

## Resilience: A risk management approach

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**R**esilience, a concept concerned fundamentally with how a system, community or individual can deal with disturbance, surprise and change, is framing current thinking about sustainable futures in an environment of growing risk and uncertainty.

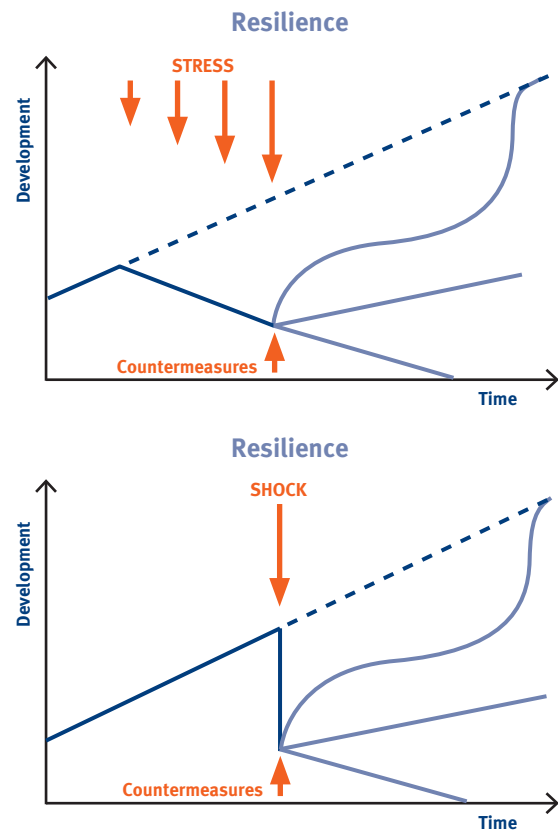
Resilience has emerged as a fusion of ideas from multiple disciplinary traditions including ecosystem stability (Holling, 1973; Gunderson, 2009), engineering infrastructure (Tierney and Bruneau, 2007), psychology (Lee et al., 2009), the behavioural sciences (Norris, 2011) and disaster risk reduction (Cutter et al., 2008). Its recent appropriation by bilateral and multilateral donor organisations is one example of how resilience is evolving from theory into policy and practice (HERR, 2011; Ramalingam, 2011; Bahadur et al., 2010; Brown, 2011; Harris, 2011).

This appropriation has been driven by the need to identify a broad-based discourse and set of guiding principles to protect development advances from multiple shocks and stresses. Consequently, 'resilience' is an agenda shared by those concerned with financial, political, disaster, conflict and climate threats to development. The aim of resilience programming is, therefore, to ensure that shocks and stresses, whether individually or in combination, do not lead to a long-term downturn in development progress as measured by the Human Development Index (HDI), economic growth or other means.

Figure 1 shows how the build-up of longer term stress (upper diagram) and short term shocks (lower diagram) require countermeasures at pivotal moments to ensure that development pathways continue on an upward trend. In reality, some coun-

termeasures are likely to be in place prior to the impact and many different shocks and stresses may combine or occur close together, each impacting the level of resilience at different scales and each requiring separate or integrated measures to reduce the abruptness of downward development trends.

**Figure 1: The effect of shocks and stresses on development pathways depending on different levels of resilience**



Source: (modified from Conway et al., 2010)

Being a fusion of ideas and bridging many areas of development policy and practice, resilience poses particular challenges for programming. Can a common definition and understanding be reached or is resilience simply an opportunity to open dialogue about joined-up programming across policy areas? Can resilience be translated into a practical set of tools and approaches?

## Defining resilience

Programming resilience will require a shared understanding of key terms and concepts. The definitions in Box 1 are intended to appeal to different disciplinary perspectives – as such they are intentionally simplified, though they are based on those included in the Intergovernmental Panel on Climate Change ‘Special Report on Extreme Events’ (IPCC, 2011).

The definitions separate resilience, associated with the functioning of a system, from risk and its common determinants of exposure, vulnerability and shock/stress/hazard. In this set of definitions, resilience is not the opposite of vulnerability, as an individual can be both predisposed to an impact and can recover in a timely and efficient manner. The approach to resilience presented here considers resilience to be about managing change and eventually thriving (Davies, 1993; Manyena, 2006) in the context of dynamic systems; which has been termed by some as ‘bounce forward ability’ (Manyena et al., 2011).

