Empowering Designs: towards more progressive appraisal of sustainability

STEPS Working Paper 3

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1. INTRODUCTION

BACKGROUND

How can social, technological and environmental systems be made more sustainable from the point of view of the poorest communities? How can complex, dynamic processes be harnessed in pathways that lead to improved wellbeing? These are just some of the questions being posed by the new ESRC STEPS Centre at Sussex. This paper begins to explore these by examining challenges in the social appraisal of sustainability.

By social appraisal, we refer to the collection of social processes through which knowledges are gathered and produced in order to inform decision making and wider institutional commitments. Note that the adjective 'social' here is used not to imply a specifically social (rather than, say, economic, environmental, technological) *object* of appraisal, but to emphasise the social setting of the *subjects* in any process of assessment, of whatever kind (cf. Pearce and Nash, 1981). Seen in this way, any understanding of appraisal must relate to – and be conditioned by – two principal considerations. The first is the nature and context of the systems of concern; systems which involve intertwined dynamics of social, technological and ecological processes (see STEPS Centre Working Paper 1 on Dynamics). The second is the nature of the institutional and governance processes in which all appraisal is embedded, through which it is constituted and which appraisal is aimed at informing (see STEPS Centre Working Paper 2 on Governance).

To examine these issues, the paper pursues two strands of argument. The first is *analytic,* aimed at a comparative reflection on existing social appraisal designs, including an assessment of the power relations involved. Our concern is to begin the process of developing a framework for social appraisal based on new understandings of the ways in which knowledge interacts with power in the appraisal of sustainability. The second strand is *normative*. In contrast to the companion papers on Dynamics (STEPS Centre Working Paper 1) and Governance (STEPS Centre Working Paper 2), this paper is more explicitly prescriptive in its emphasis.

It starts from a commitment to a wider notion of sustainabilities which, as the other papers have elaborated, requires a focus on negotiating pathways to sustainable futures which are inclusive (particularly of poorer and marginalised citizens), deliberative (exploring diverse knowledges and viewpoints) and reflexive (of framing assumptions and political/normative positionings).

The paper examines these challenges in three steps, developing and illustrating its arguments through a series of case study examples from the agricultural, environmental, health and energy fields, based on the prior work of STEPS Centre members, colleagues and partners. These draw on issues and settings as varied as future agricultural livelihoods in southern Africa, public health policy and vaccination in Africa and the UK, HIV prevention strategies, water scarcity and large dams in India, and biodiversity conservation in West Africa.

Reviewing issues addressed in more detail in STEPS Centre Working Papers 1 (Dynamics) and 2 (Governance), the first part looks at a series of formidable challenges. These include the various forms of incertitude that pervade knowledge of the dynamics of social, technological and environmental systems, with crucial implications for the applicability and reliability of different appraisal methods. They also include – as a consequence – the ways in which appraisal is conditioned by framing effects. Together, these serve to reinforce the ways in which – deliberately or inadvertently – power is often exercised in appraisal against the interests of the least powerful groups in society. We illustrate how these challenges of incertitude and framing come together in the context of dynamic, complex, inter-coupled systems, and at some of the ways in which the poorest communities are systematically excluded by power structures pervading the governance systems within which appraisal is embedded.

The second part of the paper turns to discuss practical responses to these challenges. It first explores the diversity of knowledges that are relevant to appraisal and how these might best be engaged. It addresses ways in which appraisal might be extended in scope to make it more robust and reliable in the face of incomplete knowledge and the framing effects of power, identifying a range of specific and potentially helpful methodologies. We go on to explore the importance of attending to issues of equity, the rights of those who stand to be most affected and the ways in which power can operate to thwart these ends. Together, the various responses discussed in this second part of the paper amount to a variety of ways in which the 'inputs' to appraisal might be broadened out in order to address the full range of challenges associated with sustainability.

The final part of the paper sketches some provisional conclusions concerning the best ways to achieve more empowering appraisal designs. In particular, it sets out some lessons concerning the crucial property of reflexivity in appraisal and builds on this argument to consider how the outputs of appraisal might be

configured so as more effectively to open up the outputs of appraisal to wider governance and political discourse. By combining the concepts of 'broadening out' inputs and 'opening up' outputs, we develop a novel framework for thinking about the design of appraisal, fostering new political spaces and opportunities for furthering the interests of the poorest groups in society. The paper closes with a summary of the main arguments and consideration of the implications for future research.

FOCUS, SCOPE AND DEFINITIONS

For present purposes, social appraisal includes a wide diversity of tools, methods, techniques, frameworks, approaches, processes, idioms and discourses (Pearce and Nash, 1981; Levett, 1997; Chambers, 1983; 1994c; Stirling, 2005). Of course not all of these are subject to deliberate design, and other processes of social mobilisation, lobbying and informal practice may be as – or more – important in influencing decision-making and policy processes.[1] This paper focuses on the normative and practical challenges of (deliberately) designing better processes of appraisal. However it recognises that these more formally designed, structured processes often co-exist with more spontaneous, contingent and self-organised ones, and that the ways these mutually interact, exclude or shape each other are of crucial interest.

As defined above, social appraisal (whether designed or not) concerns the many ways in which social actors come to know of the systems' dynamics. Who are these social actors? Under an inclusive and socially-situated understanding of knowledge (Jasanoff, 2005), these include, for example, government agencies, commercial corporations and wider civil society, involving in each case decision makers, specialists, citizens and all those who 'know' or who stand to be affected by changes in systems. Given our own normative positioning on sustainability and development in this present enquiry, a central concern is with the knowledges and perspectives of the poorest and most marginalised groups. The objects of the knowledge produced in social appraisal, by contrast, include the social, technological and environmental systems themselves, as well as the interests, purposes, problems, possibilities, constraints, values and information that bear on the formulation of governance interventions aimed at shaping (or choosing between) contending pathways.

[1] Future papers and empirical studies within the STEPS Designs theme will examine these complementary processes with the aim of exploring the intersections between deliberate design of social appraisal and other processes

There exist many different relevant ways of knowing in social appraisal, including a wide and growing variety of tools, techniques and frameworks. Of those of that are subject to deliberate design, examples span a series of conventional, stylised dichotomies. These include: quantitative and discursive representations (Jones, 2004); specialist (expert) and non-specialist (citizen) discourses (Schwartz and Thompson, 1990); and broad/narrow (EEA, 2001), iterative/adaptive (Alcamo et al., 2003) continuous/episodic and elaborate/simple processes and procedures. Some illustrative examples are provided in Table 1.

Not all these kinds of designs for social appraisal will be salient, let alone discussed in any detail here. The point is rather that Table 1 illustrates the potential breadth of scope in the kinds of process that may be of interest. We return to this wide range at the end of the paper in exploring some of the implications for appraisal design.

Table 1: Some indicative examples of designs for social appraisal

This list is purely for illustration. The items should not be taken to be complete or mutually exclusive.

- Organised scientific and broader academic and consultancy research (involving universities, corporations, agencies) (Nowotny et al., 2001);
- Codifications of more experiential knowledges and learning processes (representations by farmers, workers, local communities (Kolb, 1985);
- Structured or unstructured forms of social, ecological, environmental and public health surveillance and monitoring (CJPH, 1993);
- Systematic ex ante procedures for project planning, programme evaluation or logframe analysis (Julian, 1997);
- Formal ex post bureaucratic enquiries (e.g.: quasi-/judicial and political) (Hogwood and Gunn, 1984);
- Public interest political interventions (e.g.: NGO communication initiatives) (Sale, 1993);
- Discursive processes embodied in cultural activities and narratives (e.g.: performance, art, popular media, literature) (Allan et al., 2000);
- Aggregative quantitative assessment (e.g.: cost-benefit /decision/risk analysis) (Byrd and Cothern, 2000);
- Applications of heuristic techniques (e.g.: Multi-criteria methods (MCM), scenarios, sensitivity analysis) (Stagl, 2007);
- Iterative procedures for adaptive learning, using various permutations of modelling and monitoring (Jones, 1992)
- More open-structured approaches to mental modelling, morphological or soft systems analysis (Checkland, 1999);
- Use of interpretive social scientific and ethnographic methods (participant observation, focus groups) (Grove-White et al., 2000);
- Quantitative social scientific and social psychological elicitation techniques (e.g.: surveys, contingent values, repertory grid, Q-method) (McKeown and Thomas, 1988);
- Structured forms of participatory deliberation or inclusive engagement (e.g.: Participatory Rural Appraisal (PRA), Rapid Rural Appraisal (RRA), village meetings, citizen's panels, consensus conferences) (Chambers, 1994a, 1994b);
- Stakeholder negotiation fora (e.g.: strategic commissions, roundtables) (Renn et al., 1995);
- Codified contractual bargaining procedures (e.g.: on intellectual property rights, regulatory standards) (RCEP, 1998).

