'identity' the term 'specific resilience' has been introduced – resilience *of what, to what*? – in differentiation to general resilience of the system. Specific resilience requires the classification of system configurations of interest (Carpenter et al. 2001). By doing so, the vagueness of 'identity'

is exchanged for a specific system characteristic that is selected by the observer. Choosing a specific system characteristic reduces also the range of disturbances. Again, the classification involves a (normative) selection (Christmann et al. 2011). This is not per se objectionable and might be not avoidable, but highlights the importance of taking into account the practical and epistemological background of the researcher or 'resilience management advisor' (Bürkner 2010). Moreover, aiming at building resilience of a specific part of a system can lead to the loss of resilience in other ways (Cifdaloz et al. 2010, Bowles et al. 2006, Scheffer 2009). Due to this context-dependence, any simple assessment and management guidelines for resilience seem impossible (Walker et al. 2014). What system configuration shall be sustained seems to be a question of perspective, and, finally, of power – a topic that has been underrepresented so far in the resilience debate (Nadasdy 2007).

So what do we learn from these difficulties and critical discussions of the resilience approach? With a view to the above-mentioned difficulties and open questions, doubts in the explanatory power of the approach for law-based prediction seem justified. Then again, ecology typically does not discover general laws but rather context-dependent regularities (Ott and Döring 2004, 199), and likewise co-evolutionary approaches generally reject the possibility of prediction in complex systems (Norgaard 1994). Still, even as a rough description in a specific context, it may well be difficult to discover the pattern of an adaptive cycle. However, it does not follow that the approach has no use. Rather, resilience thinking might serve in other ways: as an (interdisciplinary) starting point for discussion and thinking or finding new associations between entities (Bürkner 2010). In fact, the complexity of the resilience approach has helped to bring several disciplines together (Brand and Jax 2007). The 'resilience lens' might help to switch the focus from short-term fixes of a problem to understanding long-term, underlying causes of these problems (ESDN 2012). In addition, it suggests a specific focus on scale and transferring possibilities and obstacles from one level of the system to another (Levin and Lubchenko 2008). Last but not least, the perhaps most important contribution of the approach is to invite a discussion of dealing with uncertainty. The search for tipping points and stability from local systems up to the 'planetary boundaries' of the Earth (Rockström et al. 2009) is a way of addressing uncertainty. Beyond a certain level or stage of the system – for example a specific level of CO_2 equivalent parts in the atmosphere or of average global warming beyond a specific degree – it may be very difficult to tell what the possible consequences for the integrity or identity of the specific system would be. From a precautionary perspective, the concern with resilience and the boundaries of a system is therefore a way of discussing normative choices regarding acceptable risks in social and ecological systems.

6.3 Social innovation 'through the resilience lens'

Following the working definition used by CRESSI, social innovation is "the development and delivery of new ideas (products, services, models, markets, processes) at different socio-structural levels that intentionally seek to improve human capabilities, social relations, and the processes in which these solutions are carried out".[7] So what do we learn about social innovation 'through the resilience lens'?

In our view, the central thesis to be discussed here is the claim that social innovation promotes and maintains the resilience of society, where resilience as noted above is understood as a desirable state, frequently linked to sustainability. Viewed this way, the approach may help to scrutinize and develop the widely articulated hope that social entrepreneurship and social innovation are a source

[7] Further information about the CRESSI project is available at: www.sbs.ox.ac.uk/cressi

for sustainable development (Seelos and Mair 2009).

Westley et al. (2013) argue that strengthening a culture for social innovations is a crucial precondition for building resilience: "These are cultures that value diversity, because as any *bricoleur* knows, the more (and more different) the parts, the greater the possibility of new and radical combinations" (p. 6). According to Westley et al., the continuous movement through the cycle is a precondition for the establishment of (system) resilience. On first glance, this seems to be a counterintuitive idea: why should increasing the chances of new, even radical and disruptive combinations lead to higher resilience rather than change and destruction?

First, there is the Schumpeterian argument that continuous innovation keeps the (capitalist) system in a healthy state that even raises the general standard of living (Schumpeter 1942, further discussed in Ziegler and Lodemann 2010). Clearly, this line of argumentation presupposes a specification of the system and its (desirable) functions; a key question in times of global economic and political crises. We will turn to it below. For now we would like to note the solution to the paradoxical innovation-resilience nexus in terms of the resilience language: A transformation on a lower scale ('smaller cycle') – in the Schumpeterian case for example the transformation of industrial sector - might lead to enhanced resilience on a higher scale (i.e. in the example of the economy as a whole).

