

Sustainable Development and Resilience Think piece for the SDC

Lindsey Colbourne, Sept 08

Introduction

At the last plenary I suggested that there may be something in the concept of 'resilience' that the SDC should pursue. I was asked to put pen to paper, to try to flesh out this 'hunch' a little more.

My starting point is that sustainable development suffers from being seen by many as an expendable objective with limited relevance to everyday lives: As soon as the credit crunch and fuel price rises occur it has no immediacy. The concept of resilience however, can be promoted as not only relevant but central to everyday lives.

"Resilience in social-ecological systems is the key to sustainable development. To sustain development in a world in transformation, policy must enhance resilience and sustain social-ecological systems in the face of surprise, unpredictability and complexity"¹.

I have tried to argue below that if the SDC were to analyse and comment on policies through a resilience lens, then its policy advice and its public pronouncements would have greater resonance and impact.

Context

Sustainable development has been described as a concept invented by environmentalists when they realised no one would talk to them about the environment. Now, in the grips of the credit crunch, and rising commodity and food prices, it seems no one will talk of sustainable development. Some months ago the DfT decided to 'get' the green agenda, and all systems were go. When fuel prices rose, the priority became the costs of motoring, and the green agenda was relegated. So it seems we – the SD movement – are back in the ghetto. Our ideas are only relevant in the absence of more immediate issues. SD becomes victim of govt thrashing (like a stuck machine): it is either doing something 'green' or it is keeping down costs. What we need is some way of unifying these and other issues, and deciding how to respond. I am reminded of Rita Clifton's insight in that what we are about is making SD the 'central organising principle'. Perhaps resilience – or, as I will try to describe below – a particular interpretation of resilience can help us?

Resilience is not a new idea – the earliest mention I found of it was in 1992². Academics have been beavering away at refining the concept for years. And more recently there has been an 'outing' in closer and more applied circles:

- Andrew Lee wrote of it in his director's report for the last plenary
- A recent Observer article described "how I'm coping with credit crunch: I've let room out to a mate; we only have one car now";

¹ *Resilience and SD A REPORT FOR THE SWEDISH ENVIRONMENTAL ADVISORY COUNCIL*
http://www.sou.gov.se/mvb/pdf/206497_Resilienc.pdf

² 1992, *Scientific Background Paper for the process of The World Summit on Sustainable Development on behalf of The Environmental Advisory Council to the Swedish Government called Resilience and Sustainable Development: Building Adaptive Capacity in a World of Transformations*
<http://www.unisdr.org/eng/risk-reduction/sustainable-development/resilience-sd.pdf>

- Gordon Brown said we should not waste food
- Jan Bebbington wrote a piece on how Scotland will meet its 80% reduction in ghg's by 2050 target framed entirely around resilience
- The transition town movement is based on resilience to oil price rise
- JP sent round Lester Brown's article on food/water scarcity
- Allotments represent, in part, precautionary resilience

So what is resilience?

Amongst several, I have found two approaches particularly helpful. The **first** is from the University of Lancaster earlier this year for the Environment Agency on flooding³. They argue that different conceptions of resilience have emerged across a wide range of research disciplines, for example, psychology (Luthar 2000), organizational science (Marcus and Nichols 1999), IT studies (Riollia and Savickib 2003), biomedicine (Biros and Adams 2002), and geography (Pelling and Uitto 2001, Pelling 2003). Within these separate literatures, resilience is variously characterized as persistence, resistance, stability, stasis, continuity, innovation, adaptation, transformation, immunity and recovery. However, at its most basic, resilience can be defined as **"the ability of a system to absorb disturbance and still retain its basic function and structure"** (Walker and Salt 2006). Resilience can therefore be understood as the flip-side of vulnerability - the more resilient a system is, the quicker it can recover and with less change. As such, we can think of resilience as a kind of *absorptive capacity*. A resilient system might therefore be characterised by an ability to maintain its function(s), structure(s) and identity in the face of disturbing forces.

The literature on socio-ecological resilience has gone some way towards developing a typology of different forms (e.g. Adgar 2000 Berkes et al 2003; Gundersen and Holling 2002). Some key differences between engineering, eco-system and social-ecological resilience were outlined by Folke (2006) (Table 1).

