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Livelihood resilience:
Preparing for sustainable transformations in the face of climate change

The resilience concept requires greater attention to human livelihoods if it is to address the growing likelihood of dangerous climate change, the limits to reactive adaptation strategies, and imperatives of climate justice. Although the concept of resilience is increasingly informing research and policy, its transfer from ecological theory to social systems leads to weak engagement with normative, social and political dimensions of climate change adaptation. This new perspective offers a 'livelihood resilience' approach to climate change adaptation that allows greater emphasis on people and their agency, human rights and empowerment, and considers livelihood systems in the context of transformational change.

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Navigating the Resilience Renaissance

Resilience is now a popular policy concept within the climate change adaptation and development context. It has become dominant particularly in national policy, international development and global environmental change discussions[1]. Resilience has commonly been presented as a positive attribute, as the opposite of vulnerability, and used to understand adaptive capacities to tackle the impacts, shocks and stresses of climate change.

During this recent resilience renaissance, the concept has been understood in three broad ways. The first is 'engineering resilience', an idea associated with the property of systems to bounce back to normality[2]. In the climate change adaptation setting, this implies the return of the functions of an individual, household, community or ecosystem to 'normal' conditions, with as little damage and disruption as possible following a shock. The second is the 'ecological' view, which draws heavily on socio-ecological systems (SES) theory[3]. It is characterized by the inevitability of uncertainty (which may destabilize attempts to manage the capacity of systems to cope with change) and interactions across scales[4]. It emphasizes phases of growth, release, and reorganization within systems, and the ways shocks destabilize systems and produce transitions to new systems. The third understanding is as a term that spans disciplinary boundaries, based on the widespread appeal and versatility of resilience as an idea[5]. As an inclusive term, it offers the potential for more integrated approaches to a range of shocks and stresses, including food security, conflict and disasters[6]. While it was *Time* magazine's buzzword of 2013, as a 'fuzzword', it may mean all things to all people, be used as a simple 'search and replace' term for adaptation, or lose its significance when transferred across different contexts[7] [8].

In this perspective article, we draw on insights from a collaborative 'Resilience Academy' organized by UNU-EHS Germany, ICCCAD Bangladesh and the Munich Re Foundation. We argue here that a composite concept of livelihood resilience provides rigor to livelihood research, while at the same time focusing resilience research on the issues of highest normative priority - human development. Livelihood systems sustain human socio-economic activities, support kinship networks, maintain cultural practices, and serve as a critical foundation for meeting development objectives. Resilience helps us understand how livelihood systems are both threatened by and protected from environmental harm.

Resilience and Climate Change Adaptation: Key challenges

Applying the concept of resilience to climate change adaptation raises some complex challenges. Climate change is not exclusively an environmental problem that can be addressed purely in scientific, managerial or technical ways[9]. Climate change is also crucially a conundrum of justice, with unequal contributions to the problem globally, disproportionate impacts upon poorer citizens, minority groups and future generations, and asymmetries in decision making power to determine appropriate responses[10].

The concept of resilience requires strengthening in three main ways. First we need to recognize its contested nature. When considering resilience as an 'end', it cannot be assumed that there is consensus around the nature of 'desired states'. Resilience is contingent on social values regarding what we deem important and how we ought to allocate resources to foster it[11]. People may be perpetually locked into resilient but undesirable states of poverty and marginality. Instead, we need to ask 'resilience of what type, and for whom?' and ask who decides, on the basis of what value systems?[12 13]

Second, we need to understand how values and ideologies translate into activities and institutions that characterize the political economy of climate change resilience[14 15]. For example, resilience studies concerned with ecosystem services for human well-being need to focus more on *whose* needs are being met, on the politics of ecosystem management and distribution of benefits[16]. This enables us to engage directly with power relations, differentiated access to resources, and issues of inequality that might otherwise be lost in resilience approaches[17]. In particular, there are trade-offs in which the resilience of some peoples' livelihoods may result in the enhanced vulnerability of others' (for example, through downstream impacts of flood protection measures[18]). These questions help to bring normative issues to the fore, and emphasize the distributional and political dimensions of the response options available to different actors[19 20].

