

SUSTAINABLE LIVELIHOODS AND VULNERABILITY TO DISASTERS

*John Twigg, Benfield Greig Hazard Research Centre,
for the Disaster Mitigation Institute (DMI)*

March 2001

1. Abstract

This paper provides a summary of some important recent thinking on sustainable livelihoods and vulnerability to disasters. In particular, it looks at the sustainable livelihoods (SL) framework currently being developed and promoted.

The paper includes a list of selected references and sources of information on these subjects. It also comments on issues arising from current theories that are relevant to work on livelihood options for disaster risk reduction.

2. Introduction and background

This work was commissioned by the Disaster Mitigation Institute (DMI) as part of its contribution to the project 'Livelihood Options for Disaster Risk Reduction in South Asia' that is managed by the Intermediate Technology Development Group (ITDG) Sri Lanka, in association with the South Asian network Duryog Nivaran (DN).¹ The project has three main aims:

1. To explore the impact of disasters on livelihoods in South Asia, and assess the livelihood needs and opportunities that result from disasters.
2. To identify practical options that can enhance livelihoods in disasters.
3. To test and demonstrate options for enhancing livelihoods that can be disseminated more widely (ITDG 1999: 12).

The project builds on earlier work on people's vulnerability undertaken by DN and DMI that has explored the complexity of this subject. Vulnerability has many dimensions: economic, social, demographic, political and psychological. Vulnerability is not just poverty, but the poor tend to be the most vulnerable. The work by DN and DMI has highlighted the links between levels of livelihood security and levels of vulnerability to disasters. Ensuring livelihood security is an integral part of a sustainable approach to disaster mitigation, but livelihood support is largely ignored in disaster mitigation plans (ITDG 1999: 10-11).

¹ The author is grateful to DMI for permission to update and reproduce the paper.

3. Vulnerability theories

During the 1970s and especially the 1980s the relationship between human actions and the effects of disasters – the socio-economic dimension of vulnerability – was increasingly well documented and argued. In the late 1980s and early 1990s, two important conceptual models were developed to give disaster managers a framework for understanding vulnerability to disasters and for reducing it:

1. Capacities and Vulnerabilities Analysis (Anderson and Woodrow 1989/1998).
2. Pressure and Release/Access models (Blaikie *et al.* 1994).

Both models have been influential among disaster specialists. They are summarised here, with particular attention to their views of livelihoods and how to enhance them.

This section of the paper also looks at DMI’s vulnerability model (Bhatt 1996) and comments on other aspects of vulnerability thinking that are relevant to the subject of livelihood vulnerability and resilience.

3.1 Capacities and Vulnerabilities Analysis (CVA)

This is a framework for NGOs to use in designing and evaluating projects. It was designed to make relief interventions more developmental but has been used more widely in disaster preparedness and mitigation. It is above all a practical and diagnostic tool.

The basis of the CVA framework is a simple matrix for viewing people’s vulnerabilities² and capacities in three broad, interrelated areas: physical/material, social/organisational and motivational/attitudinal.

Figure 1: CVA matrix

	Vulnerabilities	Capacities
Physical/material What productive resources, skills and hazards exist?		
Social/organisational What are the relations and organisation among people?		
Motivational/attitudinal How does the community view its ability to create change?		

² CVA makes a distinction between ‘vulnerabilities’ and ‘needs’: vulnerabilities are long-term factors that affect a community’s ability to respond to events or make it susceptible to disasters; needs (in a disaster context) are immediate requirements for survival or recovery after disaster.

Each of the three areas covers a wide range of features:

Physical/material vulnerability and capacity. The most visible area of vulnerability is physical/material poverty. It includes land, climate, environment, health, skills and labour, infrastructure, housing, finance and technologies. Poor people suffer from crises more often than people who are richer because they have little or no savings, few income or production options, and limited resources. They are more vulnerable and recover more slowly. To understand physical/material vulnerabilities, one has to ask what made the people affected by disaster physically vulnerable: was it their economic activities (e.g. farmers cannot plant because of floods), geographic location (e.g. homes built in cyclone-prone areas) or poverty/lack of resources?

Social/organisational vulnerability and capacity. How society is organised, its internal conflicts and how it manages them are just as important as the physical/material dimension of vulnerability, but less visible and less well understood. This aspect includes formal political structures and the informal systems through which people get things done. Poor societies that are well organised and cohesive can withstand or recover from disasters better than those where there is little or no organisation and communities are divided (e.g. by race, religion, class or caste). To explore this aspect, one has to ask what the social structure was before the disaster and how well it served the people when disaster struck; one can also ask what impact disasters have on social organisation.

Motivational/attitudinal vulnerability and capacity. This area includes how people in society view themselves and their ability to affect their environment. Groups that share strong ideologies or belief systems, or have experience of cooperating successfully, may be better able to help each other at times of disaster than groups without such shared beliefs or those who feel fatalistic or dependent. Crises can stimulate communities to make extraordinary efforts. Questions to be asked here include what people's beliefs and motivations are, and how disasters affect them.

Five other factors are added to the CVA matrix to make it reflect complex reality. These are: disaggregation by gender, disaggregation by other differences (e.g. economic status), changes over time, interaction between the categories, and different scales or levels of application (e.g. village or national levels).

