

Sustainable rural livelihoods: practical concepts for the 21st century

Robert Chambers and Gordon R. Conway

December 1991

The purpose of this paper is to provoke discussion by exploring and elaborating the concept of sustainable livelihoods. It is based normatively on the ideas of capability, equity, and sustainability, each of which is both end and means.

In the 21st century livelihoods will be needed by perhaps two or three times the present human population. A livelihood comprises people, their capabilities and their means of living, including food, income and assets. Tangible assets are resources and stores, and intangible assets are claims and access. A livelihood is environmentally sustainable when it maintains or enhances the local and global assets on which livelihoods depend, and has net beneficial effects on other livelihoods. A livelihood is socially sustainable which can cope with and recover from stress and shocks, and provide for future generations.

For policy and practice, new concepts and analysis are needed. Future generations will vastly outnumber us but are not represented in our decision-making. Current and conventional analysis both undervalues future livelihoods and is pessimistic. Ways can be sought to multiply livelihoods by increasing resource-use intensity and the diversity and complexity of small-farming livelihood systems, and by small-scale economic synergy. Net sustainable livelihood effects and intensity are concepts which deserve to be tested. They entail weighing factors which include environmental and social sustainability, and net effects through competition and externalities.

The objective of sustainable livelihoods for all provides a focus for anticipating the 21st century, and points to priorities for policy and research. For policy, implications include personal environmental balance sheets for the better off, and for the poorer, policies and actions to enhance capabilities, improve equity, and increase social sustainability. For research, key questions are better understanding of (a) conditions for low human fertility, (b) intensity, complexity and diversity in small-farming systems, (c) the livelihood-intensity of local economies, and (d) factors influencing migration. Practical development and testing of concepts and methods are indicated.

For the reader, there is a challenge to examine this paper from the perspective of a person alive in a hundred years' time, and then to do better than the authors have done.

Gordon Conway is Representative for the Ford Foundation in India, Nepal and Sri Lanka. He was previously Professor and Chairman of the Centre for Environmental Technology at the Imperial College of Science, Technology and Medicine. In the mid 1980s, he also established the Sustainable Agriculture Programme at the International Institute for Environment and Development in London. He has worked extensively in Asia, the Middle East and Africa, mostly on issues of agriculture and environment.

For comments on an earlier draft we are grateful to John Lawton, Melissa Leach, and Michel Pimbert. The views expressed are ours and should not be attributed to the Institute of Development Studies or the Ford Foundation.

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ISBN 0 903715 58 9

Themes: agricultural and rural problems; food security; environment

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1 Context, conventions and concepts

1.1 Change and uncertainty

In almost every domain of human life, change is accelerating. This is true wherever we look, in the ecological, economic, intellectual, political, professional, psychological, social or technological aspects of our lives. Along with other changes, human aspirations are growing at an accelerating rate, not least because of the rapidity of technological change in access to information. It is not just that change is fast; it is getting faster and faster. In this unprecedented context, two aspects stand out. First, the conventional or normal concepts, values, methods and behaviour prevalent in professions are liable to lag further and further behind the frontiers. Second, future conditions become harder and harder to predict. In this flux and future uncertainty, we can expect (though who can be sure?) that change will continue to accelerate, that much professionalism will continue to be behind the times, and that we will continue to be out of date and wrong in our anticipation of the future.

One prediction, though, seems reasonably secure: short of a holocaust, pandemic, or sequence of massive disasters, the human population of the 21st century will be much larger than it is now. Although world population growth is decelerating, the population may well rise at least to somewhere in the range of 10 to 15 billion, or two or three times the 5 billion mark passed in the late 1980s.

The burden of this growth will fall largely on the poorer countries. In the current projections for the 36 year period 1989 to 2025, both the populations of low income countries, and those of middle income countries, are expected to rise by more than three quarters (for these and other estimates see WDR 1991: 254–5). If we take low income countries alone, population would rise by 2.3 billion, from 2.9 to 5.2 billion, and in 2025 still be rising. In sub Saharan Africa, (SSA), population would treble in the next 40 years.

The prospects for the future of cities in developing countries are particularly grim (see for example Sadik 1991; Schiffer 1991). Growth rates are reported often between 8 and 9 per cent per annum and cities of over 20 million may become common. The term mega-city is now being followed by hyper-city. In one estimate, by 2025, the inhabitants of cities in developing countries will total nearly 4 billion (Schiffer 1991). But the prospects are grim, too, for the rural poor. In round figures for SSA, even if the urban population of about 130 million were five times larger by 2025, at 650 million, the rural population would still by current estimates almost double, from 330 to about 650 million.

The implications for urban and rural development strategies are profound. When so many millions are already trapped in totally unacceptable poverty, it would be massively difficult simply to enable just them alone to gain adequate and decent levels of living; but when the huge anticipated population increases of the future are added, the prospect is daunting indeed. The challenge posed is both practical and analytical. What sorts of concepts and analysis could help us, the human race, meet this challenge better?

While much of the evidence and arguments in this paper apply to urban conditions, our main focus is rural. This is for two reasons. First, the needs of the rural poor are likely to get even less attention in the

future. Visible misery, articulate aspiration and political organisation and influence in the cities may combine to concentrate resources in urban areas. Second, at the margin the larger the number of people who can live decently in rural areas, so the less will be the human pressure and misery of the towns. There are shades, subtleties and exceptions, but the major empirical and normative equation from which we start is to seek ways for most rural areas in developing countries to support many more people.

This conflicts with recognition that in low and middle income countries, the exploitation of rural resources is already often unsustainable, and least sustainable in those regions, countries and zones with the lowest urbanisation, the highest population growth rates, and the most vulnerable rural environments. Any strategy for environment and development for the 21st century which is concerned with people, equity and sustainability has, then, to confront the question of how a vastly larger number of people can gain at least basically decent rural livelihoods in a manner which can be sustained, many of them in environments which are fragile and marginal.

In looking for clues and answers to that question, a starting point is to examine some aspects of conventional analysis in the social sciences.

1.2 Defects of conventional professional analysis

In social science disciplines and professions, the context of accelerating change and uncertainty is often confronted by a conventional conservatism in concepts, values, methods and behaviour. In some universities, teachers and textbooks persist in conditioning students with the standard routines and reflexes of earlier times. Three modes of thinking in development teaching and analysis have proved singularly resistant to change: production thinking, employment thinking, and poverty-line thinking.

1.2.1 Production thinking

Problems defined variously as 'hunger', undernutrition, malnutrition, and famine are in this mode seen as problems of production, of producing enough food. There is, though, overwhelming evidence (see e.g. Sen 1981 for the seminal work) that these are much more problems of entitlements, of being able to command food supplies, than of production or supply.

1.2.2 Employment thinking

The problems of the poor are seen as lack of employment, leading to the prescription of generating large numbers of new 'workplaces' (e.g. Schumacher 1973). The ideal is full employment, in which everyone has a 'job'. But this misfits much rural reality, in which people seek to put together a living through multifarious activities.

1.2.3 Poverty-line thinking

Deprivation is defined in terms of a single continuum, the poverty line, which is measured in terms of incomes (especially wages or salaries) or consumption. The aim then is to enable more people to rise

above the line, and fewer to sink below it. But deprivation and wellbeing, as poor rural people perceive them, have many dimensions which do not correspond with this measure (see e.g. Jodha 1988).