Third, the (eco)systems focus of resilience thinking may lose sight of the people within those systems and their perspectives and differentiated vulnerability. Insights from sustainable livelihoods approaches and disaster prevention in particular have shown how vulnerability and impacts are contingent on place-based social and political-economic circumstances as well as on macro-level policies that drive wider ecological changes[21 22]. The capacity to respond to shocks and stresses is determined by levels of on-the-ground social inequality, unequal access to resources, poverty, poor infrastructure, lack of representation, and inadequate systems of social security, early warning, and planning. These factors translate climate vagaries into disproportionate concentrations of suffering and loss[23].

Much work on resilience therefore pays insufficient attention to fundamental issues of human agency and empowerment, including world-view, risk perception, and diverse cultural values, politics and power structures, and our individual and collective capacities for transformation lying at the heart of adaptation[24]. We argue that livelihoods perspectives can usefully help address some of these challenges. In doing so, we move resilience approaches beyond their predominantly scientific and technical discourses that are alien to the daily livelihood practices of ordinary people[25].

Bringing a livelihoods perspective to resilience thinking

Within the field of development, the sustainable livelihoods perspective has evolved considerably during the past two decades. A livelihood is understood to comprise 'the capabilities, assets (stores, resources, claims and access) and activities required for a means of living'[26]. Extending from livelihoods research, the sustainable livelihoods framework was developed for use by international

agencies to guide programs for poverty alleviation, prioritizing the household's asset portfolio and level of diversification of its livelihood strategies[27][28].

The framework focuses on various resource inputs (known as the five 'capitals': human, physical, financial, social, and natural capital) on which people rely to respond to opportunities and risks and thereby minimize their vulnerability or improve their wellbeing. The framework situates household livelihoods within wider sets of contextual policies, institutions and processes that promote or hinder access to these diverse resource inputs, making it possible to shed clearer light on the critical change processes that support or hinder development interventions[29]. Effective development and poverty alleviation policies therefore require improving livelihoods through enhancing peoples' capabilities, improving equity, and increasing the sustainability of resource use.

A livelihoods perspective places people at the center of the analysis, located within, rather than dominated by, ecosystems, technologies, governments, markets, experts, or resources. An emphasis on capabilities and freedoms can highlight issues of accountability, transparency and other democratic principles. It has also linked people's livelihoods with human rights perspectives, both moral and legal, emphasizing the fundamental freedoms inherent in human dignity and the obligations of nation state governments to protect those rights[30] [31].

What does a livelihood resilience approach bring to thinking and practice?

In responding to recent calls for a 'social turn' in resilience thinking[32] [33] [34], we propose an approach that focuses on people, and the constraints and opportunities they face in sustaining livelihoods, as the central actors within adaptation policy and practice. First, it prioritizes *human agency*, and our individual and collective capacity to respond to stressors. Second, by drawing on *rights-based frameworks*, it helps establish a normative and legal consideration of justice in disaster risk reduction and adaptation. Third, by challenging normative assumptions about resilience as stability and the desirability of 'bouncing back', it prioritizes individual and collective capacities for fundamental *transformation*.

In discussions of *agency*, human responses to environmental change are all too often expressed as generalized inputs within prescriptions for resilience[35] [36]. In contrast, the livelihoods resilience approach emphasizes people's capacity for, and differences in, perceiving risk and taking anticipatory actions, either individually or collectively. Information and resource flows through social networks (as understood in theories of social capital) are vital inputs to resilience, providing informal insurance, and delivering accessible financial, and physical and logistical support in the midst of environmental disturbances[37]. By prioritizing rights as a foundation for adaptation options, livelihood resilience also emphasizes the fundamental obligation of governments to protect human rights. This focus challenges longstanding power structures and weak governance that produce vulnerability[38]. An explicit focus on agency challenges critics who argue that resilience thinking ignores structural constraints and absolves states and the international community from duties around environmental impacts[39] [40].