Value of CVA to analysis of livelihoods and vulnerability to disaster

The strengths of the CVA matrix are that it is practical and broad-based, linking the many different aspects of vulnerabilities and capacities. If CVA is used properly, it should balance these different factors. Livelihoods are covered: they fit within the 'physical/material' category. On its own, CVA does not provide indicators of vulnerabilities and capacities, just an overarching framework. If CVA were to be used to look at livelihoods, specific indicators would have to be developed. The 'physical/material' category includes hazards, but when applied in practice CVA

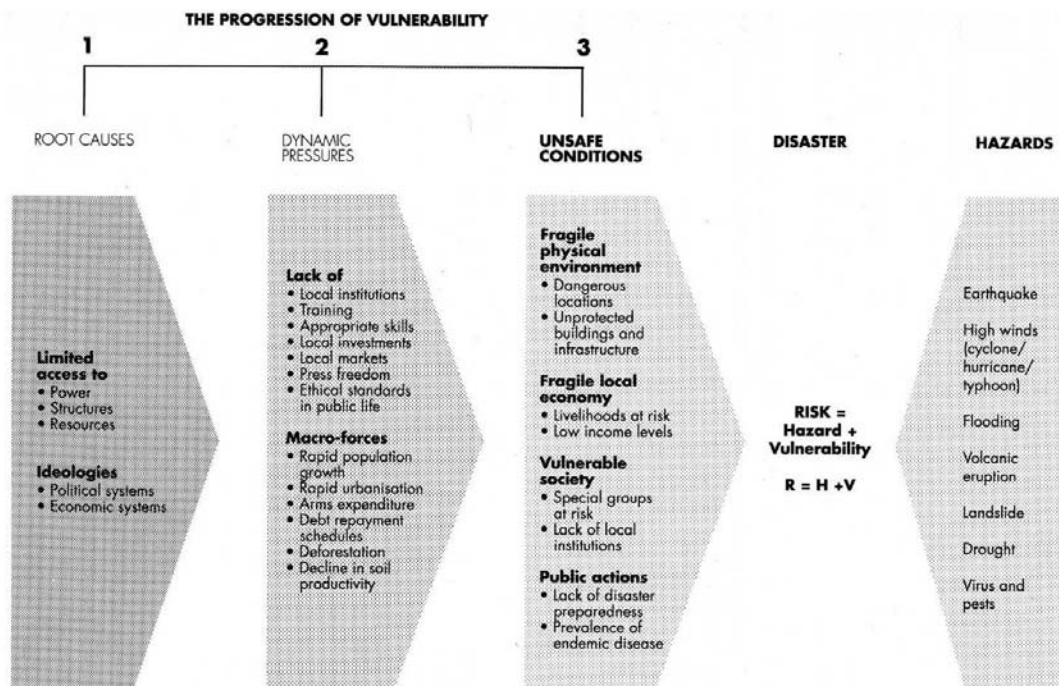
tends to underestimate the significance of natural hazards by concentrating on human aspects of disasters.

3.2 Pressure and Release/Access models

These two related models were developed as part of the detailed study of human vulnerability to natural hazards by Blaikie *et al.* (1994). They are more conceptual than CVA and have had some influence on the way that vulnerability is perceived.

The basis of the Pressure and Release (PAR) model is recognition that a disaster is the intersection of two opposing forces: the processes generating vulnerability on one side, and physical exposure to hazard on the other. Increasing pressure can come from either side, but to relieve the pressure, vulnerability has to be reduced.

Figure 2: PAR model
(Blaikie *et al.* 1994)



The model proposes a 'progression' of vulnerability with three main levels: root causes, dynamic pressures and unsafe conditions.

Root causes or underlying causes are the most remote influences. They are economic, demographic and political processes within society (including global processes). They reflect the distribution of power in a society, and are connected to the functioning and power of the state.

Dynamic pressures channel the root causes into particular forms of insecurity that have to be considered in relation to the types of hazards facing vulnerable

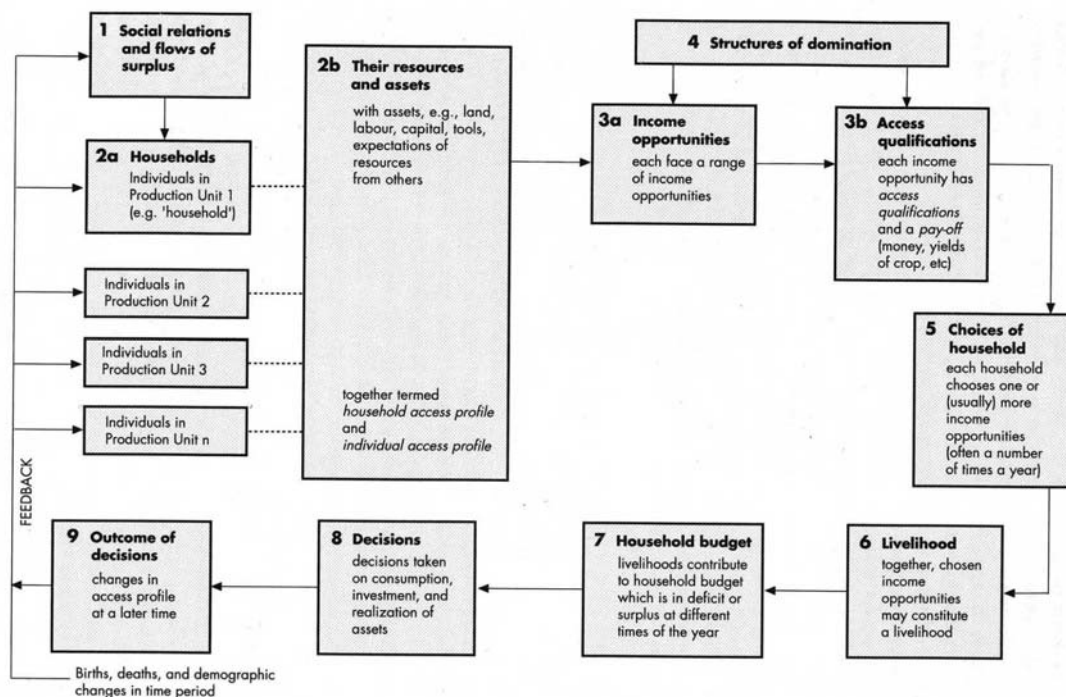
people. These include reduced access to resources as a result of the way regional or global pressures work through to localities.