2. INCERTITUDE, FRAMING AND DYNAMICS

RESPONDING TO INCOMPLETE KNOWLEDGE

Despite increasing interest in addressing wider social issues and perspectives in sustainability assessment (e.g. Munton, 2003; Holmes and Scoones, 2000), the dominant influence on appraisal in most current contexts remains with conventional expert-analytic methods (Flyvbjerg, 1998). These include a range of quantitative and/or expert-based assessment techniques, notionally based on evidence generated in scientific experimentation, modelling and monitoring (von Winterfeldt and Edwards, 1986; Morgan et al., 1990). These tend to be framed and interpreted through use of probabilistic and statistical procedures, often as part of wider forms of cost-benefit (Pearce and Turner, 1990; Hanley and Spash, 1993), risk (Suter, 1993) decision (DTLR, 2001) or logframe (Julian, 1997) analysis. A host of more specific analytical tools can be interchangeably used across these different techniques, including methods such as sensitivity analysis (Saltelli, 2001), portfolio theory (Markowitz and Fabozzi, 2002), Bayesian techniques (Lemons, 1996) and – especially – discounting for the passage of time (Portnes and Weyant, 1999).

Taken together, it is these kinds of frameworks, techniques and tools that are implicitly referred to (Byrd and Cothern, 2000), wherever calls (or claims) are made for (or to) 'sound scientific' decision making on issues like resource management, health planning, infrastructure investment or conservation policy (Morris, 2000). Similar aspirations sometimes underlie calls for greater use of 'logical frameworks' in analysis – as if a single constituting logic can be self-evident or complete (Julian et al., 1995). In particular, such methods are held to provide 'decision rules' of a kind that are applicable, appropriate and complete (Peterson, 2006). The strong implication, is that it is by this means that appraisal can achieve high level of confidence and lack of bias. Yet, though they may appear as neutral technical details, many features of expert analytic methods can carry profound implications for the kinds of results that are typically obtained. The routine practice of time preference discounting in cost-benefit analysis, for instance, involves an implicit assumption that flows of value occurring in the future may be assigned lower importance than those occurring at the time of appraisal (Portnes and Weyant, 1999). In itself, this amounts to what many see as the single most important way in which conventional appraisal can be rendered short-sighted to issues of Sustainability (Howarth and Norgaard, 1997). Focusing on other aspects that arise in the example of large dam con-

struction, Box 1 demonstrates how such methods inevitably carry with them a host of political-normative assumptions, which – if inappropriately used – can restrict understanding and insight by ignoring key parameters and variables.

The many criticisms of expert-analytic approaches to appraisal such as risk or cost-benefit analysis suggest the need to interrogate the fundamental conceptual framework that underlies all such techniques. These may be described as reductive-aggregative approaches, because they rest on the decomposition of the complex dynamic systems under appraisal, and their contexts, into a relatively

Box 1: Cost-benefit analysis and large dams[2]

A classic example of the political role of 'sound scientific' appraisal techniques lies in the applications of cost-benefit analysis in the social appraisal of large dam projects. Developed by the US Tennessee Valley Authority in the 1930s specifically to appraise large dam projects, cost-benefit analysis claims to address the diverse range of issues by focusing on identifying and measuring the contending associated costs and benefits emerging out of individual projects. While direct financial costs or benefits are easy to calculate and so render visible, less intangible economic factors and social issues are often neglected and so remain ambiguous – such as changes in socio-cultural identity and gender relations (Elson 1997; Kabeer, 1994) or impacts on geographical space and the environment (Cornerhouse, 1998).

Classic applications of cost-benefit analysis focus narrowly on a single intervention (the large dam project), to the exclusion of alternatives associated with other technological or policy pathways. As traditionally practised, the risk-based characterisation of incertitude conspicuously fails to account for uncertain dynamics (e.g. changes in river flow). Problems of water scarcity, underdevelopment and poverty are typically framed in highly specific ways, such as to reduce ambiguity and privilege the benefits of large dams. The political attributes of the issues in question are typically reduced to a simple linear balance between the rights of the majority (or nation as a whole), pitted against the rights of a small minority who are asked to sacrifice their interests in the face of this greater good (Roy 1999).

Such cost-benefit analyses also privilege prevailing values in existing markets, attributing greater value to powerful, incumbent interests. Thus

[2] This box draws on work by Mehta et al. (1999).

irrigated land is valued more highly than common property land or men's economic activities are valued above those of women. Beyond this, it is often impossible to put a discrete monetary cost or benefit on intangibles such as the loss of livelihoods that have never entered the market-place, making it especially difficult to calculate the gendered nature of costs and benefits.

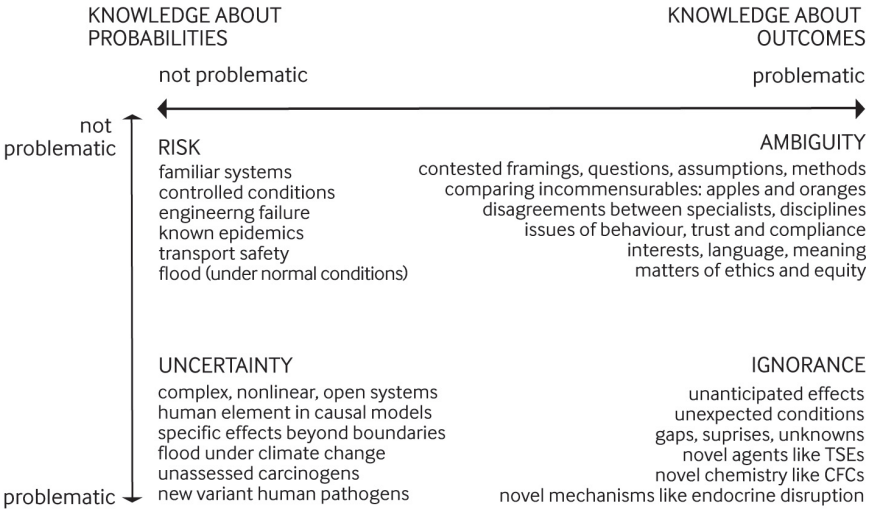
It was not until the 1980s and 1990s that the social and environmental impacts of dams came to be properly documented (e.g. Goldsmith and Hilydard 1992; Cernea, 1997; Scudder, 2005; Thukral 1992). In this context, critiques of cost-benefit analysis have increasingly highlighted the importance of making the invisible more visible. They have been sceptical of quantitative, reductive approaches to the measuring of costs and benefits and their respective distributions. Socio-cultural issues are seen as a function of equity and distribution, just as access and control over resources are intrinsic to it. In particular, gender scholars have demonstrated how a balance sheet approach serves to legitimise the unequal distribution of resources (Elson, 1997).

small number of discrete conceptual elements (Stirling, 2003). These are then analysed under some formalised structure and then re-aggregated according to a rigid protocol to yield a particular determinate picture of the system state. In risk and cost-benefit analysis, for instance, all systems and their contexts are structured according to two basic parameters (Stirling, 1998). First, there are the things that might happen: 'hazards', 'possibilities', 'benefits' or 'costs' – which might collectively be referred to as outcomes. Second, there is the likelihood thought to be associated with each outcome – conventionally represented as a numerical probability. Indeed, these parameters together constitute the archetypal concept of 'risk', which pervades virtually all expert analytic approaches to appraisal (Hacking, 1975; Weatherford, 1982; Beck, 1992).