A livelihood resilience lens also highlights incorporates a *human rights* perspective into resilience thinking. Articulating universal principles guaranteeing the right to food, housing, health and property – all critical to human dignity – and incorporating these into a resilience approach will help create the normative and legal basis for defining, measuring and promoting 'desirable states' in livelihood systems. It also extends rights to include a right to protection from, or adequate emergency response to, climate-related hazards[41]. In doing so, the human-rights dimensions of resilience can provide a strong lever for addressing the multiple root causes of social vulnerability.

Reframing resilience in rights terms therefore places a stronger burden on the international community, nation states, and the private sector to improve the living conditions of poor people living in vulnerable situations. This includes orienting the emerging UNFCCC policy agenda on 'loss and damage' from climate change towards addressing the livelihood rights of citizens rather than the claims of nation states[42]. Human rights also provide a strong imperative for a more participatory approach to resilience, where the qualities and dimensions of resilience are informed or determined by individuals and communities themselves.

Climate change is already contributing to physical transformations and threatening habitability in low latitudes and low lying coastal areas. Such impacts are a pressing concern given the scale and speed of global environmental changes, potential anthropogenic climate change in excess of 4°C, and their likely interaction to generate novel hazards[43]. Livelihoods resilience challenges normative assumptions around resilience, allowing us to focus less on recovery from shocks and more on aspects of *social transformation*[44 45 46]. This means asking difficult questions of adaptation strategies that may interpret resilience as a move to low-risk, low return activities (for example drought-tolerant cassava production) that may in turn close potential pathways to commercialization, diversification and poverty reduction[47]. It also challenges mainstream views of resilience that privilege the persistence of a system over its transformation and the reassembly of the same societal conditions which contributed to the original disruption[48 49].

Instead, it accepts that radically different livelihood strategies may be necessary and significant trade-offs may be involved. Adaptation can then be seen as a process of triage involving the things society values least, with adaptive responses equated to the relinquishing of certain values, development goals and even acceptance of conditions of poverty. Forms of adaptation that impoverish people build very powerful systems of negative resilience. In this way, adaptation is recast as a contested transformation, for example from traditional modes of agriculture to more precarious urban waged employment. Broader collectively held assumptions might also be challenged, such as those privileging economic production over other public and private goods, or placing economic profitability over ecological integrity.

Livelihood resilience and adaptation futures

Livelihoods are increasingly caught between major global transitions in both climate and social systems. The impact of dangerous climate change falls disproportionately on the livelihood systems of the poorest citizens, undermining their capacity to build sustainable livelihoods and increasing

their vulnerability. Understanding the resilience of livelihood systems of the poor (through research) and enhancing them (through transformational action) must now be seen as a normative priority.

The UN General Assembly's Rio+20 agreements have set in motion an ambitious re-articulation of sustainable development goals, in the light of new scientific and policy attention given to global environmental change during the last two decades. A key opportunity comes in Paris in 2015 with the UNFCCC's COP21, the deadline for a new climate treaty that will supplant the Kyoto Protocol. While the tendency will be for fragmentation around diffuse goals, needs and strategies (clean water, food security, urbanization, etc), we believe that livelihood resilience could become a constructive 'boundary object' that can help to merge discourses around a common objective: pro-poor climate and development policy.

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[1] Adger, W. N. *et al.* Resilience implications of policy responses to climate change. *WIREs Clim. Change* **2,** 757–766 (2011).

[2] Holling, C.S. in *Engineering within Ecological Constraints* (ed Schulze P.C.) Ch. 2 (National Academy Press, 1996).