Unsafe conditions are the specific forms in which a population's vulnerability is expressed in time and space in conjunction with a hazard. Examples include people having to live in dangerous locations, being unable to afford safe buildings, having to engage in dangerous livelihoods or having minimal food entitlements.

All of these factors change over time, sometimes rapidly. They also interact with each other in complex ways. The outcome can be unpredictable.

The second, linked, model is the Access model that attempts to show how unsafe conditions arise in relation to the economic and political processes that allocate assets, income and other resources in society. The Access model sees livelihood strategies as the key to understanding the way people cope with hazards. Access involves the ability of an individual, family, group, class or community to use resources to secure a livelihood.

Figure 3: access to resources to maintain livelihoods
(Blaikie *et al.* 1994)



Their access to resources is always based on social and economic relations (including the social relations of production, gender, ethnicity, status and age). It varies greatly between individuals and groups, and this affects their relative resilience to disasters. Those with better access to information, cash, means of production, equipment and social networks are less vulnerable and are generally able to recover more quickly.

A 'household' submodel (Figure 3) shows the different elements of access to resources to maintain livelihoods and the relationships between them. The word 'household' is used here to refer to any distinct economic unit: it could be a larger group.

The submodel is a way of looking at the resources and assets that an economic unit contains, the forces that affect its access to resources, and the factors that have to be taken into account when making decisions about livelihood strategies. This makes it a useful conceptual tool for this project.

Resources and assets comprise material and non-material forms (boxes 2a and 2b in the model). Material resources and assets include land, livestock, tools, capital, food reserves and jewellery, as well as labour power and specialist skills. Non-material resources are personal attributes such as gender or membership of a particular social group.

Based on this, each household makes choices about *income/livelihood opportunities* (box 3a). Each opportunity has *access qualifications* (box 3b) that are the particular resources and personal attributes required to take up that opportunity. Access qualifications are also influenced strongly by *structures of domination* (box 4), for example gender and other socio-cultural inequalities.

The level of a household's or individual's access to resources and livelihood opportunities is called its *access profile*. Some households have much greater freedom of choice than others (box 5), and can choose opportunities with higher pay-offs, lower risks, and greater flexibility in adverse conditions.

Choices usually involve a mixture of income-earning opportunities. In rural areas these are often linked to the agricultural cycle. These choices, together with the satisfaction of basic needs such as water and shelter, constitute a *livelihood* (box 6). Depending on the income earned and decisions made, households may improve their access profile over time, but a disaster can cause a sudden deficit in household budgets, thereby worsening its access profile and making it more vulnerable to future hazards (the so-called 'ratchet effect').

Value of PAR to analysis of livelihoods and vulnerability to disaster

The PAR/Access theory is valuable because it takes a holistic view of vulnerability. It gives more weight to hazards than CVA. It is important to this project because it places livelihood strategies at the centre of coping strategies, for all kinds of disaster, and it gives us a conceptual framework for looking at livelihoods and vulnerability. The models are primarily tools for explaining vulnerability, not for measuring it. They cannot be applied operationally without a great deal of data collection and analysis.

3.3 DMI's victim security matrix

DMI's conceptual framework resembles the CVA matrix in that it attempts to provide a straightforward operational tool that supports decision-making at field level. DMI's model also takes the form of a matrix. The terminology is different from that of CVA, but is designed to look at similar aspects. Similarly, it links physical and material aspects of vulnerability with organisational and other factors.

Figure 4: Victim Security Matrix

	Special Groups and Areas	Institutions and Governance	Resource Allocations and Accountability	Technology and Environment
Food				
Water				
Habitat				
Work				

The matrix focuses on four key elements of vulnerability/security: food, water, habitat and work. Each is viewed in a holistic way:

Food security considers the material elements of production, consumption, distribution and storage (including climate). It also looks at the wider socio-economic dimensions of access to food.

Water security includes physical aspects (source, supply, quality, use) and socio-economic aspects (access, ownership).

Habitat security encompasses the quality and location of housing, appropriate technological approaches and wider issues such as finance and planning.

Work security includes income, employment, assets, production, productivity and working conditions.

The other columns of the matrix allow vulnerability/security to be considered with regard to:

1. special groups (e.g. women, children, minorities) and areas (e.g. coastal communities)
2. institutions and governance (e.g. level of local management of programmes)
3. resource allocation (by official institutions) and accountability (to those affected by disasters)
4. technology and the environment – principally, pollution and industrial hazards

Value of VSM to analysis of livelihoods and vulnerability to disaster

The merit of the matrix is that it is practical and broad-based, linking different aspects of vulnerabilities and capacities. On its own, it does not provide indicators of

vulnerabilities and capacities, just a framework for viewing them. The four key categories of food, water, habitat and work security are key elements of livelihoods and the categorisation helps to draw attention to the centrality of livelihoods to vulnerability. If applied sensibly, the matrix should provide insights into this issue but may not cover livelihoods in all their diversity and complexity. Although hazards feature implicitly in the matrix, there is a risk, as with the CVA matrix, of undervaluing their significance in the disaster equation.