Second, there is the somewhat parallel ecological line of argumentation that in ecosystems disturbance and renewal (read here as innovation) play an important role in sustaining the system. Using an often cited example from ecology: the forest fires helps enhancing the resilience of the overall system – on the individual level of a single tree the fire is disastrous, nevertheless for the renewal of a forest it may be beneficial.

The controversial nature of generalizing this idea is obvious. What "tradeoffs" and "sacrifices" are acceptable within a society? Consider the example of mass production and assembly lines and fast food – examples identified in the literature as 'social innovations' (Gillwald 2000). It can be argued that these innovations were part of the resilience enhancing process of innovations to sustain the integrity of the capitalistic system, but on the individual level (and ecosystem level) this seems to open a slippery slope that from an ethical perspective is highly contestable (Ziegler and Lodemann 2010).

Turning to the assumption of system-specific thresholds concerning magnitude, frequency, duration and areal extent of a disturbance, we note that Westley et al aim far: not 'only' adaptations, but "...other innovations, more disruptive and radical, have the potential to transform the system." What then about the identity or integrity of the (original) system? In section 2 we have already highlighted the difficulty and importance of defining the identity or integrity of social-ecological systems. What elements – institutions, resource flows etc. – should be disrupted and changed (Westley et al. 2013)? How much transformation of the system is permissible before its identity or integrity is lost?

With a view to the unavoidable normativity of these questions in a practical context – omnipresent as it is in the social innovation literature with its countless management and policy recommendations – we propose to meet the challenge head on, and in a way that reflect that above definition of social innovation. From an ethical perspective, as far as major ethical systems that have evolved in Europe over the last three centuries are concerned, the question of "identity" and "integrity" is in the first place to be located at the level of the individual. The individual has a good of its own that we cannot instrumentalise only but that needs to be respected as an end of itself. This observation takes us to the idea of moral dignity, and in the legal system, of human rights that have emerged with the French Revolution, and since then played a central role in the ethical and legal discourse of European public spheres (Habermas 2011).

The definition of social innovation above indicates one way to conceptualize this idea of dignity and via it, human rights. Central human capabilities (Nussbaum 2006) are a list of the heterogeneous functionings that humans have reason to value for leading a life in dignity. This list itself is dynamic and open to change, but there seems to be a reasonably strong consensus on at least a core of functionings.

In turn, this focus on dignity as a complex term for a set of central human functionings opens a perspective on marginalization in terms of capability deprivations with a view to leading a life in dignity. No doubt, there is marginalization also beyond the threshold 'life in dignity', but below, it is particularly important as it is discriminatory or even humiliating, for example in the case of people being deprived of political rights due to group membership (gender, class, race).

Now this ethical perspective suggests a specific resilience-conjecture: central capabilities are key functions. Put differently, if a system is not able to promote and secure central capabilities – or legally speaking the respective basic rights – its integrity or identity is at risk. Medium term or long term failure to promote and secure these rights might lead to alienation or a switch to a different social structure.

No doubt, the identification of key functionings calls for further ethical discussion (which capabilities, which rights, how justified?). But at least as a first approximation the interpretation seems to be resonant with the public self-understanding of European traditions (and of course possibly also for many other parts of the world). In terms of social analysis, this interpretation establishes a link to constitutional democracies as the respective units of analysis. It is the constitutional level of nation states that is typically in charge of articulating and defending these basic rights. An important further question, at least in the European context, is the division of responsibilities with the emergence of the European Union as a supranational entity that likewise endorses the idea of basic rights.

The execution of the rights – legally speaking: the states responsibility to protect and fulfil them – is of course not a matter only of courts and legal traditions but a complex regulatory and provision task of states with differentiated political systems, markets, educational systems, health and unemployment insurance etc. It is via these systems that the capabilities can turn from formal rights to 'real freedoms' (in Amartya Sen's terminology). A desirable resilient system, on this interpretation of key functions, is one that in the medium and long term promotes and secures these key functions as real freedoms even in the presence of internal or external disturbances.