Recent literature (e.g. Norris et al., 2008), including this Background Note, have tended to focus on resilience more as a process than an outcome, involving learning, adaptation, anticipation and improvement in basic structures, actors and functions. The focus on resilience as a process draws attention to the notion of resilient systems: resilience is not a state but a dynamic set of conditions, as embodied within a system. Bahadur et al. (2010), identify characteristics of a resilient system that can be synthesised as follows:

- a **high level of diversity**, in terms of access to assets, voices included in decision-making and in the availability of economic opportunities
- **level of connectivity** between institutions and organisations at different scales and the extent to which information, knowledge, evaluation and learning propagates up and down across these scales
- the extent to which different **forms of knowledge are blended** to anticipate and manage processes of change

- the **level of redundancy** within a system, meaning some aspects can fail without leading to whole system collapse
- the extent to which the system is **equal and inclusive** of its component parts, not distributing risks in an imbalanced way
- the degree of **social cohesion and capital**, allowing individuals to be supported within embedded social structures.

### Box 1: Key terms

**Resilience:** The ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a shock or stress in a timely and efficient manner.

**Risk:** The likelihood of suffering harm or loss.

**Shock/Stress/Hazard:** An element that causes adverse affects.

**Vulnerability:** The propensity or predisposition to be adversely affected.

**Exposure:** the presence of people, livelihoods, environment, economic, social or cultural assets in places that could be adversely affected.

**Transformation:** the altering of the fundamental attributes of a system.

Programming resilience, in its purest sense, therefore means supporting interventions to increase diversity, connectivity, learning, reflexivity, redundancy, equity, inclusion and cohesion, while brokering the blending of knowledge. It also means emphasising the need to develop flexible systems that manage for change, to see change as a part of any system, social or otherwise and to expect the unexpected (Folke, 2006). While elements of each of these qualities often appear in interventions (development or otherwise), development projects and programmes rarely have explicit objectives to develop and support these qualities in combination or with any degree of coherence. To some extent this may be related to the rules associated with logical framework or expectations associated with achieving ‘impact’.

An alternative approach to resilience is to start from the basis of effective risk management, recognising the inherent similarities between risk and resilience as organising frames and the extent to which risk assessment and risk management provide a window on resilience.

Risk and resilience approaches share four key characteristics:

- they provide an holistic framework for assessing systems and their interaction, from the household and communities through to the sub-national and national level
- they emphasise capacities to manage hazards or disturbances
- they help to explore options for dealing with uncertainty, surprises and changes
- they focus on being proactive (Berkes, 2007; Obrist et al., 2010).

Therefore, a system that is effective in managing risk is likely to become more resilient to shocks and stresses, though the exact relationship needs to be tested empirically. Managing risk in this context means reducing risk, transferring and sharing risk, preparing for impact and responding and recovering efficiently. It also involves being prepared for surprises – those events beyond the lived experience or occurring very infrequently.

## Measuring resilience

The majority of approaches, tools and methods currently available to measure resilience reflect strongly the diversity of disciplines and sectors that have appropriated the term. Recent attempts to develop ways to measure resilience that cross disciplinary boundaries have focused on assessing such elements as technological capacity, skills and education levels, economic status and growth prospects, the quality of environment and natural resource management institutions, livelihood assets, political structures and processes, infrastructure, flows of knowledge and information and the speed and breadth of innovation.

The specific combination of measures chosen tends to be based on available data rather than a normative approach. Regardless of disciplinary preference, measuring resilience requires bounded temporal and spatial scales. It is, therefore, the decisions on what aspects of a system to draw a boundary around, and indeed how a system itself is conceptualised, that continue to shape our knowledge of the interaction of processes that determine resilience in different contexts (Carpenter et al., 2010).

The exercise of measuring resilience is also highly variable, depending on the understanding and weight given to concepts such as coping, capacity, vulnerability and adaptive capacity. The relationship between such concepts and resilience is rarely developed in full, and by no means universally agreed. Much of the work on disaster resilience, for example, draws on understandings of the relation-

ship with vulnerability and seeks to measure levels of that vulnerability rather than resilience itself. However, as Eriksen and Kelly (2007) highlight in their work on developing vulnerability indicators for adaptation policy, it is common to see a conflation of purposes and assumptions, making an often confusing and lackadaisical basis from which to undertake any form of measurement.

Caution also needs to be exercised in extrapolating findings or measures of resilience at one scale (spatial and/or temporal) and making assumptions based on those findings for other contexts or other parts of the same system. The context-specific nature of risk, the dynamic nature of change and the complexity of capacities associated with resilience make systemic measurement challenging and lead to proxies or a simpler frame for evaluation to be considered.