4. Sustainable livelihoods approaches

All of the approaches described above are attempts to understand and reduce vulnerability to disasters. They therefore take disaster/hazard vulnerability as the starting point, viewing livelihoods as an aspect of the question. An important recent conceptual development, the sustainable livelihoods (SL) approach, starts from a developmental standpoint and puts livelihoods at the centre of the discussion. It considers vulnerabilities, of all kinds, as part of the context in which livelihoods are shaped. This is a shift in emphasis but an important one.

In essence, SL theory brings the thinking and practice of poverty reduction strategies, sustainable development and participation and empowerment processes into a framework for policy analysis and programming. The SL approach is new and still evolving but its ideas are generating a great deal of enthusiasm in some quarters, including major agencies such as the Department for International Development (DFID) and United Nations Development Programme (UNDP). SL approaches will probably become part of the mainstream of development discourse in the next few years. Some people believe that SL thinking offers a good opportunity to get disasters and vulnerability higher up the development agenda. It is therefore discussed in some detail here.

Many people and institutions are involved in developing SL theory. A number of approaches have been developed that are broadly similar and draw upon each other. Three approaches are considered here. The principal one is the SL approach that has been developed by a number of researchers and institutions and is now being promoted by DFID. For convenience, this is labelled the SL framework. The other two discussed are those of UNDP and CARE. Neither is discussed in full. UNDP's model is considered with regard to its thinking on vulnerability, and CARE's approach with regard to its application specifically to disaster contexts.

4.1 Sustainable livelihoods framework

The following outline is based on DFID's series of 'sustainable livelihoods guidance sheets' (DFID 1999-2000). Other relevant literature is listed among the references below.

Basic approach

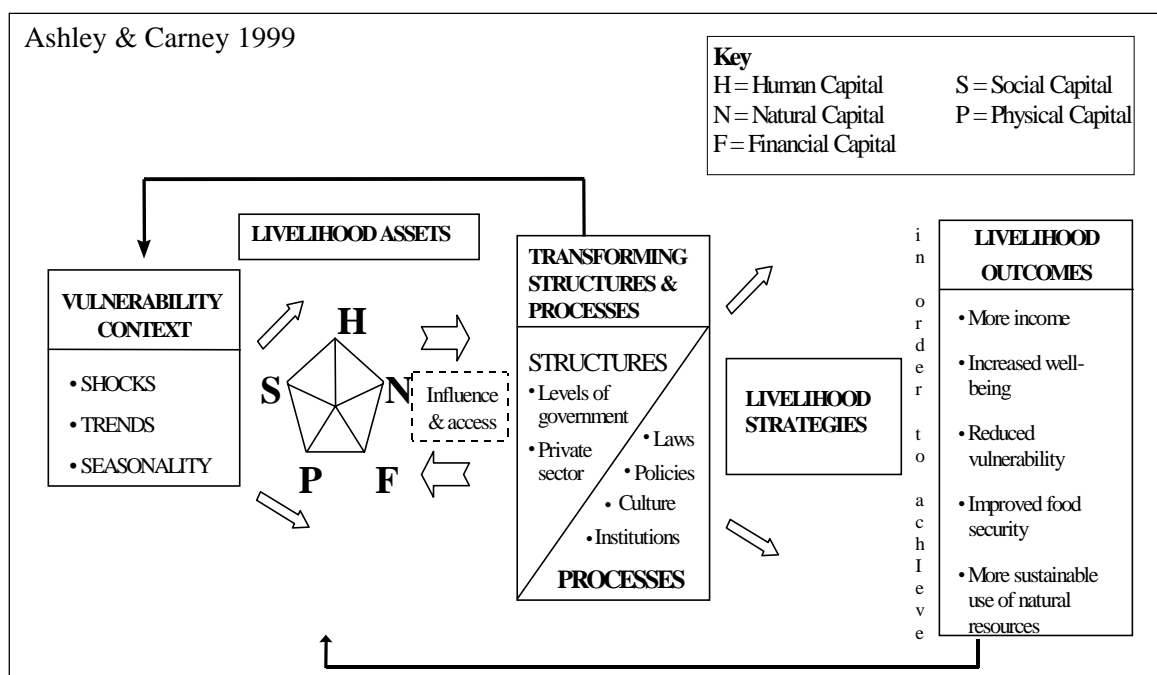
The SL framework is designed to help understand and analyse poor people's livelihoods. It takes a broad view, indicated by its definition of the term 'livelihood':

A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base. (DFID 1999-2000)

The livelihoods approach attempts to put people at the centre of development (in terms of analysis and participation). It is holistic, recognising that there is a multiplicity of actors, influences, livelihood strategies and outcomes. It also recognises that livelihoods and the forces that influence them are dynamic. It tries to bridge the gap between micro- and macro-level factors and actions.

The aim of the SL framework is to help stakeholders engage in debate about the many factors that affect livelihoods, their relative importance and the way in which they interact. This should help in identifying appropriate entry points for supporting livelihoods. It is emphatically participatory, believing that only participatory approaches can identify problems and solutions.