This takes us to the role of social innovation. On the old liberal economic understanding of constitutional democracies, innovation in markets played a crucial role to provide not only a rising standard of living but also the resources to fund requirements linked to meeting key functions, and to even include those not directly benefiting via redistributive schemes. On our diagnosis, (recent) history has proved the shortcomings of this view as social problems like (youth) unemployment, inequality and ecological problems challenge the idea that the established "business as usual" can be maintained. Though regulations and laws have been passed to tackle (some of) the topics, their implementations seem often rather difficult. The resilience lens to social innovation now suggests that following hypothesis: an extended understanding of innovation, not only focused on market-based innovation, but covering all aspects of the different key functionings, in their interrelated, "hybrid" ways is required to maintain the resilience of the system. Granted the argument that innovations keep the (social-ecological) system(s) going, innovations in and across all subsystems are needed. Such a (new) culture of innovation would enhance the resilience of the overall system ("resilience for reproduction of liberal democracy").

With respect to this interpretation of social innovation via the resilience lens, the following

questions suggest themselves:

What is the evidence that innovations across different systems play this regenerating role?

What are the anthropological, organizational, and institutional aspects of such an extended view of innovation? Here an analysis of societal change following Beckert's suggestion of a focus on cognitive frames, institutions and networks could be useful.

What changes in the system may be required for innovations to play this role of promoting and securing key functions?

How can resilience thinking help to *counteract the (obviously resilient) persistence* of marginalization?

6.4 Summary and conclusion

We started with an introduction of resilience, its different definitions and further developments. Examining the resilience thinking more closely gives rise to many questions regarding the explanatory power and practical use of resilience. This might hold especially true for the 'social side' of social-ecological systems. Anyhow, resilience thinking might offer a starting point to think about social-ecological systems, in terms of integrated, temporal dynamics (adaptive cycle) and on different levels (panarchy). Our discussion suggests the following conclusions:

Humility matters: Resilience thinking might be applicable in only a very limited number of scenarios; especially regarding socio-ecological systems its use is questionable. Therefore a detailed analysis of case studies and a careful use of resilience as a heuristic concept (including transparency and discussion on boundaries) seem crucial.

Perspective matters: Resilience thinking shows the importance of taking into account perspective in defining the system, in focusing on certain dynamics etc. Again, a high level of transparency regarding implicit or explicit assumptions is crucial.

Scale matters: Resilience thinking teaches us that there are different scales or levels at which strategies might produce different outputs, and which require evaluation on different levels as change on one level may be conducive to stability on another level.

Normativity matters: Resilience thinking per se is by no means a descriptive and safe way to a 'healthy' society. Resilience thinking includes decisions on desirable states and processes. Therefore a normative dimension is unavoidable and ought to be made transparent. To this end, and for the specific context of the EU members states, we have advanced the hypothesis of central capabilities as key functions of nation state systems, articulated and defended via the courts executed as real freedoms via differentiated social systems of markets, parliaments, social systems, and in times of crisis *possibly* regenerated via social innovations in the emerging supra-national European political entity.

List of references

Adger, W. N. (2000). Social and ecological resilience: are they related? *Progress in Human Geography* 24, 3, 347-364.

Beckert, J. (2010). How Do Fields Change? The Interrelations of Institutions, Networks, and Cognition in the Dynamics of Markets, *Organization Studies*, 31:605.

Brand, F. S. and K. Jax (2007). Focusing the Meaning(s) of Resilience: Resilience as a Descriptive

Concept and a Boundary Object, *Ecology and Society*, 12 (1), 23.

Carpenter, S., B. Walker, J. M. Anderies and N. Abel (2001). From Metaphor to Measurement: Resilience of What to What? *Ecosystems*, 4, 765-781.

Cifdaloz, O., A. Regmi, J. M. Anderies and A. A. Rodriguez (2010). Robustness, vulnerability, and adaptive capacity in small-scale social-ecological systems: the Pumpa Irrigation system in Nepal, *Ecology and Society* 15 (3), 39.

Cumming, G. S., G. Barnes, S. Perz, M. Schmink, K. E. Sieving, J. Southworth, M. Binford, R. D. Holt, C. Stickler and T. Van Holt (2005). An Exploratory Framework for the Empirical Measurement of Resilience, *Ecosystems*, 8, 975-987.