This conventional concept provides a useful starting point for critical examination, because either of these parameters of outcomes or likelihoods may be subject to variously incomplete or problematic knowledge. As Figure 1 shows, there under this kind of understanding are four possible states of incomplete knowledge (Stirling, 1999). Of course, these are neither discrete nor mutually exclusive. In the real world, they typically occur together in varying degrees. However, conventionally, each of these conditions is addressed by a similar battery of techniques: quantifying and aggregating different outcome param-

eters and multiplying by their respective probabilities to yield a single reductive picture of risk. By distinguishing the properties of these four states of incomplete knowledge – or incertitude (Stirling 2003) – however, we can gain important insights into the challenges for appraisal.

Figure 1: Contrasting states of incomplete knowledge, with schematic examples



Note: CFCs = chloro-fluorocarbons; TSEs = transmissible spongiform encephalopathies.

Figure 1 exemplifies areas in which each of these four possible kinds of incertitude may come to the fore. As can be seen, there exist many important circumstances under which we can expect conventionally used, expert-analytic approaches to be reliable and effective. This is under conditions of risk in the strict sense of the term (Knight, 1921). However, what is also clear is that there are three other less tractable states of knowledge where such conditions do not apply: uncertainty, ambiguity and ignorance. In these circumstances reductive-aggregative, expert-analytic methods are quite simply not applicable (Hayek, 1978).

Under the strict definition of uncertainty in Figure 1 (lower left quadrant), we can be confident in our characterisation of the different possible outcomes, but the available empirical information or analytical models simply do not present a definitive basis for assigning probabilities (Knight, 1921; Keynes, 1921; Rowe, 1994). It is under these conditions – in the words of the celebrated probability

theorist de Finetti – that "probability does not exist" (1974). Of course, we can still exercise subjective judgements and treat these as a basis for systematic analysis (Luce and Raiffa, 1957; Morgan, et al., 1990). However, the challenge of uncertainty is that such judgements may take a number of different – equally plausible – forms (Wynne, 1992). Rather than reduce these to a single expected value or prescriptive recommendation, the rigorous approach is to acknowledge the validity of a variety of possible interpretations.

Under the condition of ambiguity (upper right quadrant), it is not the probabilities but the characterisation of the outcomes themselves that is problematic. This may be the case even for events that are certain or have occurred already. Disagreements may exist, for instance, over the selection, partitioning, bounding, measurement, prioritisation or interpretation of outcomes (Wynne, 2002; Stirling, 2003). For instance, there may be disagreement over the right questions to pose in regulation: "is this safe?", "sustainable?", "sustainable enough?", "acceptable?" or "the most sustainable option?" (EEA, 2001). In the regulation of genetically-modified food, ambiguities arise over contending ecological, agronomic, safety, economic or social criteria of harm (Grove-White et al., 1997; Levidow et al., 1998; Stirling and Mayer, 1999). Ambiguities also arise when we are forced to compare 'apples and oranges' such as qualitatively different forms of damage; impacts on different people (workers or the public; children or adults); consequences over different time-frames (present or future generations) or on different life-forms (humans or nonhumans). When faced with such questions over "contradictory certainties" (Thompson and Warburton, 1985), Nobel prize-winning work in rational choice theory has shown that analysis alone is unable to guarantee definitive answers (Arrow, 1963; Kelly, 1978; MacKay, 1980). Where there is ambiguity, then, reductions to a single 'sound scientific' picture are neither rigorous nor rational (Collingridge, 1982; Bonner, 1986).

Finally, there is the condition of ignorance (lower right quadrant). Here, neither probabilities nor outcomes can be fully characterised (Keynes, 1921; Loasby, 1976; Collingridge, 1980). Where "we don't know what we don't know" (Wynne, 1992; 2002), we face the ever-present prospect of surprise (Brooks, 1986; Rosenberg, 1996). This differs from uncertainty, which focuses on agreed known parameters (like carcinogenicity or flood damage). It differs from ambiguity, in that the parameters are not just contestable, but are at least partly unknown. Some of the most important challenges of sustainability were – at their outset – of just this kind (Funtowicz and Ravetz, 1990; Faber and Proops, 1994). In the early histories of stratospheric ozone depletion (Farman, 2001), novel zoonotic diseases like BSE (van Zwanenberg and Millstone, 2001) and the recognition of new mechanisms of chemical toxicity like endocrine-disruption (Thornton,

2000), for instance, the initial problem was not so much divergent expert views or mistakes over probability, but straightforward ignorance over the possibilities themselves. Again, expert-analytic approaches tend to represent ignorance as risk, and are thus woefully inadequate (indeed, are examples not of 'sound' science, but poor science). Box 2 offers an example of the limits of risk assessment, and how uncertainty, ambiguity and ignorance are important features of the knowledge landscape in the appraisal of vaccination.

Box 2: Risk, uncertainty and vaccination[3]

Vaccination exemplifies one important area where appraisal designs for policies and programmes have been dominated by notions of risk, to the exclusion of adequate consideration for uncertainty, ambiguity and ignorance. Public responses in recent years, both in developing countries and in Europe, expose the limits of this, raising more intractable questions that are proving extremely challenging for conventional approaches to vaccination and public health.

Vaccination has long been acclaimed as a cornerstone public health intervention aimed at tackling the risks of disease. Whether in the Expanded Programme of Immunisation for children promoted by international agencies such as the World Health Organisation and implemented through national governments, or in campaigns aimed at the eradication of specific diseases such as polio, vaccination policies are justified by epidemiological arguments about disease control at the population level, as well as evidence of past success in disease control. Appraisal methods for how to vaccinate - styles of programme implementation, resources and infrastructure, and ensuring compliance - also tend to be dominated by narrow technical issues and the perspectives of public health institutions that emphasise the collective good of vaccination. In this context, instances where people have raised concerns about possible adverse effects of vaccination – as in recent examples where West African parents raised concerns that vaccination damaged children's mental health or that oral polio vaccine caused sterility (Yahya 2005), and as British parents did in suggesting that the measles, mumps and rubella (MMR) vaccine triggered bowel disease

[3] This box draws on evidence and arguments elaborated jointly by James Fairhead and Melissa Leach (see Fairhead and Leach forthcoming)

and autism – have tended to be treated in one of two ways. Public health policy-makers either discount them as rumours grounded in ignorance, or treat them as misperceived amplifications of the risks that vaccination does carry to the individual. They have typically sought to counter the latter by presenting publics with 'correct' risk statistics that compare the risks of disease with the risks of side-effects, showing the latter to be relatively minimal.

Reducing vaccination appraisal and public anxieties to questions of risk, however, overlooks uncertainties about vaccination and its effects. These include the possibility that there are sensitive sub-populations who react differently from others, but might not show up in broad-brush epidemiological assessments. This is what many parental groups and supportive scientists claim may be the case for the MMR vaccine, for example, calling for research that would identify the 'co-factors' that made certain children vulnerable to bowel disease and autism (Fletcher 1995, see Leach 2005). The possibility also arises that in especially in developing country settings there are vulnerable sub-populations with multiple disease burdens and immune systems compromised by malnutrition and other factors.

Ambiguities around the broader goals and politics of vaccination have also prevailed in several recent instances of public response. Thus while the oral polio vaccination campaign in northern Nigeria was framed by the WHO and federal government as an attempt to eradicate polio (a disease focus), it was rejected by Muslim and state spokespeople and many villagers as part of national and global moves to limit the vitality and autonomy of northern Muslim populations - a far broader political focus (Yahya 2005). The MMR issue was framed by government spokespeople and epidemiologists as a population-level concern, but by parental groups and certain clinical scientists as one about the bodily processes in individual children, and as part of a broader debate about the rights of the individual to choose health care options (Leach 2005). These were not controversies that research could reduce to calculable risk probabilities, or at least not in a way that would have been convincing to both sides.