[3] Folke, C. Resilience: The emergence of a perspective for social–ecological systems analyses. *Global environmental change*, **16**(3), 253-267 (2006)

[4] Bahadur, A., Ibrahim, M. and Tanner, T.M. Characterising Resilience: Unpacking the concept for tackling climate change and development. *Climate and Development,* **5**(1), 55–65 (2013).

[5] Brand, F.S. and Jax, K. Focusing the meaning(s) of resilience: Resilience as a descriptive concept and a boundary object. *Ecology and Society* **12** 23 (2007)

[6] Alexander, D. Resilience and disaster risk reduction: an etymological journey, *Nat. Hazards Earth Syst. Sci*., **13**, 2707–2716 (2013)

[7] Cornwall, A. Buzzwords and Fuzzwords: Deconstructing Development Discourse, *Development in Practice* **17**(4/5), 471-484 (2007).

[8] Brown, K. Global environmental change I - A social turn for resilience? *Progress in Human Geography.* 1-11.doi:10.1177/0309132513498837 (2013).

[9] Cannon, T. and Muller-Mahn, D. Vulnerability, resilience and development discourses in context of climate change, *Natural Hazards* **55**(3), 621-635 (2010).

[10] Roberts J.T. and Parks, B. A Climate of Injustice: Global Inequality, North-South Politics and Climate Policy (MIT Press, 2010).

[11] O'Brien, K.L. and Wolf, J. A values-based approach to vulnerability and adaptation to climate change, *WIREs Clim. Change* **1**(2), 232–242 (2010).

[12] Leach, M. (ed) *Reframing Resilience*: *a Symposium Report*, (STEPS Centre, 2008) available at http://www.steps-centre.org/PDFs/Resilience.pdf

[13] Cote, M. and Nightingale, A. Resilience thinking meets social theory: Situating social change in socio-ecological systems (SES) research. *Progress in Human Geography* **36**(4) 475–489 (2012)

[14] Tanner, T. and Allouche, J. Towards a new political economy of climate change, *IDS Bulletin* **43**(3), 1-14 (2011).

[15] Dow, K., Berkhout, F., Preston, B., Klein, R., Midgley, G. and Shaw, R. Limits to Adaptation. *Nature Climate Change* **3**, 305-307 (2013).

[16] Beymer-Farris, B.A., Bassett, T.J. and Bryceson, I. in *Resilience in the Cultural Landscape* (eds Plieninger T and Bieling C) 283–299 (Cambridge University Press, (2012)

[17] Béné , C., Wood, R., Newsham, A., Davies, M. *Resilience: New Utopia or New Tyranny? Reflection about the Potentials and Limits of the Concept of Resilience in Relation to Vulnerability Reduction Programmes*. IDS Working Paper # 405, Brighton. (2012)

[18] Wrathall, D. *et al*. Migration and climate rigidity traps: Socio-ecological possibilism and resource politics in Honduras and Peru, *Annals of the Association of American Geographers.* (In Press)

[19] Cote, M. and Nightingale, A. Resilience thinking meets social theory: Situating social change in socio-ecological systems (SES) research. *Progress in Human Geography* **36**(4) 475–489 (2012)

[20] Brown, K. Global environmental change I - A social turn for resilience? *Progress in Human Geography.* 1-11.doi:10.1177/0309132513498837 (2013).

[21] Scoones, I. Livelihoods perspectives and rural development. *Journal of Peasant Studies*,**36**(1) 171-196 (2009)

[22] Wisner B, Blaikie P, Cannon T, and Davis I. *At risk: Natural hazards, people's vulnerability and disasters*, Routledge (2004)

[23] Ribot, J.C. in *Social Dimensions of Climate Change: Equity and Vulnerability in a Warming World*. (eds Mearns, R. and Norton, A.) 47–74 (The World Bank, 2011).

[24] Miller, F. *et al*. Resilience and Vulnerability: Complementary or Conflicting Concepts? *Ecology and Society,* **15**(3), 11 (2010).