These three modes of analysis share two defects: an industrialised country imprint; and reductionism for ease of measurement. Production, employment and cash income as indicators of wellbeing are industrial preoccupations; and all three are also amenable to measurement along single scales – amount produced (whether tonnes of steel or tonnes of foodgrains), numbers employed in jobs, and earnings or wages in a weekly or monthly pay-packet. They have narrow conceptual bases thought out and designed in central places, and applied top-down to elicit data that fit into preset boxes. These concepts and measures, generated in urban conditions and for professional convenience, do not fit or capture the complex and diverse realities of most rural life. They account for the failure of much conventional analysis to pick up or show the plural priorities of the rural poor and their many and varied strategies to obtain a living.

1.3 Fundamentals: capability, equity and sustainability

In the 1970s and 1980s, priorities and prescriptions for development changed rapidly. In some fields, such as neo-classical economics, theory itself generated change. In others, theory and concepts lagged behind practice and experience. Gaps appeared most marked where linkages were weak between objectives and methods, or between different disciplines. But disciplinary reductionism – the limiting of values, concepts and methods to the narrow concerns of a single academic and professional discipline – has been increasingly challenged. Gaps and cross-linkages between ecology, economics and other social sciences offer scope and need for practical concepts. The question is whether concepts can be found which are useful both analytically, to generate insight and hypotheses for research, and practically, as a focus and tool for decision-making.

From the flux and debate of the past few years, we have taken three concepts variously found in or evolved in the social and biological sciences, and which have increasingly commanded consensus. (In an earlier draft, we included diversity, but this is more controversial, and the mutual reinforcement with the other three is less strong and more ambiguous than between the three themselves.) Each concept is represented by a single word. Each has two sides, normative and descriptive. Used normatively, each states a desirable goal or criterion for evaluation; and used descriptively, each can be empirically observed or in principle measured. The three concepts are capability, equity, and sustainability.

In proposing these three concepts, we, like others, are trapped in implicit paternalism. Faced with diversity and change in human conditions, values and aspirations, no search for universal concepts can fully escape top-down generalisation and prescription. So capability, equity, and sustainability are ‘our’ concepts, not ‘theirs’. They are justified only as a stage in a constant struggle of questioning, doubt, dialogue and self-criticism, in which we try to see what is right and practicable, and what fits ‘their’ conditions and priorities, and those of humankind as a whole. In these, and other concepts, there can and should be nothing final.

The three concepts of capability, equity and sustainability are linked. Each is also both end and means: that is to say, each is seen as good in itself, as an end; and each is also seen as a means to good

ends, to the extent that it can support the others. Linked together, capability, equity and sustainability present a framework or paradigm for development thinking which is both normative and practical. However, like other concepts of what is good, they are not always or necessarily mutually supporting (for example equity in access to a resource by no means assures sustainable resource use without appropriate and effective institutions for resource management and exploitation). The search has to be for ways in which these three concepts, as objectives, can be combined so that in practice conflict is low and mutual support high.

1.3.1 Capability

The word capability has been used by Amartya Sen (Sen 1984, 1987; Dreze and Sen 1989) to refer to being able to perform certain basic functionings, to what a person is capable of doing and being. It includes, for example, to be adequately nourished, to be comfortably clothed, to avoid escapable morbidity and preventable mortality, to lead a life without shame, to be able to visit and entertain one's friends, to keep track of what is going on and what others are talking about (Sen 1987:18; Dreze and Sen 1990: 11). Quality of life is seen in terms of valued activities and the ability to choose and perform those activities. The word capability has, thus a wide span, and being democratically defined, has diverse specific meanings for different people in different places, including the many criteria of wellbeing of poor people themselves (for examples of which see Jodha 1988).

Within the generality of Sen's use of capability, there is a subset of livelihood capabilities that include being able to cope with stress and shocks, and being able to find and make use of livelihood opportunities. Such capabilities are not just reactive, being able to respond to adverse changes in conditions; they are also proactive and dynamically adaptable. They include gaining access to and using services and information, exercising foresight, experimenting and innovating, competing and collaborating with others, and exploiting new conditions and resources.

1.3.2 Equity

In conventional terms, equity can be measured in terms of relative income distribution. But we use the word more broadly, to imply a less unequal distribution of assets, capabilities and opportunities and especially enhancement of those of the most deprived. It includes an end to discrimination against women, against minorities, and against all who are weak, and an end to urban and rural poverty and deprivation.

1.3.3 Sustainability

In development prose, 'sustainable' has replaced 'integrated' as a versatile synonym for 'good'. Few, if any, dissent from the view that development should now be sustainable. There are, though, many meanings and interpretations of the term (Lele 1991). Environmentally, sustainability refers to the new global concerns with pollution, global warming, deforestation, the overexploitation of non-renewable resources and physical degradation. It has become orthodox, verbally if not in behaviour, to take a long-term view,

to have a sense of the global village with finite resources threatened by wasteful and polluting consumption on the one hand, and by rapid growth of population on the other. In common parlance, sustainability connotes self-sufficiency and an implicit ideology of long-term self-restraint and self-reliance. It is used to refer to life styles which touch the earth lightly; to organic agriculture with low external inputs; to institutions which can raise their own revenue; to processes which are self-supporting without subsidy. Socially, in the livelihood context, we will use sustainability in a more focused manner to mean the ability to maintain and improve livelihoods while maintaining or enhancing the local and global assets and capabilities on which livelihoods depend.

2 Livelihoods

2.1 Sustainable livelihoods as an integrating concept

Capabilities, equity, and sustainability combine in the concept of sustainable livelihoods. A livelihood in its simplest sense is a means of gaining a living. Capabilities are both an end and means of livelihood: a livelihood provides the support for the enhancement and exercise of capabilities (an end); and capabilities (a means) enable a livelihood to be gained. Equity is both an end and a means: any minimum definition of equity must include adequate and decent livelihoods for all (an end); and equity in assets and access are preconditions (means) for gaining adequate and decent livelihoods. Sustainability, too, is both end and means: sustainable stewardship of resources is a value (or end) in itself; and it provides conditions (a means) for livelihoods to be sustained for future generations.

A concept of sustainable livelihoods was put forward in the report of an Advisory Panel of the World Commission on Environment and Development. In calling for a new analysis, it proposed sustainable livelihood security as an integrating concept, and made it central to its report (WCED 1987a: 2–5). The definition was as follows:

Livelihood is defined as adequate stocks and flows of food and cash to meet basic needs. Security refers to secure ownership of, or access to, resources and income-earning activities, including reserves and assets to offset risk, ease shocks and meet contingencies. Sustainable refers to the maintenance or enhancement of resource productivity on a long-term basis. A household may be enabled to gain sustainable livelihood security in many ways – through ownership of land, livestock or trees; rights to grazing, fishing, hunting or gathering; through stable employment with adequate remuneration; or through varied repertoires of activities.

The Panel argued that this was an integrating concept, since sustainable livelihood security was a precondition for a stable human population, a prerequisite for good husbandry and sustainable management, and a means of reversing or restraining destabilising processes, especially rural to urban migration. Sustainable livelihoods were seen as a means of serving the objectives of both equity and

sustainability. From our perspective, sustainable livelihoods also provide the resources and conditions for the enhancement and exercise of capabilities.