Figure 5: Sustainable livelihoods framework



The framework starts with the *vulnerability context* in which people live their lives and the *livelihood assets* (in effect, capacities) that they possess. It then looks at how *transforming structures and processes* generate *livelihood strategies* that lead to *livelihood outcomes*.

Sustainability and the vulnerability context

A central feature of the approach is that it views people as operating in a context of vulnerability. This frames the external environment in which people exist and is responsible for many of the hardships faced by the world’s poorest people.

The factors that make up the vulnerability context are important because they have a direct impact upon people's assets and the livelihood options that are open to them. The framework presents three main categories of vulnerability: trends, shocks and seasonality.

Trends are long-term and usually large-scale. They include population trends, resource trends (including conflict over resources), economic trends (national and international), trends in governance and politics, and technological trends. They have a particularly important influence on rates of return from chosen livelihood strategies.

Shocks include human health shocks (e.g. epidemics), natural shocks (e.g. natural hazard-induced disasters), economic shocks (e.g. rapid changes in exchange rates), conflict and crop/livestock health shocks. They can destroy assets directly (e.g. in the case of floods or storms). They can also force people to dispose of assets as part of coping strategies. Resilience to external shocks and stresses is an important factor in livelihood sustainability.

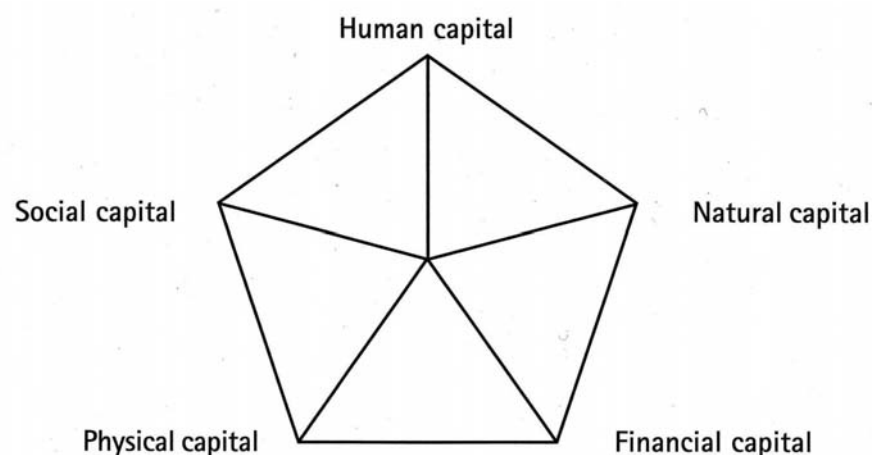
Seasonality is expressed through seasonal shifts in prices, production, food availability, employment opportunities and health. These are one of the greatest and most enduring sources of hardship for poor people.

The factors that make up the vulnerability context are important because they have a direct impact upon people's assets and the livelihood options that are open to them.

Livelihood assets

Like the Access model, the SL framework takes a broad view of people's strengths/capacities in the form of livelihood assets. This is expressed visually as an asset 'pentagon' showing the different types of asset and the important inter-relationships between them.

Figure 6: the asset pentagon
(DFID 1999-2000)



The model breaks assets ('capital') into five categories:

1. Human: skills, knowledge, ability to labour, good health.
2. Social: the social resources upon which people draw in pursuit of livelihood objectives (e.g. networks and connections, membership of groups, relationships of trust, reciprocity and exchanges).
3. Natural: the natural resource stocks from which resource flows and services are derived (e.g. land, forests, marine/wild resources, water, protection from storms and erosion).
4. Physical: the basic infrastructure and producer goods needed to support livelihoods. Infrastructure components include affordable transport, secure shelter, adequate water supplies and sanitation, access to information. Producer goods are the tools and equipment that people use to function more productively.
5. Financial: includes savings and credit, and inflows of money other than earned income (e.g. pensions, remittances).

When looking at a household, community or other group, the model can be used to show the strengths and weaknesses of different types of asset, their relative importance and the linkages between them. This helps in identifying entry points for strengthening livelihood security. The model does not set out indicators for measuring the different assets. Assets are destroyed and created as a result of the trends, shocks and seasonality of the vulnerability context.

Transforming structures and processes

These are the institutions, organisations, policies and legislation that shape livelihoods. They operate at all levels, from the household to the international arena, and in all spheres, from private to public. Their importance cannot be overemphasised. They determine:

1. access to the five different types of capital, livelihood strategies and decision makers
2. terms of exchange between the different types of capital
3. economic and other returns from livelihood strategies

They can reduce or worsen the impact of external shocks on vulnerable people.

Transforming structures are organisations that set and implement policy and legislation, deliver services, purchase, trade and perform many other functions that affect livelihoods. Public sector, private sector and civil society organisations are all included.

Transforming processes determine the way in which structures and individuals operate and interact. They include policies, legislation and other rules that regulate access to assets, markets, culture and power relations in society.

Livelihood strategies

Operating within the *vulnerability context*, using their *livelihood assets* and under the considerable influence of *transforming structures and processes*, poor people choose

and implement livelihood strategies. These are often complex and may change rapidly in response to the external context. The SL approach seeks to understand the many factors influencing people's choice of livelihood strategy and then to reinforce the positive aspects (factors that promote choice and flexibility) and mitigate the constraints.