[25] Cannon, T. and Muller-Mahn, D. Vulnerability, resilience and development discourses in context of climate change, *Natural Hazards* **55**(3), 621-635 (2010).

[26] Chambers, R., and Conway, G. R. Sustainable rural livelihoods: Practical concepts for the 21st century, (Institute of Development Studies, 1991); available at http://www.eldis.org/vfile/upload/1/document/0708/DOC12443.pdf

[27] Ashley, C. and Carney, D. Sustainable livelihoods: Lessons from early experience (DFID, 1999)

[28] Ellis, F. Household strategies and rural livelihood diversification. *Journal of Development Studies,* **35**(1) 1-38 (1998).

[29] Ashley, C. and Carney, D. Sustainable livelihoods: Lessons from early experience (DFID, 1999)

[30] Moser, C. and Norton, A. *To claim our rights. Livelihood security, human rights and sustainable development*. (Overseas Development Institute, 2001)

[31] Cameron, E. *Development, Climate Change and Human Rights: From the Margins to the Mainstream* (World Bank, Washington DC, 2011)

[32] O'Brien, K. Responding to environmental change: A new age for human geography? *Progress in Human Geography* **35**, 542–549 (2011)

[33] Brown, K. Global environmental change I - A social turn for resilience? *Progress in Human Geography.* 1-11.doi:10.1177/0309132513498837 (2013).

[34] Hayward, B. Rethinking resilience: reflections on the Earthquakes in Christchurch, New Zealand, 2010 and 2011. *Ecology and Society* **18**(4), 37 (2013)

[35] Davidson, D.J., 2013. We Still Have a Long Way to Go, and a Short Time to Get There: A Response to Fikret Berkes and Helen Ross. *Society & Natural Resources* 26, 21–24.

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

[37] Aldrich, D. *Building Resilience: Social Capital in Post-Disaster Recovery* (University of Chicago Press, 2012).

[38] Pelling, M. *Adaptation to climate change: from resilience to transformation*. (Routledge, 2010)

[39] Brown, K., Westaway, E., 2011. Agency, Capacity, and Resilience to Environmental Change: Lessons from Human Development, Well-Being, and Disasters. *Annual Review of Environment and Resources* 36, 321–342.

[40] Welsh, M. Resilience and responsibility: governing uncertainty in a complex world, *The Geographical Journal*, doi: 10.1111/geoj.12012 (2013)

[41] Bronen, R. in *Humanitarian Crises and Migration* (eds Martin, S., Weerasinghe, S. and Taylor**,** A) (Routledge, 2014)

[42] Huq, S., Roberts, E. And Fenton, A. Loss and damage, *Nature Climate Change,* 3, pp947–949 (2013)

[43] Smith, M.S., Horrocks, L., Harvey, A., Hamilton, C. Rethinking adaptation for a 4°C world. *Phil. Trans. R. Soc. A* **369**, 196–216 (2011)

[44] O'Brien, K. 'Global environmental change II: From adaptation to deliberate transformation' *Progress in Human Geography* **36**(5), 667-676 (2012)

[45] Kates, R. W., Travis, W. R., & Wilbanks, T. J. (2012). Transformational adaptation when incremental adaptations to climate change are insufficient. *Proceedings of the National Academy of Sciences*, ***109***(19), 7156-7161 (2012)

[46] Park, S.E., Marshall, N.A., Jakku, E., Dowd A,M., Howden, S.M., Mendham, E., Fleming, A. Informing adaptation responses to climate change through theories of transformation. *Global Environmental Change* **22**, 115–126 (2012).

[47] Dercon, S. (2005) Risk, Poverty and Vulnerability in Africa, *Journal of African Economies* 14(4) pp483–488

[48] Leach, M. (ed) *Reframing Resilience*: *a Symposium Report*, (STEPS Centre, 2008) available at http://www.steps-centre.org/PDFs/Resilience.pdf

[49] Pelling, M. *Adaptation to climate change: from resilience to transformation*. (Routledge, 2010)