Modifying the WCED panel definition, we propose the following working definition of sustainable livelihoods:

- a livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long term.

2.2 Determinants of livelihood

There are numerous initial determinants of livelihood strategy. Many livelihoods are largely predetermined by accident of birth. Livelihoods of this sort may be ascriptive: in village India, children may be born into a caste with an assigned role as potters, shepherds, or washerpeople. Gender as socially defined is also a pervasive ascriptive determinant of livelihood activities. Or not necessarily ascriptively, a person may be born, socialised and apprenticed into an inherited livelihood – as a cultivator with land and tools, a pastoralist with animals, a forest dweller with trees, a fisherperson with boat and tackle, or a shopkeeper with shop and stock; and each of these may in turn create a new household or households in the same occupation.

Many livelihoods are also less singular or predetermined. Some people improvise livelihoods with degrees of desperation, what they do being largely determined by the social, economic and ecological environment in which they find themselves. A person or household may also choose a livelihood, especially through education and migration. Those who are better off usually have a wider choice than those who are worse off, and a wider choice is usually generated by economic growth. In a future of accelerating change, adaptable capabilities to exploit new opportunities may be both more needed and more prevalent.

2.3 The nature of human livelihoods

The simple definition of a livelihood as a means of securing a living summarises a reality which comes into focus as being complex as its parts are found and named, and its structure unravelled.

The definition of a livelihood can be at different hierarchical levels. The most commonly used descriptively is the household, usually meaning the human group which shares the same hearth for cooking. In adopting this level here, it is important to recognise an individual or intrahousehold level, in which the wellbeing and access of some household members, and especially women and children, may be inferior to that of others, especially men; and also the broader levels of the extended family, the social group, and the community. These levels are widely significant, but for the sake of brevity and clarity, we will here use the household as the unit of analysis.

In our provisional anatomy of a household livelihood, we postulate four categories of parts:

People	their livelihood capabilities)
) repertoire
Activities	what they do)
Assets	tangible (resources and stores))
	and intangible (claims and access)) portfolio
	which provide material and social)
	means)
Gains or outputs	a living, what they gain from what they do	

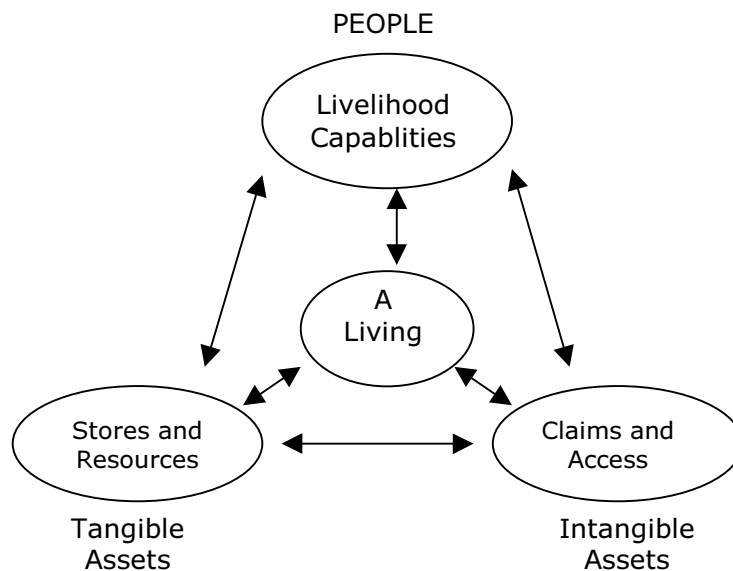
The core of a livelihood can be expressed as a living, and the main components and relationships presented as in Figure 2.1.

Of these four, the most complex is the portfolio of tangible and intangible assets.

In approaching the portfolio, Swift (1989) provides a good starting point. In his analysis of human vulnerability and responses to famine, he distinguished three classes of asset – investments, stores and claims. We accept and expand his broad use of ‘asset’ but shift the emphasis to include ‘normal’ living as well as survival in crisis. Adopting his division of assets into tangible and intangible, we separate out stores and resources as tangible, and claims and access as intangible. While these are large categories, putting them together avoids problems of overlap, since stores are often also resources and vice versa, and claims require access if they are to have any value. The two groups can be outlined as follows:

Stores and resources: These are tangible assets commanded by a household. **Stores** include food stocks, stores of value such as gold, jewellery and woven textiles, and cash savings in banks of thrift and credit schemes.

Figure 2.1 Components and Flows in a Livelihood



Resources include land, water, trees, and livestock; and farm equipment, tools, and domestic utensils. Assets are often both stores and resources, as with livestock, trees and savings.

Claims and access: These are intangible assets of a household. **Claims** are demands and appeals which can be made for material, moral or other practical support or access. The support may take many forms, such as food, implements, loans, gifts, or work. Claims are often made at times of stress or shock, or when other contingencies arise. Claims may be made on individuals or agencies, on relatives, neighbours, patrons, chiefs, social groups or communities, or on NGOs, government or the international community, including programmes for drought relief, or poverty alleviation. They are based on combinations of right, precedent, social convention, moral obligation and power. **Access** is the opportunity in practice to use a resource, store or service or to obtain information, material, technology, employment, food or income. Services here include transport, education, health, shops and markets. Information includes extension services, radio, television and newspapers. Technology includes techniques of cultivation and new seeds. Employment and other income-earning activities include rights to common property resources (CPRs) such as fuelwood or grazing on state or communal lands.

Out of these tangible and intangible assets people construct and contrive a living, using physical labour, skills, knowledge, and creativity. Skills and knowledge may be acquired within the household, passed on from generation to generation as indigenous technical knowledge, or through apprenticeship, or more formally through education or extension services, or through experiment and innovation.

Rural livelihoods, themselves, comprise one, or more often several, activities. These can include cultivation, herding, hunting, gathering, reciprocal or wage labour, trading and hawking, artisanal work such as weaving and carving, processing, providing services in transport, fetching and carrying and the like, begging, and theft. They variously provide food, cash, and other goods to satisfy a wide variety of human needs. Some of these outputs are consumed immediately, and others go into short or long-term stores, to be consumed later or to be invested in other assets.

As Swift (1989) points out, such investments occur when production leads to a surplus beyond immediate consumption requirements. Investments are made in enhancing or acquiring resources, in establishing claims, in gaining access, and in improving capabilities. Resources may be enhanced through investing labour as in terracing to improve the stock of soil, or through investing money in a cart to take produce to market. Claims may be established by investing in a marriage or by giving presents. Access to information may be obtained by investment in a radio or in education. Capabilities may be enhanced again through investment in (useful) education and training, and in apprenticeship. The results of successful investments are an added variety or quality of assets and/or capabilities which can be used for further production or in responding to future contingencies and threats to survival.

In addition to direct and physical benefits, adequate and decent livelihoods can and often do have other good effects. They can improve capabilities in the broader sense of the term by providing conditions and opportunities for widening choices, diminishing powerlessness, promoting self-respect, reinforcing cultural and moral values, and in other ways improving the quality of living and experience.

3 Sustainability

The sustainability of livelihoods raises many questions. These fall into two groups: whether a livelihood is sustainable environmentally, in its effects on local and global resources and other assets; and whether it is sustainable socially, that is, able to cope with stress and shocks, and retain its ability to continue and improve. Sustainability is thus a function of how assets and capabilities are utilised, maintained and enhanced so as to preserve livelihoods.