Livelihood outcomes are also diverse. The SL framework divides them into five broad categories to make the framework more manageable:

1. more income and more economically sustainable livelihoods
2. increased well-being (non-material goods such as self esteem, sense of control and inclusion, physical security, health, access to services, political enfranchisement, maintenance of cultural heritage)
3. reduced vulnerability to external trends, shocks and seasonality
4. improved food security – which is of fundamental importance
5. more sustainable use of the natural resource base

In any livelihood strategy, there will be trade-offs and possibly conflict between different outcomes (e.g. increased income for some groups damages the natural resource base, or different household members have different priorities). It is hard to measure different types of outcome against each other. Even when participatory approaches are used, monitoring can be difficult as it can be difficult to develop usable indicators.

Value of the SL framework analysis of livelihoods and vulnerability to disaster

The SL framework is only a model, and it is very broad, but it does allow the many different factors of livelihood resilience to be put in context and balanced against each other. Many of its components are not new but the framework itself is innovative. Placing vulnerability and external shocks at the heart of livelihoods analysis is a big step forward from much conventional development thinking.

When an approach is so broad, problems are likely to arise in identifying the most important needs. The SL framework argues that livelihoods analysis does not have to be exhaustive to be effective. In the case of the vulnerability context, it argues for identifying the trends, shocks and seasonalities that are of particular importance to livelihoods. However, there is a risk that natural hazards' importance may be downplayed by such an approach, especially in the case of hazards that occur relatively infrequently.

A further indication that natural hazards' significance may be undervalued is the statement that in the short to medium term and on an individual or small group basis little can be done to alter the vulnerability context directly. This is true in the sense that some hazards cannot be prevented, and the model rightly emphasises the need to concentrate on building people's resilience to shocks, but it could lead researchers and implementing agencies to undervalue the potentially beneficial impact of local- and higher-level disaster mitigation measures. The framework recognises that hazards can damage natural capital, but places less emphasis on the magnification and creation of hazards by inappropriate resource use.

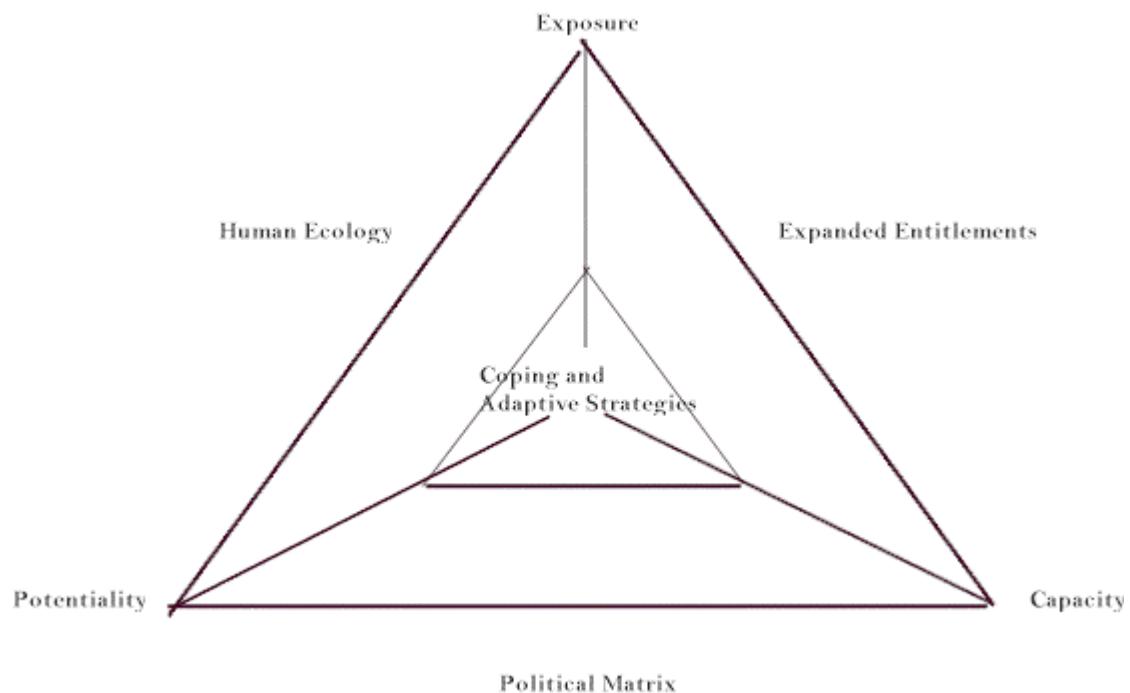
Overall, the SL framework is a good model for viewing livelihoods in all their aspects, and in setting risk reduction and hazard vulnerability in the wider vulnerability and livelihoods context. It is recommended as a conceptual model for framing research studies in the project 'Livelihood Options for Disaster Risk Reduction in South Asia'.³

4.2 UNDP, sustainable livelihoods and vulnerability

UNDP's thinking on SL is influenced by the framework described above. Two relevant elements are described here: a conceptual framework and one of the several models considered before reaching that framework (Hoon *et al.* 1997).

In UNDP's conceptual framework, the livelihood system is defined by three distinct processes that are linked through a tripartite structure.

Figure 7: analytical framework for SL used by UNDP
(Hoon *et al.* 1997)



The three sides of the analytical triangle are Human Ecology, Expanded Entitlements and Policy Matrix.

The *human ecology* side refers to the relations between the natural resource base and human society.