Consequently, a number of studies take risk management as an entry point for operationalising and measuring resilience (e.g. Twigg, 2009). These have proved popular with development actors. For example, Twigg (2009) developed a set of characteristics of a disaster resilient community based on a meta-analysis of experience and good practice. Twigg's characteristics are a practical programming tool as they provide a checklist of attributes that have been proven to protect lives and livelihoods from shocks and stresses.

This bottom-up and experience-based derivation of 'resilience' measures in the context of risk management is a promising avenue, although measures of resilience more broadly have their critics. Silva Villanueva (2011; 7), for example, raises three concerns about popular measures: their deterministic approaches that focus on inputs and outputs rather than processes; their capture of a static rather than a dynamic picture; and their narrow focus on system effectiveness and efficiency rather than assessing processes of transformation. More research is needed to compare, contrast and link methods of measuring resilience and risk management effectiveness.

## Effective management of risk to build resilience

In the context of managing risks, building and strengthening resilience involves establishing systems that incorporate the range of risk management options detailed in Table 1. It also requires certain institutional capacities to enable a range of risk management options to be pursued in ways that recognise resilience as a process that is inherently context specific (see Foresti et al., 2011 with reference to economic shocks).

The relative balance of investments in different options depends on a range of factors including:

- the results of detailed and frequently updated risk assessments (recognising the dynamic nature of risk)
- the capacity of organisations to implement actions effectively
- the political economy of investing in one option over another
- the resources available
- the extent to which there is a cultural acceptance of different levels of risk that is tied intrinsically into understandings of values and rights.

In many policy arenas, the idea of eliminating risk completely is unrealistic, so many systems will need to pursue all options simultaneously, though not in balance.

Table 1 highlights some of the advantages of adopting a risk management lens to strengthening resilience. The examples provided (of options in different areas of the risk management continuum) are illustrative rather than exhaustive. Moreover, context specificity is paramount to determine which set of risk management options are required in any given context. It may be that one

set of management options for addressing risk may be entirely inappropriate for another given time and/or place.

With further development, Table 1 may provide a cross-comparable matrix with scope to identify overlaps and opportunities for integration in diverse disciplinary and policy approaches to managing risks to development progress, the extent to which there are gaps in systems (e.g. where action in one column is lacking) and the way in which (lack of) activity in one area can influence the balance of risk in another policy domain.

An example of this interdependence would be where measures to respond to climate impacts involve careful support for migration in ways that do not increase conflict risk or, alternatively, where lack of action to reduce greenhouse gases increases the potential for extreme weather and climate events beyond a level of risk that can be reduced.

Table 1 helps to highlight some commonalities of approaches between different disciplines and spheres of action, including the need to invest in institutional capacity, in monitoring and early warning and in measures to increase social capital to help share risks across societies.

**Table 1: Risk management options across key policy areas**

	<b>Risk reduction (preventing hazard/shock, reducing exposure and vulnerability)</b>	<b>Transfer or share risks</b>	<b>Being better prepared</b>	<b>Responding and recovering effectively</b>	<b>References</b>
<b>Climate change risk</b>	Greenhouse gas emissions reduction, poverty reduction	(Re)insurance, community savings and other forms of risk pooling	Monitor salinisation, coral bleaching, seasonal forecasts	Support environmental migration and livelihood transitions	McGray et al. (2008)
<b>Disaster risk</b>	Land use planning, poverty reduction, strong building codes with enforcement	(Re)insurance, community savings and other forms of risk pooling	Early warning, evacuation, first aid training	Cash-transfers, rapid shelter provision, risk assessments in reconstruction	UNISDR Global Assessment Report (2011)
<b>Conflict risk</b>	Conflict analysis informing policy and programming decisions, consensus building approaches, electoral reform in some contexts	Building wider allegiances and coalitions for peace	Early warning, conflict analysis, training in mediation, development of negotiation strategies, proactive peacekeeping	Peacekeeping, transitional justice/peace building, new governance and decision-making processes, economic opportunities	GSDRC on conflict (Haider, 2011)
<b>Economic and financial shocks</b>	Transformative and promotive social protection, land reform, migration, build foreign reserves	Redistributive tax measures, with investment in welfare/benefit for more exposed individuals	Early warning, economic trend analysis, coordination between government departments, macro-economic shock facilities	Cash and other asset transfers, increases in aid, supported investment flows.	Devereux and Sabates-Wheeler (2004), te Velde (2008)

Further research is needed on the politics of investing in different options, on the economics of how to balance investments across the continuum in the context of dynamic and interacting risks and on the extent to which implementation of measures across the risk management continuum genuinely helps develop the attributes of a resilient system. It also requires a better understanding of when a risk is deemed a risk in a particular cultural or moral context and at what point a risk requires a policy or individual response to manage it.