Ignorance is also at stake around certain aspects of vaccination. The possibility that there exist hitherto unknown mechanisms is acknowledged by many vaccine scientists dealing with this rapidly advancing arena of science and technology. These include the possibility that new generations of DNA vaccines could have unforeseen effects in the body, or that vaccines

could interact in unpredicted ways with disease ecologies so that new resistances emerge. Publics, equally, have raised concerns about areas of ignorance, such as the long-term evolutionary consequences for human health of using vaccines derived from animal tissue (Hobson-West 2003: 279), or the long-term effects of multiple vaccines on child health (Poltorak et al 2005). The potentialities for such unknown factors tends however to be little heeded by institutions charged with vaccination policy and programmes, for whom they can represent unwarranted distractions from the promotion of mass-immunisation with all its benefits. In some cases, public concerns about ignorance are turned back on them as supposed expressions of their own ignorance. For example parental concerns about multiple vaccines being 'too much in one go' have been countered by scientists and policy-makers who argue that they are negligible compared with the onslaught an infant immune system receives 'naturally' from antigens in the environment soon after birth. Yet such dismissal frequently does not capture, and thus fails to close down, the more open-ended character of incertitude that parents are expressing. (Some of the thus-foregone practical methodological responses to ignorance are addressed later in Section III of this paper).

FRAMING AND POWER

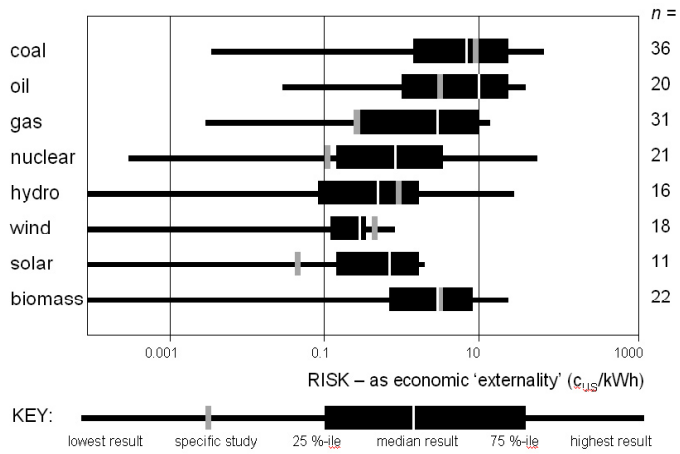
These fundamental issues concerning the conceptualisation of incertitude undermine the robustness of conventional, expert-analytic approaches to the appraisal of sustainability (Stirling, 1999). There is a repeated mismatch between the precision with which such techniques typically represent their results, and their underlying accuracy. This has many practical implications for sustainability policy, as can be illustrated by a field in which the application of reductive, expert-analytic approaches is arguably most mature, sophisticated and elaborate – the assessment of energy options (Starr, 1969; Holdren, 1982). Over many years, great efforts have been expended in conducting comprehensive comparative assessments across a full range of energy policy options (Keepin and Wynne, 1982). Results have been influential in areas of policymaking like climate change, foreign direct investment, regulatory policy, and strategies for nuclear power and waste management.

However, as Figure 2 demonstrates, while specific studies may appear to produce precise findings (and hence policy prescriptions), these seriously understate the enormous variability in the literature as a whole (Stirling, 1997a; Sundqvist et

al., 2004). In this literature – as elsewhere in chemical and industrial regulation (Amendola et al., 1992; Saltelli, 2001) – overlaps between ranges yield different possible rankings across a wide variety of contending policy options.

Figure 2: Variability in quantitative 'science-based' assessment (cf. Sundqvist et al., 2004)

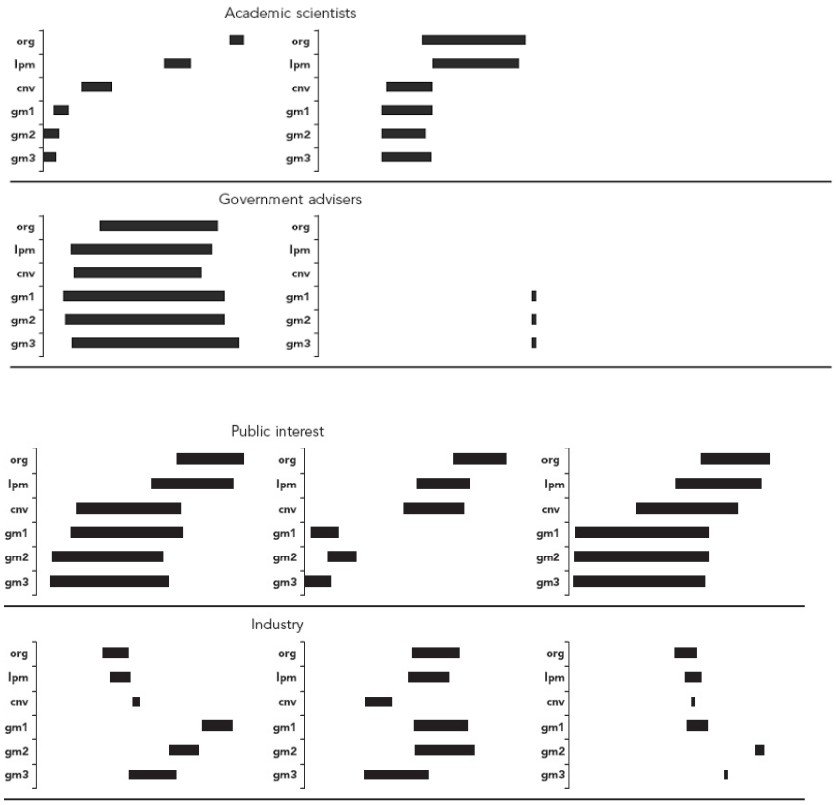
(results obtained in 63 detailed risk- and cost-benefit comparative studies of electricity supply risks)



These sometimes enormous variabilities are due to a host of (usually hidden) causes, combining contextual, methodological and evaluative factors. No small sub-set of factors can explain the full range. Most importantly (even with respect to individual factors), even were they to be openly deliberated, it would be impossible to definitively justify closure around one particular value or assumption rather than another. In other words, the ambiguity is intrinsic to the process of appraisal and not an artefact of specific approaches.

Nor are such findings restricted to formal quantitative reductive-aggregative assessment using risk or cost-benefit analysis. Figure 3 displays a similar picture with respect to the variety of judgements exercised by specialists engaged in more qualitative expert advisory procedures; in this case, the perspectives of twelve senior individuals involved in advising the UK government on the regulation of genetically-modified (GM) agricultural technology in the late 1990s (Stirling and Mayer, 1999). Using a method called multi-criteria mapping, participants represent their own qualitative specialist judgements through a structured process of deliberation. This results (among other things) in a simple graphical expression of the overall relative rankings of participants' favoured policy options. These are shown as horizontal bars in Figure 3 (extending from low sustainability on the left of each chart, to high sustainability on the right).

Figure 3: Variability in judgemental 'science-based' assessment (after Stirling and Gee, 2003)



Key to Figure 3:Variability in judgemental 'science-based' assessment (after Stirling and Gee, 2003)

Each chart shows risk rankings on a subjective interval scale of 'sustainability'.: low to high

org : organic agricultural methods

ipm : integrated pest management

cnv : conventional intensive farming

gm1: GM with segregation & labelling

gm2: GM with monitoring

gm3: GM with voluntary controls

As is the case with the formal quantitative assessments in Figure 2, Figure 3 reveals similarly starkly contrasting understandings in qualitative expert deliberations. Overall understandings of the sustainability of different agricultural strategies overlap strongly across different specialist perspectives. Despite the fact that the advisory committees concerned here typically represented their collective judgements as precise prescriptive recommendations to policymaking, then, their underlying perspectives displayed much greater diversity.