The *policy matrix* side refers to the relationship between policy and livelihood systems. Patterns of entitlements, distribution of assets and livelihood strategies are embedded in a policy structure at macro- and micro-level.

³ SL is intended also as a tool in planning new projects although it can be difficult to apply.

The *expanded entitlements* side comprises commodities, social support structures and capacity to make use of environmental resources.

The core of the triangle comprises the coping and adaptive strategies of the livelihood group. Each point of the triangle represents a network of interconnected ideas and indicators that can be categorized on the basis of processes, structures, values and decisions.

The triangle represents UNDP's conclusions after considering different theories and models. One of those models, which is worth discussing here because of its direct relevance to disasters, is the vulnerability assessment (VA) model. In the context of livelihoods, this sees vulnerability and sustainability as two ends of a continuum. The properties of a vulnerable livelihood system are contrary to those of a sustainable livelihood system, notably in terms of the risk of exposure to crises, stresses and shocks, and capacity to cope with these.

Livelihood systems can be located at a certain point on the continuum but it must be remembered that sustainability and vulnerability are processes and not events. Livelihood systems and groups on the vulnerability-sustainability continuum are dynamic in nature.

The VA model recognizes that not everybody is equally at risk and therefore takes coping and adaptive strategies as the entry point for developing strategies. The SL response is to reduce exposure, enhance coping capacity, strengthen recovery potential and finally create, maintain and enhance an enabling environment within which people can realise their livelihood aspirations.

Value of UNDP's approach to analysis of livelihoods and vulnerability to disaster

UNDP's triangular model is coherent and wide-ranging but appears rather unwieldy. The SL framework seems to be easier to use. The VA model is described, not promoted, by UNDP, and its notion of an essentially linear continuum does not do justice to the complexity of vulnerability.

4.3 CARE's application of the SL approach to disaster contexts

CARE has been a frontrunner in developing SL approaches. It has also considered how such approaches can be applied to the disaster context (Sanderson 1999). It does this by linking SL perspectives to different stages in the relief to development continuum.

In the *relief* stage, the emphasis is on *livelihood provisioning*. Such activities focus on meeting basic needs such as shelter, food and water.

In the *relief to rehabilitation* stage, the aim is to prevent further erosion of productive assets or coping strategies and to help households re-establish their livelihoods. Short-term interventions may include food-for-work or cash-for-work.

The stage of moving from *rehabilitation to mitigation and preparedness* comprises medium- to long-term rehabilitation-to-development activities that aim to build up assets and improve household production, consumption and exchange activities. Livelihood promotion strategies are focused on longer-term asset building to improve access to resources and mitigate future shocks and stresses.

It is pointed out that while the livelihoods approach is based on holistic analysis, it does not necessarily lead to holistic or multi-sectoral projects. The intervention strategy must be focused.

Value of CARE's approach to analysis of livelihoods and vulnerability to disaster

The approach is interesting because of the specific application to the different stages in the relief-development continuum. Its limitations are those of the relief to development continuum model itself, which has been criticised for taking an oversimplified view of complex processes – in particular, for viewing this process as a single linear process whereas in practice different elements of relief, rehabilitation and longer-term development and mitigation may be mixed at the same time. However, it does underline the need to focus interventions in disaster situations, and to be clear about what emphasis to give to different kinds of livelihood asset and strategy in such situations.

5. Further comments

All of these models and theories are just that: models and theories. The limitations of vulnerability theory in addressing complex and dynamic reality are noted in Duryog Nivaran's book *Understanding Vulnerability*:

Vulnerability is too complicated to be captured by models and frameworks. There are so many dimensions to it: economic, social, demographic, political and psychological. There are so many factors making people vulnerable: not just a range of immediate causes but – if one analyses the subject fully – a host of root causes too ... investigations of vulnerability are investigations into the workings of human society, and human societies are complex – so complex and diverse that they easily break out of any attempts to confine them within neatly drawn frameworks, categories and definitions. They are also dynamic, in a state of constant change, and, because they are complex and diverse, all the elements within societies are moving, so that these changes occur in different parts of society, in different ways and at different times (Twigg 1998: 6-7).

Similar comments can be made of the SL framework, for all its subtlety, and of other theoretical models for SL.

To counter this problem, the authors of all the approaches described rightly emphasise the need for stakeholder participation in examining livelihoods and their context. The value of participatory rural appraisal/participatory learning in action (PRA/PLA) methods in development and disaster mitigation projects is now widely recognised. Vulnerable people and victims of disasters, without using theory, will always place

the disaster in the context of their daily struggle to earn a living and feed their families. They can also articulate these issues clearly, if they are given a chance (e.g. Bhatt 1998).

6. Conclusions

The models and theories outlined here have much in common. In particular, all are holistic views that link disasters and development processes. They are methods of understanding problems and framing solutions, platforms on which to develop detailed research and projects. Each model or approach has its strengths and weaknesses, explained above, but all are flexible and can be adapted to circumstances.

For research studies on livelihood options for disaster risk reduction, the SL approach appears to be the most useful. For community-level projects, such an approach would have to be simplified according to the scale of the project and the capacity of those implementing it but the basic analytical framework would remain valuable. Participation of vulnerable people in analysis and implementation is of paramount importance.

Whichever approach is adopted, care must be taken in two particular areas:

First, the significance of *hazards* and their impact must be considered in the vulnerability/livelihoods equation. This does not mean that there should be special emphasis on hazards, only that their relative importance within the vulnerability context should be properly assessed and kept in mind.