Environmental sustainability concerns the **external** impact of livelihoods on other livelihoods; social sustainability concerns their **internal** capacity to withstand outside pressures.

3.1 Environmental sustainability

Most conventional thinking equates sustainability with preservation or enhancement of the productive resource base, particularly for future generations. This can be separated into two levels.

The first level is local. The question here is whether livelihood activities maintain and enhance, or deplete and degrade, the local natural resource base. This is the familiar focus on visible aspects of sustainability. On the negative side, livelihood activities may contribute to desertification, deforestation, soil erosion, declining water tables, salinisation and the like. On the positive side, livelihood activities can improve productivity of renewable resources like air and river water, soil, organic soil fertility, and trees.

The second level is global. The question here is whether, environmentally, livelihood activities make a net positive or negative contribution to the long-term environmental sustainability of other livelihoods. This is the now familiar, but less visible, focus on issues such as pollution, greenhouse gases and global warming, the ozone layer, the irreversible use of the world's store of non-renewable resources, and the use of sinks (such as the sea for carbon dioxide) for pollution emissions (Agarwal and Narain 1991).

To this thinking on sustainability which is concerned with tangible assets, we would add the notion of preservation or enhancement of intangible assets. Livelihood activities can be regarded as environmentally unsustainable if they have a net negative effect on the claims and access needed by others. Claims and access can be diminished in several ways, including by law, by force, or by bureaucratic barriers. Examples of negative effects on claims and access to resources at the local level are their erosion or loss through appropriation and exclusion by the powerful. The livelihoods of the powerful gain, but there are net losses.

At the global level, livelihoods are threatened by international trade and other agreements that reduce claims and access to global markets for livelihood products and to global common properties, for example to ocean fisheries. The pervasive links between the global and the local levels (Davies and Leach 1991) are important and easily overlooked.

In this paper, we are concerned mainly with the local level, and mainly in the South. It is, though, imperative to point out that globally, the least environmentally sustainable livelihoods are those of the rich, mainly in the North. Any per capita calculation of the net source and sink demands made by the rich

– the people of countries of the North, and the rich of the South – would show their livelihoods to be far less sustainable in the global dimension than those of the poor.

Locally, the main challenge is to enhance the sustainable livelihood- intensity of resource use, especially in the rural areas of the South. Globally, the main challenge is to reduce the unsustainability of livelihoods, especially in the urban areas of the North.

3.2 Social sustainability

In terms of equity, the environmental sustainability of livelihoods has to be complemented by the social sustainability of all livelihoods. Social sustainability refers to whether a human unit (individual, household or family) can not only gain but maintain an adequate and decent livelihood. This has two dimensions, one negative, one positive. The negative dimension is reactive, coping with stress and shocks; and the positive dimension is proactive, enhancing and exercising capabilities in adapting to, exploiting and creating change, and in assuring continuity.

3.2.1 Coping with stress and shocks

The livelihoods and survival of human individuals, households, groups and communities are vulnerable to stresses and shocks. Vulnerability here has two aspects: external, the stresses and shocks to which they are subject; and internal, the capacity to cope (IDS 1989). Stresses are pressures which are typically continuous and cumulative, predictable and distressing, such as seasonal shortages, rising populations or declining resources, while shocks are impacts which are typically sudden, unpredictable, and traumatic, such as fires, floods and epidemics (Conway 1987; Conway and Barbier 1990). Any definition of livelihood sustainability has to include the ability to avoid, or more usually to withstand and recover from, such stresses and shocks.

Examples of livelihood stresses which build up gradually are: declining labour work available; declining real wages; declining yields on soils which degrade through salinisation, acidity or erosion; declining common property resources, and having to go further and spend longer for less, for fuel, fodder, grazing or water; declining water tables; declining rainfall; population pressures on resources leading to declining farm size and declining returns to labour; ecological change leading to lower bio-economic productivity; indebtedness; physical disabilities like river blindness, the effects of which build up gradually affecting the whole household (Evans 1989); and the domestic cycle with its periods of high ratios of dependents to active adults.

Regularly occurring stresses arise from cycles which are either diurnal (midday and afternoon heat, mosquitoes in the evening and at night, cold and difficulty seeing at night ...) or seasonal. For the sustainability of livelihoods, seasonal stresses are more significant than diurnal. They have physical, biological, and socio-economic dimensions (Chambers, Longhurst and Pacey 1981; Chen 1991; Gill 1991) which often interlock at bad times of the year.

Examples of shocks affecting whole communities include wars, persecutions and civil violence, droughts, storms, floods, fires, famines, landslips, epidemics of crop pests or of animal or human illness,

and the collapse of a market. Examples of shocks affecting individuals and households include accidents and sudden sickness; the death of a family member or of a valued animal; loss of assets through theft, fire or other disaster; and loss of a job.

Human and household strategies for coping with stress and shocks have a substantial literature (for some recent sources see the journal *Disasters* passim; Rahmato 1987; Corbett 1988; IDS 1989; de Waal 1989; Agarwal 1990; Gill 1991; Chen 1991). The strategies consist of mixes of the following:

- **stint**: reduce current consumption; shift to lower quality foods; draw on energy stored in the body
- **hoard**: accumulate and store food and other assets
- **protect**: preserve and protect the asset base for recovery and reestablishment of the livelihood
- **deplete**: draw upon household stores of food; pledge or sell assets
- **diversify**: seek new sources of food – wild foods, gleanings, wild animals, foods stored by rats and other animals (Beck 1991); diversify work activities and sources of income, especially in off-seasons
- **claim**: make claims on relatives, neighbours, patrons, the community, NGOs, the government, the international community, variously by calling in debts, appealing to reciprocity and good will, begging, and political action
- **move**: disperse family members, livestock (Rahmato 1987), and assets; and/or migrate.

Sustainable livelihoods are those that can avoid or resist such stresses and shocks and/or that are resilient and able to bounce back. Households' portfolio of tangible (stores and resources) and intangible (claims and access) assets can be understood as partly chosen by design to reduce vulnerability and to enable the household to survive stress and shocks with minimum risk of threat to the future livelihood. (A substantial though scattered literature shows tenacity on the part of the poor in protecting and hanging onto their productive assets in difficult times). Similarly, the repertoire of activities of household members can be interpreted partly as designed to spread risk.

Security is a basic dimension in livelihood sustainability. Assets can be vulnerable. Stores of grain can be stolen, or destroyed by floods, fire or pests. Households can be deprived of their resources or their resource rights. Claims may be lost, as with death of a relative on whom a claim could have been made. Even access may disappear, as with government action to withdraw a bus service to market, or to close of a school or health centre.

Reducing vulnerability has two dimensions. The first is external through public action – to reduce external stress and shocks through flood prevention, disaster preparedness, off-season public works to provide employment, prophylaxis against diseases, and the like. The second is internal through private action, in which a household adds to its portfolio of assets and repertoire of responses so that it can respond more effectively and with less loss.