Taken together with the cases of cost-benefit analysis in large dam projects and risk assessment in vaccination, the cases summarised in Figures 2 and 3 provide graphic evidence for the importance of framing effects in the conduct of appraisal (Goffman, 1975; Wynne, 1987; Jasanoff, 1990; Schwartz and Thompson, 1990; EEA, 2001). Framing refers to the particular contextual assumptions, methodological variables, procedural attributes or interpretive issues that different groups might bring to a problem, shaping how it is bounded and constituted, and the relative salience of different factors. Framing effects together condition the ways in which even the most finely specified method is implemented in practice, and thus strongly influence the patterning of results. Because of different configurations of framing conditions, even expert-analytic approaches can yield radically divergent results - although with their reliance on particular disciplinary criteria of rigour or consistency, many expert-analytic approaches fail to recognise this.

Table 2 identifies a series of framing effects which lead to a variety of ways in which the answers can depend on the questions. As can be seen, these apply as much to qualitative approaches as to quantitative ones, albeit in different ways (Stirling, 2005). The substitution of one form of appraisal for another thus does not resolve the problems of the contingent effects of framing. Nor does it remove the pressures exerted through power relations for particular framing conditions to be adopted; often those that justify decisions that work in the interests of powerful groups or institutions (Denzin and Lincoln, 2003; Kanbur, 2003). Therefore attention to framing effects should be part of any sound scientific, rigorous procedure, and central to any appraisal approach.

Table 2: A selection of factors influencing the framing of appraisal

Equally relevant to quantitative and qualitative approaches		
setting of agendas	defining problems	posing of questions
prioritising of issues	deciding on context	choice of methods
power relations within process	definition of options	selection of alternatives
treatment of dissensus	design of process	drawing boundaries
More relevant to expert and quantitative approaches		
discounting of time	formulating criteria	characterising metrics
setting of baselines	basis for probabilities	including disciplines
handling of uncertainties	recruiting of expertise	commissioning research
constituting proof	exploring of sensitivities	interpreting results
More relevant to participatory and discursive approaches		
identification of stakeholders	phrasing of questions	bounding of remits
recruitment of participants	provision of information	choice of focus
personalities of protagonists	medium of discourse	style of facilitation
documentation of findings	dynamics of persuasion	adoption of norms

Box 3 provides an example of how power, politics and the framing of water scarcity play out in the case of water policy in India.

Box 3: Framing water scarcity in India[4]

Water scarcity is considered one of the most pressing problems confronting the survival of humankind over the course of the coming century. But, what is it that makes water scarce? Is it because of rapidly dwindling aquifers? Is it because a billion people lack access to clean water? Clearly, water supplies are limited and finite, but does this make water scarce in absolute terms? The case of 'water-scarce' Kutch in India and its relationship with the controversial Sardar Sarovar Project (SSP) demonstrates that water scarcity can be constructed or framed differently by different social and political actors, often to meet political ends.

[4] This box is based on work by Mehta (2005).

State discourses portray scarcity as natural (rather than partly human-induced) and universal (rather than something that is cyclical). These external, essentialised notions of scarcity are often quite different from local people's knowledge systems and livelihood strategies that allow them to adapt to the unpredictability and temporary scarcity of water. State programmes have failed to recognise the uncertain dynamics within drylands, exacerbating problems of water access for poorer people. This "dryland blindness" of planners and policy makers creates biases that fail to recognise that uncertainty is part and parcel of life in drylands such as Kutch. Policy makers and planners based in distant capitals are accustomed to areas with perennial rivers and more efficient irrigation facilities. They use these yardsticks to evaluate and plan water resources development, instead of viewing drylands on their own terms.

Scarcity conditions in Kutch are often attributed to dwindling rainfall. However, rainfall data over the 60 years prior to 1997 indicates that while there have been erratic variations in the quantity of rainfall, there is no evidence to suggest that precipitation rates have changed. Kutchi identity is moulded around water, or the lack of it. Villagers across the length and breadth of the district say that the lack of water is the cause of their misery, the depopulated villages and mass migration out of Kutch. Water scarcity is attributed to low rainfall, ever-decreasing rainfall and perennial droughts. There is a wide-spread belief in Kutch that due to the harsh climate, erratic water supply, declining groundwater sources and frequent droughts, the only solution is to get water from the rivers of Gujarat with hopes pinned on the ambitious dam project, SSP.

The water 'crisis' in Kutch is largely human-induced and intensely political, and not simply 'natural'. However, in popular, planning and political discourse these dimensions of water scarcity are obscured. The culpability of large farmers, bad water management practices and state policies is denied. The story of "dwindling rainfall" obscures the fact that water has been misused and legislation is constantly circumvented. The power of the water lords remains unquestioned and their motivations unchallenged. The water problem is seen as immutable, something beyond human agency, even though rainfall and drought patterns are characterised by high uncertainty and variability, each with many strategic responses. Projects such as the SSP are evoked as the only solution to set right what nature has ostensibly disturbed.

An historical examination of scarcity in Kutch indicates that it has become an acute problem only in the past few decades. In the past, even though rainfall was precarious and scanty, the region's water resources were managed either by local people or by the Raos of Bhuj. They were based on principles that were compatible to Kutch's needs: for example, earthen dams, tanks and other methods. Over the past few decades, the blueprint models do not necessarily take into account Kutch's special needs. The obsession with the large dam obscures the fact that only two per cent of Kutch stands to benefit from the SSP. Much of this water will be utilised by the industrial complex in southern Kutch or be diverted to meet the needs of big irrigation farmers whose use of water is neither economic nor judicious. Following present plans, SSP water will not help recharge the groundwater aquifers of Kutch or reduce soil salinity; neither will it meet the water needs of poor dryland cultivators, women and pastoralists. It thus seems unlikely that it will solve the real problems confronting Kutch at the moment. The unequal political economy of irrigation and large-scale dam projects is well known. In many Indian villages, it is the rich and powerful who are assured of canal water. Even though rainwater harvesting techniques are probably the best way to tackle water problems in a dryland such as Kutch holistically, short-term ad hoc interventions were prioritised over long-term solutions.

It is thus a range of institutional and political factors which contribute to a particular framing of the 'water problem', rooted in a particular construction of 'water scarcity'. This has resulted in short-sighted and distorting water resources development policies of Kutch, oriented to the needs of the powerful, with alternative pathways for water resource development obscured or dismissed.

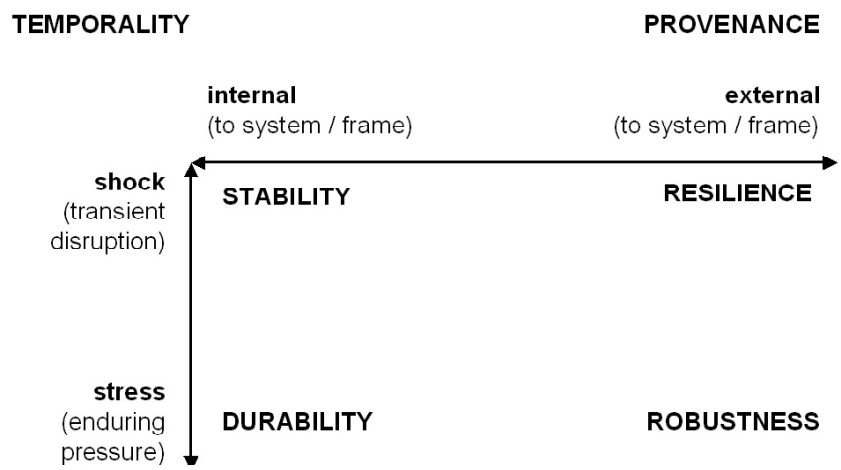
THE DYNAMICS OF SYSTEMS

The challenges for appraisal of incomplete knowledge and framing effects, discussed in the preceding sections, are amplified by the dynamic characteristics of social, technological and ecological systems. As STEPS Working Paper 1 on Dynamics elaborates, these systems are typically tightly coupled, highly non-linear and strongly path-dependent in their evolution. This means that simple, deterministic understandings are often inappropriate. Even minor perturbations arising from interactions between system components, or apparently insignificant interventions, may have disproportionately large, unpredictable and potentially irreversible effects. Our evolving understandings of system

dynamics thus presents us with a poignant dilemma. Interventions in systems may have major and far-reaching influences, making the deliberate design of appraisal especially important. Yet these influences, in dynamic systems, also create particular challenges for the efficacy of appraisal itself.