ESDN Quarterly Report No 26, Pisano, U. (2012). 'Resilience and Sustainable Development: Theory of resilience, systems thinking and adaptive governance', European Sustainable Development Network (ESDN).

Folke, C., A. Jansson, J. Rockström, P. Olsson, S. R. Carpenter, F. S. Chapin III, A.-S. Crépin, G. Daily, K. Danell, J. Ebbesson, T. Elmqvist, V. Galaz, F. Moberg, M. Nilsson, H. Österblom, E. Ostrom, A. Persson, F. Peterson, S. Polasky, W. Steffen, B. Walker and F. Westley (2011). Reconnecting to the Biosphere, *Ambio*, 40, 719-738.

Folke, C., S. R. Carpenter, B. Walker, M. Scheffer, T. Chapin and J. Rockström (2010). Resilience Thinking: Integrating Resilience, Adaptability and Transformability, *Ecology and Society*, 15 (4), 20.

Holling, C. S. (2001). Understanding the Complexity of Economic, Ecological and Social Systems, *Ecosystems*, 4, 390-405.

Mäler, K.-G. (2008), Sustainable Development and Resilience in Ecosystems, *Enivronmental and Resource Economics*, 39, 17-24.

Perrings, C. (1998). Resilience in the Dynamics of Economy-Environment Systems, *Environmental and Resource Economics*, 11 (3-4), 503-520.

Peterson, G. D., G. S. Cumming and S. R. Carpenter (2003). Scenario Planning: a Tool for Conservation in an Uncertain World, *Conservation Biology*, 17, 2, 358-366.

Seelos, C., Mair, J. (2009). 'Hope for Sustainable Development: How Social Entrepreneurs Make It Happen', in Ziegler, R. (Ed.), *An Introduction to Social Entepreneurship: Voices, Preconditions, Contexts*. Cheltenham: Edward Elgar, P. 228–246.

Walker, B., N. Abel, F. Andreoni, J. Cape, H. Murdoch and C. Norman (authors), with contributions from workshop participants J. Bell, J. Chrystal, G. Earl, K. Krebs, T. MacDonald, G. Moss, C. Raine, J. Russell, P. Ryan, D. Salt, J. Shearing, B. Wilde and R. White (2014). 'General Resilience – A discussion paper based on insights from a catchment management area workshop in south eastern Australia', published online, http://www.resalliance.org/files/General_Resilience_paper.pdf

Westley, F., O. Tjornbo, L. Schultz, P. Olsson, C. Folke, B. Crona and Ö. Bodin (2013). A Theory of Transformative Agency in Linked Social-Ecological Systems, *Ecology and Society*, 18 (3), 27

Westley, F., B. Zimmerman and M. Patton (2006). *Getting to Maybe: How the World Is Changed*. Toronto: Random House Canada.

Ziegler, R. and J. Lodemann (2010). 'Social Innovation and Ecological Sustainability', contribution to the ISEE conference 2010, draft version.

References to non-English language documents:

Brand, F., D. Hoheisel and T. Kirchhoff (2011). 'Der Resilienz-Ansatz auf dem Prüfstand:

Herausforderungen, Probleme, Perspektiven‘, *Laufener Spezialbeiträge 2011. Landschaftsökologie. Grundlagen, Methoden, Anwendungen*. 78-83

Bürkner, H.-J. (2010). ‘Vulnerabilität und Resilienz – Forschungsstand und sozialwissenschaftliche Untersuchungsperspektiven‘, *IRS-Working Paper*, No. 43

Christmann, G., O. Ibert, H. Kilper, T. Mass, with contribution by K. Balgar, F. Hüesker, M. Kühn, K. Pflanz, T. Schmidt, H. Sommer, F. Sondershaus, T. Thurmann (2011). ‘Vulnerabilität und Resilienz in sozio-räumlicher Perspektive: Begriffliche Klärungen und theoretischer Rahmen‘, Working Paper No. 44, Leibniz-Institut für Regionalentwicklung und Strukturplanung (IRS).

Habermas, J. (2011), Zur Verfassung Europas, Frankfurt: suhrkamp.

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Contact person: Project Manager: cressi@sbs.ox.ac.uk

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