3.2.2 Dynamic livelihood capabilities

Social sustainability of a livelihood also depends on positive and dynamic competence, the ability to perceive, predict, adapt to, and exploit changes in the physical, social and economic environment. This aspect of sustainability has been recognised in agriculture in the work and writing of Roland Bunch (1985; 1988; 1989). In this approach, small farmers are enabled to improve their own experimentation, to conduct their own extension, and to organise to manage and exploit links with the wider economy. Awareness, experimental innovation, and adaptability contribute to dynamic capabilities. Through these, a farm family's livelihood can become more sustainable in uncertain and changing conditions where markets and prices fluctuate, and where old opportunities shrink and new ones appear and expand.

3.2.3 Intergenerational sustainability

The social sustainability of a livelihood also involves maintaining and enhancing capabilities for future generations. This intergenerational sustainability can be direct or indirect.

In its direct form, intergenerational sustainability takes the form of the inheritance of assets and/or skills: land or the tools of a trade are passed on to the next generation; skills and knowledge are transmitted from parents to children through family apprenticeship.

In its indirect form, intergenerational sustainability is achieved through children moving to other places or into other occupations. There they find or create new livelihoods which may be the same or different from those of the earlier generation. To enhance this form of sustainability, households often invest in education and the acquisition by children of skills other than those available within the household.

As rural populations rise, farm sizes diminish, and change accelerates, so dynamic livelihood capability and inter-generational sustainability become more critical.

4 Practical analysis

To translate concepts of livelihoods and sustainability into fair and efficient policies requires appropriate analytical orientations and methods. Three of these will be examined: valuing future livelihoods; enhancing livelihood-intensity; and estimating livelihood effects.

4.1 Valuing future livelihoods

Planning for future livelihoods implies the placing of a value on the future. The Brundtland Report (WCED 1987:8) emphasised this in its much-quoted definition of sustainable development as meeting the needs of the present without compromising the ability of future generations to meet their own needs, and thereby raised the issue of equity for future generations.

In practice, future generations and their livelihoods are undervalued in decision-making for four reasons:

- **Innumeracy** – the failure to recognise the numbers involved. Short of a massive global calamity or failure of human organisation, we who are alive today will be vastly outnumbered by future generations. If the population of the world were to stabilise at, say, 15 billion, with a life expectancy of 75, then future people would number 20 billion per century. Over a millenium, 200 billion people would live. At only 5 billion, we who are alive today would then be a minuscule minority, outnumbered by future people 4 to 1 over any one century, 40 to 1 over a thousand years, and 400 to 1 over ten thousand (roughly the equivalent of the time since agriculture began).
- **Undemocratic democracy** – the lack of democratic representation of future people. Future generations have no votes. Their interests can only be represented through the exercise of our imagination, altruism, restraint, and responsible stewardship.
- **Discounting** – devaluing the future. Economists discount the future in order to maximise net present value; politicians discount the future in order to win votes at elections which occur every five years or so; and businessmen discount the future in order to make profits now, and to repay interest on loans.

The implications in economics are well known but deserve underlining. Discounting as taught and practised in conventional social cost-benefit analysis gives lower present values to benefits and costs the further away they are in the future. The manner in which this appears to justify development decisions with bad long-term environmental effects is not in dispute (see for example Pearce *et al* 1989). A cost of 50 million pounds in 100 years time has present values of only 69,016 pounds when discounted at 2 per cent, only 3,802 pounds at 5 per cent, and only 36 pounds at 10 per cent (Pearce *et al* 1989:136). Future benefits too are given similar low values. If we were starting from scratch, and were commissioned to devise a mode of valuation to penalise future generations, it is discounting that we would be driven to invent.

- **Uncertainty** – inability to predict the future. Futurologists have often been spectacularly wrong in their past predictions. Faced with accelerating ecological, technological and social change, we have few grounds for supposing that many current predictions will be better. To take only some of the more obvious examples, huge unknowns include the potentials and impacts of biotechnology, of nuclear fusion, and of the social impacts of the new mass communications.

Innumeracy, undemocratic democracy, discounting and uncertainty are bad reasons for taking a short-term view. Human ingenuity has a capacity to rationalise short-sighted selfishness as inadvertent altruism, as manifest in neoclassical economic theory. The political and professional challenge here is to offset the temptations of short-term advantage and to forego short-term benefits, for the sake of those future people who we can expect to outnumber us so astronomically.

Contrary to the values of normal democracy and discounting, intergenerational equity requires setting a higher value on future sustainable livelihoods than on present ones. This is to the extent that pressure of livelihoods on resources can be assumed to be more intense in the future. If there will be greater pressure

and competition for livelihoods, then an adequate and sustainable livelihood will be harder to achieve, and will therefore be worth more than one at present.

This can be illustrated by hypothetical development decisions, and their anticipated effects on numbers of acceptable livelihoods.

Table 4.1 Hypothetical development decisions and livelihood trajectories

Number of livelihoods in

	10 years	50 years	100 years	150 years
Needed	50	100	150	150
Project A	100	50	25	10
Project B	75	75	75	75
Project C	25	50	100	100
Project D	25	50	100	150

Project A could be a canal irrigation system which generates temporary livelihoods during construction, and then later suffers declining productivity from silting and salinisation.

Project B could be small-scale lift irrigation with a good water table where investment takes place rapidly and production is then sustained.

Project C could be a diverse hardwood forestry project with slow-growing trees owned by communities or individuals who defer harvesting.

Project D could be progressive colonisation and intensification of agriculture in a swamp or in a newly forming river delta area, in each case with a land frontier.

Many considerations impinge on choices between projects like these, including externalities, the livelihood effects of reinvestment of capital generated, and uncertainties about technological change, about outcomes, and about livelihood trajectories. All the same, the table serves to illustrate the conflicting interests of generations. Normal innumeracy, undemocratic democracy, discounting and uncertainty prefer project A, or project B as a second best. Future generations would prefer project D, but that is now a rare case based on an atypical land frontier. So they would settle for C; and be appalled that we could ever have been so selfish and short-sighted as to have chosen A or B.

4.2 Enhancing livelihood-intensity

4.2.1 Professional pessimism

Recent writing about intergenerational equity has tended to be modest in its definition of sustainability, and so of our responsibilities for the future. This is reflected in the following quotations (cited from Pearce *et al* 1989: 173–185):

... sustainability might be redefined in terms of a requirement that the use of resources today should not reduce real incomes in the future...sustainability ought to mean that a given stock of resources - trees, soil quality, water and so on – should not decline.

(Markandya and Pearce 1988)

The sustainability criterion suggests that, at a minimum, future generations should be left no worse off than current generations.

(Tietenberg 1984)

We summarise the necessary conditions [for sustainable development] as ‘constancy of the natural capital stock.’ More strictly, the requirement is for non-negative changes in the stock of natural resources such as soil and soil quality, ground surface waters and their quality, land biomass, water biomass, and the waste assimilation capacity of receiving environment.

(Pearce, Barbier and Markandya 1988)

In principle, such an optimal [sustainable growth] policy would seek to maintain ‘an acceptable’ rate of growth in per capita real incomes without depleting the national capital asset stock or the natural environmental asset stock.

(Turner 1988)

These statements use negative syntax to express limited, even defensive objectives. The phrases ‘should not reduce’, ‘should not decline’, ‘at a minimum...left no worse off’, ‘non-negative changes’, ‘non-declining’, ‘without depleting’ – suggest a holding operation or rearguard action rather than an offensive. If economics is the dismal science, and environmentalism doleful, their hybrid can appear morbidly depressed.