Seen as the maintenance over indefinite periods of specified functions of social equity, human wellbeing and environmental quality, sustainability faces four distinct forms of threat. Discussed in more detail in STEPS Working Paper 1, these are represented in Figure 4 (after Stirling, 2007a).

Figure 4: Relationships between system properties of stability, durability, resilience and robustness



A key challenge for the appraisal of dynamic systems thus lies in characterising the conditions under which each of the properties of stability, durability, resilience or robustness might be more appropriate. Questions for appraisal arise right at the outset over the parameters and time-frames against which to define these properties and associated notions of change and irreversibility (Stirling, 2007a; Alcamo et al., 2003). For example, should strategies be aimed at stability (under which perturbations are seen as internal to a system and transient) or durability (where these same perturbations are seen as internal but enduring)? Similarly, what should be the responses to transient disruptions – or *shocks* – in contrast to long term shifts in external conditions? Appraisal responses must be sensitive to the possibilities and appropriateness of maintaining these different properties, and the requisite trade-offs between them, in different systems and settings. Drawing in our earlier discussion of incertitude and framing effects, we

also need to recognise that there may be divergent understandings – framings – of the incertitudes in play, with corresponding implications for all of these dynamic system properties. Taking all these into account, it becomes clear that the deliberate design of appraisal in the context of complex, non-linear social-technological-ecological dynamics faces some especially intractable dilemmas.

The seriousness of these challenges deepens when power relations are considered. These may shape the framing of which particular parameters are to be maintained, how system dynamics are to be represented, and how particular strategies are chosen. In particular, there is a question over whether these dynamic system qualities are taken to refer to system structures (specific institutions, networks or practices) or the functions that these are variously intended to fulfil (social equity, environmental quality or human wellbeing). Where these dynamic qualities are conceived in terms of system structures, then they are inherently more conservative. Likewise, to the extent that assumptions of persistence can have the effect of sustaining self-fulfilling expectations, then incumbent powerful social actors might be expected not only to favour a structure- (rather than function-) oriented approach, but also to emphasise strategies which presume the maintenance of existing conditions (i.e. those configured for stability and resilience rather than durability or robustness). In contrast, attempts to challenge and reconfigure existing power structures might be expected to focus most strongly on the sustaining of system functions (rather than structures) and to favour strategies configured for durability and robustness (which assume changing system contexts) rather than stability and resilience (which assume static system contexts) (Stirling, 2007a).

Box 4 presents an example where all three kinds of contrasting framing arise – in terms of the valued system functions, understandings of system dynamics and favoured response strategies. As expected, power relations operate to favour certain framings at the expense of others.

Box 4: Power and the framing of dynamics in conservation assessment in West Africa [5]

An international biodiversity priority-setting workshop for the forest region of West Africa, convened in 1999 by the agency Conservation International, exemplifies the ways in which appraisal designs can lead to key aspects of systems dynamics being ignored, with particularly negative implications for the poor. This workshop brought together nearly 200 scientists – conservation biologists, botanists, zoologists, and some sociologists and anthropologists – policy-makers and government and NGO representatives from six countries for five days to draw together knowledge about biodiversity and pressures on it in the region, to inform fundraising and regional and national planning for conservation. Thematic groups met for two days; the priority areas resulting from each group were compiled in a set of large, coloured maps prepared by Conservation International's Geographical Information Systems (GIS) team. Participants were then re-grouped to reflect geographical areas, and asked to consider the maps together, and in the light of them, address where and what sort of conservation action was needed.

Several aspects of the design led the debate and its outcomes to produce a highly static image of biodiversity as part of a stable yet threatened 'nature', disconnected from historical and ongoing pathways of intertwined ecological and social dynamics in the region. Its overall framing around biodiversity 'hotspots' – a technical concept describing areas of high species richness, high concentrations of endemic species and high endangeredness (Mittermeier et al., 1997) – led discussion in thematic groups to emphasise the generation of a present-day snapshot, through data such as plant and animal species lists and indices of endangeredness. The workshop was framed by a notion of forest as the region's stable 'climatic climax' vegetation. The workshop design also produced a distinction between ecology and society, by dividing thematic streams into either biological (plants, mammals, insects, reptiles, aquatics, and biogeography) or socio-economic 'threats' (land use, population, conflict, protected areas). This followed, and affirmed, the workshop's conceptualisation of biodiversity as associated with 'original' forest vegetation on which human 'impacts' constitute 'threats' and 'pressures'. This all contributed to a notion that internationally-valued 'nature' needed to be protected from the threat of (poor, local) people. This made the workshop effective in delivering dramatic

[5] This box draws on joint work by James Fairhead and Melissa Leach (see Fairhead and Leach 2003)

messages about the urgent need for biodiversity conservation and funding for it; framings intended to appeal to international donors in a world of competition for political and funding priority for environmental issues.

However, this led to the eclipsing of dynamic pathways of biodiversity as shaped by non-equilibrial ecological processes involving soils, climate, fire, and plant-animal-human interactions. This was despite many of the scientists involved having worked and published on these issues. Mismatches were evident between the consensual outcomes mapped and recorded, and the often heated arguments that took place within the groups and outside the workshop sessions. Such a division in the workshop processes ruled out formal opportunities to document and record the entwined biological-social dynamics that shape biodiversity trajectories. These include instances where people are living with and directing vegetation dynamics in ways that maintain and enhance system functions that support local agriculture and a flow of valued non-timber forest products (e.g. Fairhead and Leach, 1996, 1998). The result was to lend legitimacy and support to 'exclusionary' approaches to conservation in national and local settings – approaches that displace people and their livelihoods from protected forest reserves in ways that frequently contribute to poverty and conflict. Ignored were opportunities to build on historically-proven and ongoing local land-use and forestry practices that simultaneously enhance biodiversity and local livelihoods.

3. RESPONSES IN APPRAISAL DESIGNS

BROADENING THE INPUTS TO APPRAISAL

The first part of this paper has reviewed the challenges to appraisal posed by the diversity of states of incertitude, the pervasive effects of framing, and problems associated with the dynamic nature of social-technological-ecological systems. How might we respond to these challenges? In this part we move on to explore literature concerning appropriate strategic responses, integrating insights from

both emerging 'northern' literatures on precaution (O'Riordan and Cameron, 1994; Harding and Fisher, 1999; Raffensberger and Tickner, 1999; ESTO, 1999; O'Riordan et al., 2000; EEA, 2001), and 'southern' literatures on the conduct of participatory processes in settings pervaded by steep gradients of power (e.g. IIED, 2006b; Chambers, 1997; Cornwall and Gaventa, 2000). To do this we adopt a more explicitly normative style of discussion. Four main groupings of issues will be dealt with in turn, each under the heading of an injunction summarising the main thrust of the argument:

- Include a diversity of knowledges through participatory engagement in framing;
- Extend scope to address multiple criteria and scales and enable choice among options;
- Be humble over incertitude and take a dynamic perspective;
- Attend explicitly to issues of rights, equity and power – and their implications for divergent priorities and preferences.

Together, these add up to an overall call to *broaden out* the inputs to appraisal

INCLUDE A DIVERSITY OF KNOWLEDGES THROUGH PARTICIPATORY ENGAGEMENT

Different forms of knowledge can be both sources and products of the framing of appraisal. They can also be entirely neglected, so that the framing of appraisal systematically excludes proper attention to highly salient forms of knowledge. The result can be impoverished conclusions for policymaking. To address this problem is simple in principle. Rather than privileging a particular body of elite or disciplinary knowledge (like economics or risk assessment), appraisal should be deliberately configured to draw symmetrically on the full diversity of different methods and salient knowledges – emphasising where necessary to correct for the neglect of weaker voices (EEA, 2001). In this, quantitative expert-analytic knowledges will often remain relevant (and sometimes essential), but need to be recast as necessary, rather than sufficient, inputs to the structuring of appraisal (ESTO, 1999). Depending on the context, other relevant bodies of knowledge might variously include those of marginalised scientific disciplines, local communities, farmers, women, workers, consumers, 'users', citizens, children, or those living with particular health or livelihood conditions (Fischer, 1990). Although they may share many features, the knowledges associated with such varied social groups may also embody (sometimes subtle but) important on-

tological differences arising from divergent experiences, conceptualisations, values and priorities (Wynne, 2001; Feenberg, 2002). They may also be associated with important epistemic differences concerning the ways that relevant knowledges are (or should be) constructed, accredited, interpreted, or validated (e.g. Scoones and Thompson, 1994; Agrawal, 1995; Fairhead and Leach, 2003).