### **Dangers of aligning resilience and risk management**

The concept of resilience does not come without its critics, or indeed limitations. For many authors, for example, there is a concern that the term resilience may reinforce a focus on the hazard or shock, at the expense of vulnerability.

When considering climate change or disasters, it is suggested that ‘resilience’ tends to frame nature as the major threat and appears to increase the prominence of physical science in identifying solutions (Gaillard, 2010). Framing risk in the context of resilience may inadvertently downplay the focus on poverty, vulnerability and the political economy of skewed development: drawing attention away from the role of agency, power and politics. As Cannon and Muller-Mahn (2010: 623) argue, resilience

‘... is dangerous because it is removing the inherently power-related connotation of vulnerability and is capable of doing the same to the process of adaptation’.

Conversely, the vulnerability dimension of the risk equation seeks to do exactly the opposite; to place emphasis on the root causes of poverty and inequality. However, it should be noted that resilience does place emphasis on individual, institutional and system wide capacities at its heart, which can help to expose concerns about an inability to address underlying causes and where weaknesses (such as lack of power) have an impact on overall functioning.

Similar concerns have been raised by those with a focus on pro-poor and grass-roots development approaches. For some, the concerns about resilience are not only about the way in which the concept is coming to (re)shape development practice, but also the objects of that

practice (i.e. the poor). The policy implications of resilience may lead to a focus on scientific and technocratic responses divorced from a focus on social processes and systemic failures (Cannon and Muller-Mahn, 2010). However, anecdotal experience from the operational agencies suggests that the sustainable livelihoods approach is used as a proxy for framing resilience as, in practical terms, the livelihoods approach is well embedded whereas specific resilience approaches are unfamiliar and nascent (Jones et al., 2010). This may result in a skewed, incomplete and potentially ineffective version of ‘resilience’ being pursued locally.

As an equally fundamental challenge, many authors have commented that a resilient system is not necessarily inherently good. It may even be necessary to disband, destroy or modify a system in order to enable the presence of a system that is more desirable and resilient. Such a perspective immediately brings to the fore questions of values, power and politics. The question being posed, therefore, becomes ‘...resilience of what, for whom?’ (Leach, 2008: 3).

If a resilient system could, in fact, be the persistence of a negative system, whose resilience is at stake? The so-called ‘dark side of resilience’ includes examples where (negative) systems become fixed and, therefore, less responsive to future threats or positive transformation. Painting a picture of resilience as undesirable raises quite different sets of questions that seek to distinguish between different types and functions of resilience, and the structures required to maintain them.

Although not the approach taken in this paper, the final concern to be noted here is the criticism that most of the interpretations of resilience being used in mainstream policy and practice are conservative, as opposed to radical, transformative or challenging of the status quo. Brown (2011) provides a useful highlight on how the concept of resilience being used in international development policy defends the status quo, rather than presenting a challenge to the norms (as emphasised in many academic framings and by the IPCC, 2011) that may be required to genuinely reduce risk.

## Conclusion

Resilience is an integrating concept that allows multiple risks, shocks and stresses and their impacts on ecosystems and vulnerable people to be considered together in the context of development programming. Resilience also highlights slow drivers of change that influence systems and the potential for non-linearity and transformation processes. It focuses attention on a set of institutional, community and individual capacities and particularly on learning, innovation and adaptation. Strengthening resilience can be associated with windows of opportunities for change, often opening after a disturbance (e.g. Birkmann et al., 2010).

However, resilience is a difficult concept to measure and to apply to different operating contexts, meaning other framings and linked concepts may be more fruitful avenues in which to work with 'resilience'.

While resilience clearly has attractions as a unifying concept and as a vision with political currency in uncertain times, achieving positive outcomes will require policy makers and practitioners to fall back

on more familiar concepts with which they have practical experience. Risk and risk management provide this familiarity and, similarly, allow a cross-disciplinary, cross-issue discussion.

The ability for risk management to provide a structure to actions as demonstrated in Table 1 offers a useful basis for spotting linkages between strategies and to consider the balance of efforts between reducing risks and managing residual risks. Understanding this balance in the context of dynamic systems is a key challenge, recognising that the risk of shocks/stresses/hazards impacting societies is constantly changing.

Nonetheless, a more systematic approach to addressing the multiple risks to development progress is the prize and combining elements of resilience and risk management will likely be the most pragmatic option.

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