Part of the problem is the concept of capital stocks and wealth. A constant stock notion taken on its own bequeaths future more numerous generations with less per capita. If the world population were to stabilise at 15 billion, then with constant stocks, future people would have only one third per capita of what we have today. The problem here lies in the concept of stock or wealth used by economists and environmentalists. They tend to think of environmental resources as a fixed quantity which is being used up. This is true for some resources but not others. It is true for non-renewable fossil fuels and for

minerals. In the right conditions, it has not been true for many small farming systems which, in many parts of the world, have enhanced their natural resources stock and their wealth.

We do not minimise the massive problems posed by population growth, human greed, and depletion of the global resource base. But negative approaches tend to be self-fulfilling: if the focus is only on problems, opportunities are easy to miss. Moreover, current poverty and future populations present such an enormous and acute challenge that it is irresponsible not to explore more positive approaches. The question has to be how, from the finite resources of the globe, to generate a vastly larger number of decent, adequate and secure livelihoods which are also sustainable and self-enhancing.

4.2.2 Practical optimism

A more optimistic view emerges from studying what poor people do. There are no grounds for facile optimism. Nevertheless, in terms of resource productivity, and of livelihood-intensity, the actual practices of poor and small farmers and also of some who are landless suggest greater sustainable livelihood potentials than most concerned professionals have recognised. These potentials are found in two dimensions: in enhanced intensity and productivity of resource use; and in small-scale economic synergy.

a Resource-use intensity and productivity

The livelihood potentials of resource use have been habitually underestimated, as for example by the often hysterical population and resources literature of the 1940s and 1950s. The underestimate has been made in two domains.

First, in small-scale farming there is better understanding now that for the complex, diverse and risk-prone agriculture of much of the South (outside the generally flat and irrigated green revolution areas), bio-economic productivity is enhanced and stabilised not by simplifying with high-input packages, but by complicating and diversifying with multiple interlinking enterprises. Mixed cropping, agroforestry, aquaculture, cut-and-carry stall feeding of livestock, the creation and protection of microenvironments which concentrate soil, water and nutrients (Chambers 1990), and intensified highly diverse home gardening (Nunez 1984; Cheatle and Njoroge 1991; Soemarwoto and Conway in press) are labour- and livelihood-intensive responses to risk and to rising population to land ratios. Many of the complications add synergistically to the nutrient flows internal to the farming system. Increasing heterogeneity will also diversify activities and outputs, and may then provide opportunities for more kinds of livelihood.

Second, and again echoing the findings of ecological analogies, degraded resources quite often present immense livelihood potential. Paradoxically, degradation has often protected resources for the poor. Because land is degraded – deforested, eroded, waterlogged, bare from grazing, flooded, or unsustainably cropped – it has low value. But again and again, when management practices are changed, remarkable bio-economic potential is realised (see e.g. Conroy and Litvinoff 1988, especially Bunch 1988 and Mishra and Sarin 1988). Some of the potentials are in growing trees: in India, some 69 million hectares of degraded lands could be growing trees to produce annual biomass increments

dramatically greater than those current (Chambers, Saxena and Shah 1989: 39–49), with at least ten-fold increases in the production of most minor forest products. Since these are livelihood-intensive, the degraded Forest land of India (36 out of the 69 million hectares) could provide sustainable livelihoods to millions more poor people.

b Small-scale economic synergy

The scale and significance in rural areas of activities other than a household directly farming its own land have been underperceived. One reason has been the reductionism of large-scale questionnaire survey methodology which tends to the recording of short and simple responses. But much evidence of a more social anthropological nature indicates that high proportions of incomes of the poor, even of those with land, derive from sources other than direct farming (see e.g. Chuta and Liedholm 1979 for an early review; also Harriss 1989). A study in rural Bangladesh (Magor and Orr 1990) found that only 37 per cent of reported household incomes came directly from agriculture, with 44 per cent from labour (including agricultural labour), and 19 from business, service and other sources. The proportions from direct agriculture rose sharply with landholding size. The implication is that, though at a low economic level in this case, many opportunities can be generated and exploited locally. When this occurs, there can be a synergy of recirculation of income.

To optimise that synergy raises questions of the market, of urban produce, of scale and cost of technology, of bureaucratic hassles through licensing and restrictions, and of local power structure. To optimise the synergy of recirculation is an issue which should perhaps be confronted more as a central concern, especially as more areas of the world will experience the population pressures now current in Bangladesh, and those in Bangladesh will intensify even more. A general hypothesis can be that recirculation through local purchases and provision of goods and services will be more livelihood-intensive than their import from outside.

Though we would argue that the scope for intensifying and complicating farming systems, and for small-scale synergy, is considerable in most environments, there are bio-economic limits. Just as there may be thresholds in population to land ratios for the adoption of more intensive technologies (Boserup 1965), so there must be thresholds beyond which immiseration is almost inevitable. It is not easy, for example, to be sanguine about the prospects of adequate and decent livelihoods for the rural poorer of Bangladesh in 2025, when the national population which stood at 111 million in 1989 is estimated to have risen by 77 per cent to 196 million (WDR 1991: 254). Restraining population growth has been, and will remain, one of the most vital and difficult preconditions for adequate and sustainable livelihoods for all in the long-term; and especially in those regions and countries where even with present populations they are so far from being achieved.

4.3 Net sustainable livelihoods

Concepts of wellbeing or deprivation have often been determined by their measurability. Convenience of measuring income or consumption has reinforced the definitions of deprivation as poverty, and of poverty as low income or low consumption. The ideas of employment, a job and a workplace are reinforced by the relative ease with which these can be identified and counted, especially in urban and industrial contexts; as professionals, we define as significant whatever we capture and can count in our crude and standard nets; and this misses much of the transient, mobile, dispersed and diverse livelihood activities of the rural poor.

In contrast, livelihoods, and sustainable livelihoods (SLs), are concepts which have evolved more from open-ended fieldwork than from the closed concerns of surveys and statistics. As we have seen, the empirical reality which they seek to encompass is not simple. To recapitulate, as narrowly defined, sustainable livelihoods include not just income and consumption, but ability to handle stress and shocks, and to satisfy basic needs; as defined more broadly, they include environmental sustainability, and good effects on others' livelihoods. SLs have many dimensions and multiple causality. They take different forms for different people in different environments. Not surprisingly they are not easy to measure or estimate; and any attempt to reduce measurement to a single scale or indicator risks doing violence to precisely the complexity and diversity which many rural livelihoods manifest – in themselves, in their relationships with the physical environment, and with each other.

In the practical world, though, criteria and ways of thinking are needed which can be used to make judgements about what to do and how to do it. The measurement fallacy has partly been to suppose that it is always necessary to know 'how much?' when often it is enough to know 'more' or 'less' or a trend. Also, an evaluative concept which conflates several criteria is usable once assessments of orders of magnitude, of relative values, and of trends are accepted as useful and usable for decision-making. As Carruthers and Clayton (1978) have indicated, decisions can be based on matrices which list estimated values for several criteria. Judgement can then be used to give weightings.

On these lines, the composite criterion we propose is net sustainable livelihoods (net SLs). This is a measure of the number of environmentally and socially sustainable livelihoods that provide an adequate living in a context less their negative effects on the benefits and sustainability of the totality of other livelihoods anywhere. Based on this, two practical concepts are net SL effects, and net SL intensity.