Second, the approach must avoid a common error in vulnerability/livelihoods thinking. This is the assumption that greater assets automatically reduce vulnerability to disasters. This is *usually* true, but not *always* true. It depends on the types of asset and their vulnerability. For example, if a household takes a loan to set up a small income-generating enterprise, this may improve its income and therefore in time will enable it to acquire assets of different kinds that will help to make it more resilient to disasters. However, in some circumstances the establishment of the enterprise could make those who own it more vulnerable. If that enterprise and its assets (e.g. equipment, buildings, raw materials) are not properly protected against a natural hazard and are destroyed in a disaster as a result, the household owning the enterprise could be in a worse position than if it had never set the business up because it still has to pay off the loan. It is therefore essential to ensure that any attempts to enhance livelihood assets are accompanied by adequate protective measures against hazards.

7. References and sources of information

This is a list of selected references only. It covers documents cited in this paper and other key sources of information. More complete lists can be found in DFID's

Sustainable Livelihoods Guidance Sheets section 8, and from the British Library of Development Studies and Eldis databases (see below). Key references are accompanied by comments on the content and value of the document concerned.

7.1 References

Vulnerability theories

Anderson MB, Woodrow, PJ 1989/1998, *Rising from the Ashes. Development Strategies in Times of Disaster*. London: Intermediate Technology Publications (1998 edition). 338pp. The first half of the book presents and explains the CVA framework. The second half contains case studies of disaster response.

Bhatt MR 1996, 'On Understanding Vulnerability'. Presentation to Duryog Nivaran Steering Committee, November 1996, Colombo. Mimeo. 28pp. Explains DMI's victim security matrix and related views of vulnerability.

Blaikie P, Cannon T, Davis I, Wisner B 1994, *At Risk: natural hazards, people's vulnerability, and disasters*. London: Routledge. 284pp. The definitive textbook on people's vulnerability to natural hazards. As well as setting out the PAR and Access models, the book examines vulnerability in relation to different hazard types and presents a strategy for reducing risk.

Other documents on vulnerability

Bhatt E 1998, 'Women Victims' View of Urban and Rural Vulnerability' in Twigg J, Bhatt MR eds 1998.

Twigg J 1998, 'Understanding Vulnerability – an introduction' in Twigg J, Bhatt MR eds 1998.

Twigg J, Bhatt MR eds 1998, *Understanding Vulnerability: South Asian Perspectives*. London: Intermediate Technology Publications/Duryog Nivaran.

The sustainable livelihoods framework

Ashley C, Carney D 1999, *Sustainable livelihoods: lessons from early experience*. London: Department for International Development. 55pp. Available in print or online (<http://www.ids.ac.uk/livelihoods/nrcadc.pdf>). Examines the application of the SL approach to development projects and considers the lessons learned.

(DFID) Department for International Development, 1999/2000, *Sustainable livelihoods guidance sheets*. London: DFID. A series of informative, readable guidance sheets on different aspects of the SL approach. It covers aims, the framework overall, its uses, methods for applying the SL approach (analytical approach, indicators, etc.) and key literature and websites. The series is incomplete: other sections will be added in due course. All the guidance sheets produced so far are available online at <http://www.ids.ac.uk/livelihoods>

Farrington J, Carney D, Ashley C, Turton C 1999, *Sustainable Livelihoods in Practice: early applications of concepts in rural areas*. London: Overseas

Development Institute Natural Resource Perspectives no.42. Available online at <http://www.oneworld.org/odi/nrp/42.html>. This is a short account of issues surrounding the use of the SL approach, covering similar ground to Ashley and Carney 1999.

Scoones I 1998, *Sustainable Rural Livelihoods: a framework for analysis*. Brighton: Institute of Development Studies Working Paper 72. 22pp. Outlines the SL framework and its potential benefits.

Other SL approaches and applications

Hoon P, Singh N, Wanmali S 1997, *Sustainable Livelihoods: concepts, principles and approaches to indicator development*. New York: UNDP. Available online at http://www.undp.org/sl/Documents/Indicators_and_eval/. Describes UNDP's conceptual approach and related theories, and has a detailed discussion about the development and use of indicators.

Sanderson D 1999, 'Applying CARE's livelihoods approach'. London: CARE International (UK). 10pp. Mimeo. The paper summarises CARE's approach and presents a model of livelihoods and of interventions within the relief-development continuum. It gives examples of application, including indicators.

Other documents cited in this paper

(ITDG) Intermediate Technology Development Group 1999, 'Livelihood Options for Disaster Risk Reduction in South Asia'. Colombo: ITDG. Project proposal submitted to the Department for International Development.

7.2 Sources of information (online)

DFID Sustainable Livelihoods Learning Platform

This contains information on DFID's sustainable livelihoods programme (including online copies of the guidance sheets and other sources of information). It is at <http://www.ids.ac.uk/livelihoods/>

UNDP documents

UNDP's website has a large section on SL with a number of documents examining it in theory and in relation to different issues (e.g. gender) and sectors (e.g. mining). Go to <http://www.undp.org/sl/documents/>

Databases and catalogues

Very short summaries of documents on livelihoods can be viewed online on the catalogue of the *British Library of Development Studies* (<http://www.ids.ac.uk/bllds>).

Some online material can be found on the *Eldis* development database (<http://www.ids.ac.uk/eldis/>) that offers access to documents and organisations' websites.