To achieve this more symmetrical approach to different knowledges, many argue that an overarching open process of participatory deliberation is needed, taking precedence over the application of different specific methods (Irwin, 1995; Sclove, 1995). This should be subject to principles of accessibility, fairness, transparency, mutual respect, free expression, public reasoning and good faith; principles that are widely established to characterise rational, equitable discourse (Renn et al., 1995; Joss and Durrant, 1995). Only once such broad criteria of high-quality deliberation are established for a particular appraisal process should attention turn to finer grained conventions to be adopted over the choice and use of more specific methods (Rowe and Frewer, 2000; Petts, 2001). This includes attention to the framing of techniques like risk or cost-benefit analysis (where these are applied) and deliberate iteration between disparate and complementary methods to compensate for any difficulties or 'blind spots' and stimulate challenges to further learning (EEA, 2001).

Establishing such open, equitable discourse, especially in power-laden settings, is of course extremely challenging (Dryzek, 1990; Bohman, 1996). At the very least, particular efforts must be made to bring the voices and perspectives of groups disempowered by prevailing social and institutional structures into this deliberation over framing (Gaventa and Valderrama, 1999; Holmes and Scoones, 2000; Wakeford, 2001). The process can also be assisted by particular methods and procedures. Drawing on grounded work by the International Institute for Environment and Development, Table 3 summarises an illustrative list of different tools through which the agency of the most marginalised groups can be enhanced in the framing of appraisal processes (IIED, 2006b).

Table 3: Tools for empowerment (selected from IIED, 2006b [6])

TOOLS FOR UNDERSTANDING

- **Community trade-offs assessment**

  Activities for communities to assess different development options in terms of local worldviews and aspirations, based on experience in Guyana.

- **Family portraits**

  Description, analysis and communication of how a given family organises labour and other assets, based on experience in Mali.

- **Stakeholder influence mapping**

  Method to examine and visually display the changing policy influence of various social groups, based on experience in Costa Rica, the UK and Kenya.

- **Stakeholder power analysis**

  Techniques for understanding stakeholder relationships and capacity for change, based on international experience.

- **The four Rs: Rights, Responsibilities, Revenues and Relationships**

  Framework to clarify and negotiate respective stakeholder roles, based on experience in Zambia and Cameroon.

TOOLS FOR ENGAGING

- **Avante Consulta! Effective consultations**

  Steps to empower communities in negotiation processes, based on experience in Mozambique.

- **Better business: market chain workshops**

  Workshops for direct and indirect participants in market chains to share knowledge and inform policy, based on experience in Vietnam.

- **Speaking for ourselves**

  Steps for communities to express their priorities and constraints in professional development language, based on experience with pastoralists in Ethiopia.

- **Targeting livelihoods evidence**

  Steps to link natural resources policy with poverty reduction strategies and to develop appropriate monitoring, based on experience with forestry in Uganda.

- **The pyramid**

  Framework to stimulate participatory assessment and target-setting in forest governance at national level, based on experience in Brazil

[6] http://www.policy-powertools.org/guide.html

Box 5: 'Broadening out' appraisal

APPRAISING CONSERVATION AND BIODIVERSITY[7]

Experiences of conservation and biodiversity appraisal in West Africa highlight a number of problems with conventional, technical approaches. First, with narrow appraisal approaches, interventions can be justified which are inappropriate to local circumstances, reducing local resource control and worsening poverty. Second, forest management continues to rest on particular ideas of nature as separate from society, and as stable and predictable. By obscuring historical experiences which reveal both the intertwining of ecological and social processes and the dynamic forces shaping environments (e.g. in climate history), forest management may pursue illusory goals and miss opportunities to adapt to emergent trends. Third, appraisal designs continue to invoke and reproduce particular ideas of society, including positive social categories (e.g. 'traditional' hunter, 'modern' environmentally literate citizen) and negative ones (e.g. squatter, charcoal-maker, slash-and-burn farmer). Such caricatures contribute to simplified narratives which frame the elaboration of interventions, and who gains and loses from them. They also shape and sharpen social fault-lines which have a far wider bearing on processes of governance and social change. However, there is potential for appraising biodiversity conservation differently through broader, more inclusive approaches that draw pro-actively on a combination of local knowledge, historically-grounded social science and non-equilibrium ecological perspectives. The inclusion of the perspectives and experiences of local land and forest users in appraisal procedures in which poorer forest users genuinely help to set agendas and questions is one dimension of this, but require particular effort to engage and empower groups whose landscape knowledge has been persistently subjugated by external perspectives since early colonial times. Significantly though, villagers' oral histories and expressions of the impacts of their agricultural and livelihood practices on vegetation dovetail in many respects with anthropological, forest ecological and climate-history research pointing to the dynamism of West Africa's forest landscapes. While the latter has held little sway against the power of current international conservation interests and their supportive conservation-biology science, there is scope for broadening the inputs to appraisal to include such strands of research. This

[7] This case draws on Fairhead and Leach (2003).

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would serve both to open up appraisal to recognise a greater diversity of possible pathways of people-ecology interactions, with diverse implications for conservation strategies, and serve to give strength and legitimacy to local users' perspectives through their articulation and alliance with certain strands of 'expert' analysis.

APPRAISAL FOR SOIL AND NUTRIENT MANAGEMENT [8]

One of the major challenges for African agriculture is the management of nutrients in poor soils. The conventional response has been to undertake soil tests and define a fertilizer input strategy which adds appropriate amounts of nitrogen, phosphorous and potassium. This is seen as a straightforward, technical exercise, one that can result in generic extension recommendations for large areas. However, as farmers across Africa will quickly point out, such blanket approaches to fertiliser application are often inappropriate. Blanket applications can be wasteful and expensive, generic recommendations fail to respond to the micro-variation of soils and their fertility within and between fields, and interactions between inorganic and organic fertility sources can be very complex. Yet, farmers always have an intimate knowledge of their fields and their fertility, knowing how different crops respond in different patches, investing in soil improvement in certain places and not others, amending soils with organic mulches or inorganic chemical fertilisers depending on the situation. How then can such located, complex understandings be combined with insights from scientific soil chemistry and biology in ways that can improve integrated forms of soil management? Building on the approach of soil nutrient balance modelling, a more interactive, participatory form of appraisal was developed with farmers, researchers and extension workers in Ethiopia, Mali and Zimbabwe. By drawing nutrient cycle 'maps' of their farms aimed at monitoring flows of inputs and outputs, farmers were able to identify areas of soil nutrient surplus and deficit, and focus their management efforts strategically. The maps also helped scientists to identify with farmers where to focus their investigations of nutrient content, identifying particular processes and field sites where, with the benefit of lab based knowledge, farmers could improve soils management and gain improved yields. Such an approach to appraisal for integrated soil management has allowed a broadening out – of knowledges used, of methods deployed, and of options emerging. This

[8] This example draws on material in Scoones (2001). See also DeFoer and Budelman (2000)

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farmers, researchers and extension workers in Ethiopia, Mali and Zimbabwe. By drawing nutrient cycle 'maps' of their farms aimed at monitoring flows of inputs and outputs, farmers were able to identify areas of soil nutrient surplus and deficit, and focus their management efforts strategically. The maps also helped scientists to identify with farmers where to focus their investigations of nutrient content, identifying particular processes and field sites where, with the benefit of lab based knowledge, farmers could improve soils management and gain improved yields. Such an approach to appraisal for integrated soil management has allowed a broadening out – of knowledges used, of methods deployed, and of options emerging. This broadened, integrated and participatory approach to appraisal has become an important tool for farmers, as well as research/extension personnel, in improving soil management in cost-effective, efficient and sustainable ways.