Table 1: A sequence of resilience concepts, from the more narrow interpretation to the broader social-ecological context (adapted from Folke 2006 page 259)

Resilience concepts	Characteristics of resilience	Analysis of resilience	Assumptions of systems dynamics ?
Engineering resilience	Return time, efficiency	Recovery, constancy	Vicinity of a stable equilibrium
Ecological/ecosystem resilience social resilience	Buffer capacity, withstand shock, maintain function	Persistence, robustness	Multiple equilibria, stability landscapes
Social-ecological resilience	Interplay disturbance and reorganization, sustaining and developing	Adaptive capacity, transformability, learning, innovation	Integrated system feedback, cross-scale dynamic interactions

³ Excerpt from paper by Nigel Watson, Lancaster Environment Centre, 2007 for Environment Agency Science Project 'Improving Institutional and Social Responses to Flooding'.

For engineering resilience, there is essentially one optimum state for the system to be in and so resilience is a measure of recovery in terms of *return time*. The resilience of ecological and also social systems alone has tended to be defined in terms of robustness (Adger 2000). In sharp contrast, the analysis of resilience in more complex socio-ecological systems emphasizes the importance of adaptive capacity, which involves positive and negative feedback loops leading to processes of learning, innovation and adaptation. For example, Conway (2007, p.274) observed that:

"The important thing about resilience is that it is a process involving anticipation, planning and design, response and, most crucially, learning. A resilient society is a learning society – one that learns from mistakes and the dynamics of its environment. This is also true for individuals..." Resilience is as important a concept for the individual as it is for society.

Resilience appears to involve *purposive change* in response to the opportunities and demands created by a disturbance, such as a flood or oil price rise. Resilient systems therefore have a capacity for self-organization, which enables structures and processes to be *re-configured* to ensure long-term survival. In practical terms, this implies that a resilient person, household, organization or community would have the ability to change practices and structures in the aftermath of a major event or change. As a result, the person or entity is not only able to function in the new environment and but also has the capacity to anticipate and prepare for the possibility of similar shocks and surprises in the future.

The applied literature on socio-ecological resilience is oriented towards the identification of effective strategies for managing sustainability in an increasingly turbulent environment characterized by complexity, change, uncertainty and policy-related conflict (e.g. Berkes et al 2003; Folke 2006 Gundersen and Holling 2002).

Translating social-ecological concepts of resilience into SD practice

My **second** source of inspiration is a report for the Swedish Environmental Advisory Council⁴. They state that:

"Resilience in social-ecological systems is the key to sustainable development. To sustain development in a world in transformation, policy must enhance resilience and sustain social-ecological systems in the face of surprise, unpredictability and complexity. Further, policy needs to strengthen the perception of humanity and nature as interdependent and interacting. In particular, this requires:

- An active, adaptive management approach acknowledging uncertainty and expecting surprise, which treats policies as hypotheses and management as experiments from which managers can learn.
- Management that supports or creates diversity for enhancing resilience in both social and ecological systems.
- Policy that stimulates flexible and open institutions that allow for learning.
- Policy that provides incentives for participation by stakeholders and incorporates their ecological knowledge into institutional structures in a multi-level governance system.
- Policy that develops indicators of gradual change and early-warning signals for loss of ecosystem resilience and imminent shifts to less desirable

⁴ *Resilience and SD A REPORT FOR THE SWEDISH ENVIRONMENTAL ADVISORY COUNCIL*
http://www.sou.gov.se/myb/pdf/206497_Resilienc.pdf

ecological states.

- Policy that encourages ecosystem-friendly technology and economic incentives to enhance resilience and adaptive capacity. "

Popular appeal?

Resilience means different things to different people. The same Lancaster University work provided a typology of the way in which people both interpret and respond to changes (see table 2 below).

Table 2: Three types of resilience and their implications⁵

Resilience Type	System Characteristics	Response Characteristics	Planning Orientation
<p>Type 1</p> <p>Resistance</p>	<p>Steady state/stable</p> <ul style="list-style-type: none"> - Continuity of functions - Robust/ability to absorb shocks and disturbances 	<p>Preparedness via:</p> <ul style="list-style-type: none"> - Early detection of shocks - Issue of effective warnings - Multiple lines of defence - Hazard resistant design or retrofit - Organizational redundancy and overlap/duplication 	<p>Present is better than the past and the future</p>
<p>Type 2</p> <p>Restoration</p>	<p>Unstable</p> <ul style="list-style-type: none"> - structures, processes and functions sensitive to shocks and disturbances 	<p>Rapid normalization via:</p> <ul style="list-style-type: none"> - Temporary evacuation/housing - Compensation and insurance cover - Repair of services and infrastructures - Verb/adjective? <p>Support services: physical and psychological health, social care, legal and technical advice</p>	<p>Past was better than the present</p>
<p>Type 3</p> <p>Re-configuration</p>	<p>Open-ended</p> <ul style="list-style-type: none"> - Responsive to feedback (+/-) - Self-organizing 	<p>Adaptation via:</p> <ul style="list-style-type: none"> - Increased rates of knowledge acquisition - Trial-and-error 	<p>Future can be better than the past and the present</p>