Net SL effects are the net adequate and sustainable livelihoods generated and supported by a livelihood itself, or by an enterprise, project, programme or policy, or by a resource use or locality, or by a social, economic or political grouping or system.

Net SL-intensity relates net adequate and sustainable livelihoods as numerator to the denominator of another livelihood, or an enterprise, project, programme or policy, or a resource use or locality, or a social, economic or political grouping or system. The more the net sustainable livelihoods supported, the higher the net SL-intensity.

Assessing net SL effects can be considered under three headings: environmental sustainability; social sustainability; and net effects.

4.3.1 Environmental sustainability effects

Assessing sustainability of livelihoods requires judgements about an increasingly unpredictable future. But the need to use judgement, and difficulty in using it, are not good reasons for holding off when the alternatives to a best guess are a less than best guess, based on easier but less fitting criteria. To the contrary, such difficulties and the need for the explicit exercise of judgement explain past neglect, and make it more important than ever to make good efforts now. Rather than trying to measure sustainability, we propose suggestive indicators, and for policy purposes, assessments of trends in these indicators.

Any given livelihood can in principle be assessed for its environmental sustainability. For the people of the rich North and the rich of the South, global rather than local environmental sustainability is more important. Here a measure of net per capita demand on the environment for its source and sink functions should be feasible. A do-it-yourself manual for the rich to assess their own net demands would seem overdue. For poor people in the South, a similar calculus is possible, but on equity grounds less important since their per capita net demand is lower.

For rural people in the South, local environmental sustainability is more relevant, pointing to the local livelihood resource base. This picks up physical and biological aspects of sustainability, and especially farming systems, common property resources, and raw materials needed for livelihoods. Some measures here will be those commonly used in the physical and biological sciences for assessing effects such as soil erosion, deforestation, and salinisation, and also the sustainable augmentation of productivity and livelihood-intensity of resource use.

The sustainable livelihood focus shifts some physical and biological criteria from their normal values. To illustrate, in livelihood effects, secondary forest can score better than primary forest: it generally has higher primary productivity and also higher livelihood-intensity. An example is 'degraded' sal forest in India which, as it regenerates, produces a rich harvest of non-timber products, including silkworms, fruits for oil, fodder grass, and leaves that are made into plates (Malhotra and Poffenberger 1990). Or again, in West Africa, conservationists are concerned about the loss of rainforest to farmbrush fallow, a product of local rotational agricultural practices. Yet farmbrush is far superior to forest in livelihood terms, as the main source of cultivable fertile land and of a wide range of non-timber forest products (pers comm. Leach M.).

The resource base has also to be that of a locality as a whole, not of just one part of it. For example, a slope may erode, but farmers may be trapping the silt lower down to make new fields. From a technical physical angle, this gets bad marks for sustainability; from a livelihood angle, it gets good marks, by concentrating soil, water and nutrients in stable and more highly productive micro-environments which provide more livelihoods which are also more stable and sustainable.

Rather more difficult to assess are the impacts of livelihood activity on the intangible assets of other livelihoods. Again there are dichotomies between rich and poor, global and local, that parallel the impacts on tangible assets. Appropriation of physical and biological resources by the rich is usually accompanied by denials of claims and access to resources by the poor, and these need to be included in the environmental sustainability calculus.

For a locality, community, or project, suggestive indicators are the status and trends in:

- migration (and off-season opportunities)
- rights and access to land, water, trees, and common property resources, and the security of those rights
- local non-farm income
- formal employment.

4.3.2 Social sustainability effects

Livelihood capability is a key part of the social sustainability of a livelihood. Indicators, though, are not obvious. Education has no simple correlation with capability; for some people education is enabling, enhancing capability; and for others it is disabling, diminishing capability, as with the trained distaste for farming of many educated young rural men. Health and physical competence are clearer: but even here, some of the handicapped find skills and niches which assure adequate livelihoods. Skills themselves are either difficult to measure or liable to mislead: old skills become obsolete, and newly acquired skills in training programmes can prove useless compared with apprenticeship. Important as livelihood capability is, it eludes easy counting, which may be one reason why its day as a concept used by professionals has yet to come.

Assets are easier to assess. The sustainability of a livelihood can be linked with its net assets. Of these, tangible assets are easier to identify and estimate. A useful and usable indicator of vulnerability and security, may be the net asset position of a household, defined as the value of its realisable tangible assets less liabilities such as debts.

Intergenerational social sustainability is hard to assess but making the effort does matter. Many trends – in increasing numbers of people, in smaller farm units, in higher dependence on off-farm income, in numbers of livelihoods from labouring, in continuing rural-rural and rural-urban migration – have mainly (though not universally or only) negative implications. Best judgements have to be made about these if present policies are to serve future people.

4.3.3 Net effects

Net effects brings together both sustainability and livelihoods. For net effects to be fully positive four conditions have to be met: first, environmental sustainability, and second, social sustainability, as both discussed above; then third, adequacy of livelihood, which presents problems of definition which require a separate paper; and fourth, net livelihoods. This last, concerning the net effects on the sum of sustainable livelihoods, raises additional questions which point to competition, and to externalities.

a Competition

Many livelihoods are in competition. Proximate adverse effects of competition apply especially to the poor. A livelihood may be sustainable in itself but may weaken or destroy others. Where many compete for few opportunities, as in oversupplied labour markets, each livelihood diminishes others. Or the success of one enterprise is at the cost of others. A prospering shopkeeper drives rivals to ruin. A landowner buys up the land of distressed neighbours. A household appropriates common land and deprives the poor of pasture and wild foods. Net SL effects have to deduct adverse effects on other livelihoods and on their sustainability.

b Externalities

Livelihoods and life styles have many indirect effects or externalities. Adverse externalities are marked in the net demands of the richer on the global environment. Let us suppose that an intervention improves the living standards of people who already have adequate (though not environmentally sustainable) livelihoods, say a majority in an industrialised country. If that improvement increases their net demand on the environment, the net SL-intensity of the intervention will be negative: for there will have been no gain in adequate livelihoods, and a loss in global sustainability.

In summary, then, interventions which make the adequate but unsustainable livelihoods of the rich sustainable, or which make the inadequate but sustainable livelihoods of the poor adequate, should have positive SL-intensity. But, and depending on weightings, the most positive SL-intensity should be where the unsustainable and inadequate livelihoods of the poor become both sustainable and adequate.

To conclude, the assessment of net SL effects, like the measurement of poverty, is a problem for professionals rather than for poor rural people. It is not simple to do, but useful for the questions it raises. It becomes easier the less one tries to measure, and the more one relies on commonsense, judgement, relative rather than absolute values, and trends and directions of change.

The key to assessment, here, will often be the local experts, the rural people themselves. Under the rubrics of rapid rural appraisal (RRA) and participatory rural appraisal (PRA), a battery of participatory methods has been developed which enable them to do more of the analysis themselves. Their criteria vary, fitting and reflecting local conditions and aspirations. Adequate and sustainable livelihoods are a common aspiration of the poor. Professional assessments will always be needed; but the more poor rural people themselves play a part in making assessments, the more they will be empowered; and the more policies and practice support their priorities, so the more they will be enabled to achieve for themselves the sorts of sustainable livelihoods they want and need.