⁵ Excerpt from paper by Nigel Watson, Lancaster Environment Centre, 2007 for Environment Agency Science Project 'Improving Institutional and Social Responses to Flooding'.

		experimentation - Flexibility in distribution of resources	
--	--	---	--

In response to an external shock, the responses from politicians, the media, policy makers and the many sections of the public may be very different for exactly the same problem. Nevertheless, each will believe their response to be right. These typologies of resilience would help to explain why such divergence exists.

Resilience could be sold to the public as an insurance policy. We insure against various risks. If our cars are involved in crashes, we take it for granted that we have insured against the cost of repairs and injury to others. National Insurance was introduced to insure for health via payment for the NHS and for unemployment. Homes and possessions are generally covered. Making our houses resilient to flooding is a form of self insurance. Reducing petrol dependency insulates the individual to a degree from oil price shocks. Green electricity, in the long term, is price resilient in a way that fossil fuel can never be. Eating healthily and exercising provides protection from the costs of poor health.

Resilience also provides the basis for reconciling apparently conflicting objectives. Thus we need green taxes to promote green behaviour but if fuel prices rise at the same time, the public won't wear it. Turning a resilience lens onto government policy would mean that tax increases designed to promote green behaviour could not be introduced in isolation from tax reductions to produce a neutral burden for the individual. Resilience requires a whole systems response that would make tax changes sustainable. The scenario planning of Shell prior to the 1973 oil shock enabled that company to respond better than all their competitors who had then built no such resilience into their business. The civil service would have been so much better served to have adopted a similar approach 35 years later but chose not to plan for an oil price of \$100 a barrel. Resilience would require joined up government and not allow the current plethora of separate low carbon initiatives that have had no analysis of their cumulative impact on the individual.

Thought of in this way, resilience is a friend to the individual, not a religion, nor a moral requirement, nor a speculative wish for those with a green conscience.

So what does all this mean for the SDC and for our advice to government?

1. Does it pass the resilience test?

Any government policy we are asked to comment on would be assessed as to whether it improves the individuals' and society's resilience. Similarly for our own work. The resilience test would fit with our four roles of advocacy, advice, capacity building and watchdog.

For example, when Jan Bebbington was asked to write about how Scotland would achieve its 80% reduction in ghg's by 2050 target, she wrote: "If I had to choose one word that best describes the impetus for our journey to a low carbon

economy I would use the term resilience.⁶ The way we achieved our reduction target was to focus on what would make a resilient society that could absorb and adapt to what has become an increasingly turbulent world (both in physical and social terms). While the creation of an economy, ecology and society with greater resilience had many aspects, three components stand out. These are: the role of technology; the importance of individual and collective behaviour change; and changes in culture, values and expectations.”

2. Present all our public facing output in terms which the individual can relate to.

If we were preparing the wind power booklet again, we would add a piece on how and why green energy makes the individual (household, business and community) resilient to fossil fuel energy price hikes. How would the resilience objective be incorporated into our public facing information on tidal, nuclear, aviation?

3. Plan for uncertainty.

Both by government and in our own work, promote an active, adaptive planning approach acknowledging uncertainty and expecting surprise: as we did for the \$100/barrel of oil work.

4. Promote the concept of adaptive, learning organisations throughout the public sector.

5. Insist on an understanding of the cumulative effect of policies on those affected by them (especially the poorest).

It is simply unacceptable that government departments and subsections of them still feel able, with impunity, to behave as if they are separate organisations with separate ownerships and distinct share prices on the tax payers’ stock exchange. It is both entirely realistic and reasonable, and necessary in the face of a gigantic threat, for government to act coherently.

⁶ Resilience, here, refers to the ability to recover from or resist adverse effects of (for example) a setback or disease. An example of conversations about resilience can be found at <http://resilienceblog.blogspot.com/>.