5 Conclusion: for the 21st century and beyond

In this paper we have not tried to cover every aspect of sustainable livelihoods. Everything is connected with everything else, and the reader will have no difficulty in listing external factors like international debt, transnational enterprises, defence expenditures, international terms of trade, agricultural pricing and much else that could have been included. We have narrowed attention largely to the household, and especially the poorer rural rather than urban household in the South, but we have also taken a long-term perspective. There are implications for policy, for research, and for the reader.

5.1 Policy implications

Policy implications follow from the long-term view of an extended future for the human race, of many more people having to live on the earth. Here we will select a few of the most salient.

For the richer, the priority is to change their life styles to make lower demands on the environment. If the rich make lower demands, more is left for the poor and for future generations. Pricing and taxation policies could contribute to reducing environmental demand. A world-wide campaign for awareness and abstinence is also implied. One part could be personal livelihood environmental balance sheets. These would show the scale of personal debt to the environment and to future generations. They would apply much more to the rich than the poor, showing individually how much we are drawing on our common global capital.

For the poorer, who are our main concern here, and especially the rural poorer, the three concepts with which we started apply.

5.1.1 Enhancing capability

Livelihood capability in a context of change and unpredictability requires being adaptable, versatile, quick to change, well-informed, and able to exploit diverse, complicating and changing resources and opportunities. There are practical implications for the provision of enabling infrastructure and services, including:

- education for livelihood-linked capability
- health, both preventive and curative to prevent permanent disability
- bigger and better baskets of choices for agriculture, and support for farmers' experiments
- transport, communications and information services (about rights, markets, prices, skills...)
- flexible credit for new small enterprises

5.1.2 Improving equity

Giving priority to the capabilities, assets and access of the poorer, including minorities and women. Practical implications for these groups include:

- redistribution of tangible assets, especially land, and land to the tiller
- secure rights to land, water, trees and other resources, and secure inheritance for children
- protection and management of common property resources and equitable rights of access for the poorer
- enhancing the intensity and productivity of resource use, and exploiting small-scale economic synergy
- rights and effective access to services, especially education, health and credit
- removing restrictions which impoverish and weaken the poor

5.1.3 Increasing social sustainability

Reducing vulnerability by restraining external stress, minimising shocks, and providing safety nets, so that poor people do not become poorer. Practical measures are many (see also IDS 1989) and include:

- peace and equitable law and order
- disaster prevention
- counterseasonal strategies to provide food, income and work for the poorer at bad times of the year
- prompt support in bad years, and high prices for tangible assets people sell in distress
- health services that are accessible and effective in bad seasons, including treatment for accidents
- conditions for lower fertility

Among the poorer, these three thrusts are mutually supporting.

5.2 Research implications

Any list of research implications **for the rich** should be headed by estimating the net environmental demands of their livelihoods, and devising individual environmental balance sheets to provoke awareness and action to reduce demands.

For the rural poorer, our main concern, we see four sets of key research questions. None is new; but we suggest they are critical and demand renewed attention:

5.2.1 Population

Understanding better why people want to have more or fewer children, and what needs to be done to create conditions in which they will want and be able to have fewer, especially learning lessons from societies, groups and rural conditions in which small family size has been preferred.

5.2.2 Intensity, complexity and diversity

In agriculture: understanding better the sequences and conditions for intensification, complication and diversification, including synergy, sequences, gains from microenvironments, bioeconomic limits to livelihoods, and methods and scope for farmers' own analysis and innovation.

5.2.3 Livelihood-intensity of local economic circulation and non-farm activities

Understanding better the synergy of local economic circulation, and the dynamics and livelihood-intensity of local economies, their links with outside markets, and how locally based livelihoods can be increased and sustained.

5.2.4 Sustainable rural livelihoods and migration

Understanding better how more people can want and be able to continue to gain their livelihoods in rural areas, how to prevent distress migration to urban areas, and how to support voluntary reversals of rural-urban migration.

Finally, straddling between practice and research, are questions of **practical development and testing of concepts and methods**. These include:

- assessing the environmental and socio-economic conditions under which livelihood -intensity is maximised
- testing and developing SL-intensity and net SL effects as practical concepts in policy-formulation and project cycles
- exploring the utility of SL criteria as complements or alternatives to discounting, and how to offset the normal view from the present by taking the view backwards from the future

5.3 Implications for the reader

In this paper we have tried to open up and explore concepts, analogies and relationships to fit future human needs. In doing so we have rejected some conventional professional wisdom. In the spirit of exploration, we have also allowed ourselves the liberty of speculation, of seeing where a line of thinking would lead. In consequence, the paper raises more questions than it answers. It also puts forward combinations of working concepts, categories and hypotheses for testing for practical utility.

The reader can judge the concept of sustainable livelihoods from a contemporary view. We would prefer it to be judged by a view from the future, let us say, from a hundred years' time. If humankind has not annihilated itself, and if no major disaster has befallen, there will perhaps be between 10 and 20 billion people alive then. How would we, if we were them, standing there, a hundred years hence, judge this paper and its concepts? What would we, from that future vantage point, say that it missed? What, with what we knew then, would we wish had been written here?

We leave those questions as challenges, for readers to take that stance, and to do better than we have done.

Glossary

For the convenience of readers, and especially for those who skim, dip and miss bits, here are the meanings given to a number of terms in the text.

- access: opportunity in practice to use a resource, store or service, or to obtain information, material, technology, employment, food or income.
see pages: i, 4–9, 11, 19–20, 22–23
- assets: resources and stores (tangible assets), and claims and access (intangible assets), which a person or household commands and can use towards a livelihood.
see pages: i, 4–9, 11–12, 19–20, 22–23
- capabilities: what a person or household is capable of doing and being (after Sen). Livelihood capabilities comprise the ability to gain a livelihood, including abilities to cope with stress and shocks, to be dynamically adaptable, and to explore and exploit opportunities.
see pages: i, 4–10, 12, 22
- claims: demands and appeals which can be made for material, moral or other practical support or access. Claims are based on combinations of right, precedent, social convention, moral obligation, and power.
see pages: i, 6–9, 11, 19
- environmental sustainability: referring to a livelihood, maintaining or enhancing physical livelihood potentials locally and globally, and having net beneficial effects on assets and opportunities for other livelihoods in the short and long term.
see pages: 9–10, 18–20
- livelihood: a means of living, and the capabilities, assets and activities required for it.
see pages: i, 2, 4–24
- net sustainable livelihood effect refers to the net adequate and sustainable livelihoods generated and supported by a livelihood itself, or by an enterprise, project, policy or programme, or by a resource or locality, or by a social, economic or political grouping or system.
see page: i
- shocks are impacts which are typically sudden, unpredictable, and traumatic, such as fires, floods, storms, epidemics, thefts, civil disorder, and wars. Contrast stresses.
see pages: i, 4–6, 9–11, 18, 23

- social sustainability referring to a livelihood, the ability of a human unit (individual, household or family) to cope with and recover from stresses and shocks, to adapt to and exploit changes in its physical, social and economic environment, and to maintain and enhance capabilities for future generations.
see pages: i, 9–10, 12, 18, 20, 23
- stresses are pressures which are typically cumulative, predictable, and variously continuous or cyclical, such as seasonal shortages, rising populations, declining soil fertility, and air pollution. Contrast shocks.
see pages: 10–11
- sustainable livelihoods: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long term.
see pages: i, 5–6, 9, 11, 13, 17–18, 20–22, 24

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