EXTEND SCOPE AND ENABLE CHOICE

To be effective and rigorous, appraisal for sustainability needs to focus with comparable vigour on a range of different criteria – rather than being circumscribed or dominated by a particular focal consideration. Among other things, this means broadening the scope of appraisal to enable choice amongst different options (O'Brien, 2000). This is especially important where a policymaking initiative is driven by a specific problem (such as a threat to economic welfare) or beset with urgent priorities (like a pressing risk issue – EEA, 2001). In practice, this means taking care that appraisal move away from narrow assessments of the efficacy, efficiency, acceptability, safety or tolerability of a single possible course of action – often that favoured by powerful institutions or under prevailing market forces (ESTO, 1999). Instead, appraisal should address a range of contending possible options and future pathways (policies, strategies, programmes, investments, technologies, processes, products, substitutes) favoured – or salient under – a diversity of different interests and perspectives (Collingridge, 1980). Indeed, attention may also extend to the ways in which the pursuit of a diversity of options themselves may also have the effect of accommodating such plural perspectives, hedging ignorance and fostering more robust and innovative future strategies (Stirling, 1997b; 2007c). Only in this way can appraisal genuinely address the dynamics of alternative pathways for change and so enable real choices among a variety of different possible technology, policy or institutional trajectories.

This essentially comparative character to appraisal should also move beyond preoccupations with negative 'impacts' or 'risks', in order to allow a balanced consideration of the pros as well as the cons of different possible courses of action. This means paying attention to claims or expectations over the positive dimensions of each option, such as its driving needs or purposes, or associated benefits and justifications (Jackson and Taylor, 1992; MacGarvin, 1995). A final aspect of this extended scope concerns the need to consider indirect, cumulative and synergistic social, economic and environmental effects – as well as the direct impacts that are more tractable to conventional forms of assessment (EEA, 2000).

Box 6 discusses these issues in relation to the evaluation of the impacts of land reform in southern Africa. Here, a broader scope to appraisal means adopting wider definitions of key concepts such as 'viability' and 'success' – addressing entire livelihoods rather than the consequences of particular activities. Appraisal needs to include consideration of cultural sensibilities and symbolic implications, as well as those considered by incumbent institutions or disciplines to be most relevant, tangible or directly measurable. Crucially, appraisal should approach the problem at a variety of different spatial and temporal scales through appropriate networks, to avoid obscuring unintended impacts at other levels.

As the example in Box 6 demonstrates, a broadened scope for appraisal presents challenges for conventional approaches to monitoring and evaluation. For, as in the case of land reform projects in southern Africa, particular approaches to monitoring and evaluation have become institutionalised, with success and performance measured in particular ways, reinforced by data collection routines, standardised methodology and reference data sets. Such historic data sets can reinforce certain framings, biasing future scenarios by making them appear more 'knowable' or 'scientifically robust'. Thus the performance of data collection and monitoring contributes to entrenching particular pathways for development. By contrast – as highlighted by Box 6 – new ways of collecting data and measuring things, with a wider array of criteria, can open up alternative pathways, and broaden out debates about trajectories for development.

Box 6: Livelihoods after land reform in southern Africa[9]

How should the success of redistributive land reform efforts be evaluated? This is a long-running question for researchers, policymakers and implementers of land reform efforts across the world. In southern Africa,

[9] This box draws from Cousins and Scoones (2007, in prep.)

the questions hold particular pertinence as redistribution efforts unfold in a number of countries in the region. Conventionally this question has been addressed with very narrow criteria, using a limited set of metrics. The standard approach is to use methods developed for farm management to assess the returns to different factors of production – land, labour, capital and so on – and to approach the question of success in purely economic terms. In southern Africa, a recurrent focus for evaluation efforts has been a discourse about 'viability', framed in terms of the degree to which a new farming enterprise performs in relation to criteria chiefly established for large-scale commercial farming operations. The result is – implicitly if not explicitly – the expectation that land reform beneficiaries are expected to be 'small big farmers', and perform accordingly.

A new project, led by the Programme for Land and Agrarian Studies of the University of Western Cape in South Africa, and involving collaborative work in Namibia, South Africa and Zimbabwe, is questioning these assumptions, and exploring alternative methodological frameworks for evaluating 'success', centred on a 'livelihood pathways approach'. A number of elements guide this enquiry.

1. The approach encompasses a broader notion of 'success' than conventionally used in largely economic farm management assessments. Multiple criteria are required, including those conventionally used, but extending to others which are derived from a broader livelihoods approach. For, if a core objective of redistributive land reform is to generate more sustainable livelihoods, then economic returns from agriculture on a plot of land is only one component of a wider picture. In southern Africa, livelihoods are composed from a variety of activities – on and off farm – and agricultural production, while important, has to be looked at in this context. Maximising returns to agriculture may not be ideal, if this affects other livelihood activities, for instance. Different people within a farming household may focus on different activities in different years (depending on drought conditions, for example), over seasons, and through domestic cycles. And this will depend on gender, age, wealth status and many other attributes. In other words, different people, depending on their context, will be following different 'livelihood pathways'. These paths may diverge or converge over time, but there will be different routes followed, and a one-size-fits-all dual carriageway approach will not capture such diversity in individual, household and group-level trajectories.

2. Critically, 'success' must be looked at from the perspective of land reform beneficiaries. There are many reasons why people demand land. There ares, of course, the material, livelihood-focused reasons already discussed, but there are others too. Land has symbolic and political value, and, particularly in the context of a long history of disenfranchisement and expropriation as in southern Africa, gaining access to land can be vitally important. This may be especially so when through restitution processes of land reform, land is returned to 'traditional' owners, where grave sites are situated, and ancestral spirits reside. A sense of 'home' is important too, particularly in migrant labour economies where people move to towns, farms and mines to work. Having somewhere that people can return to, associated with family, lineage and community, is a significant part of people's identity and association, as well as providing a location for investment and a basis for social security in old age.

3. Assessments of success should not be restricted to a single spatial scale – conventionally the farm, project or scheme. Success may look very different when viewed from the perspective of an individual, a household, a community, a district and a region. Scale interactions are therefore important, as the ability of land reform efforts to generate impacts is dependent on linkage and multiplier effects across scales . Thus small-scale farming, situated within and linked to a wider off-farm economy through labour, remittance and investment flows, held together by social and political connections, can potentially have far wider impacts on livelihood improvement more generally than the equivalent area farmed under different social and economic conditions. Even if a large-scale farm is more 'productive' in narrow economic terms, it may generate fewer linkage and multiplier effects on the wider economy, less labour, and smaller flows of investment, being linked very often to vertical supply chains that create benefits elsewhere for a smaller group of people.

4. 'Success' is an evolving phenomenon. Many studies have shown how it takes time for land redistribution efforts to show positive impacts. There is much learning to do, different infrastructure, skill and knowledge needs must be met, new organisations and institutions must be built, market interactions must be re-geared, and the social and political connections that make things happen must be reconfigured. This does not happen overnight, and nor does it happen solely through the conventional 'support' mechanisms, focused as they are on farm level production

issues and scheme/project level infrastructure development (if they happen at all) . The wider 'soft infrastructure' of learning, organisation, institutions and social interactions are ones that are more difficult to provide, and must emerge slowly and incrementally, as new groups of people come together following land reform. This requires a more longitudinal approach to appraisal, one that understands how adaptive change – at the intersections of farm production, off-farm enterprise development and social and political institutions – comes about. A 'pathways approach' suggests appraisal monitoring and evaluation approaches, which are attuned to such on-going dynamics, avoiding the snapshot assessment in favour of an adaptive, learning approach.

'Success' – or in terms of the prevailing policy discourse, 'viability' – thus is a more complicated concept than first appears. A wider framing of these notions thus requires a greater methodological scope and complexity for appraisal. To address this challenge, the project is attempting to combine a number of elements, including:

- A multi-scale appraisal which links assessments at the farm/plot level (through conventional enterprise/marginal returns type analyses), to individual/household levels (through survey work and individual/group reflections), to district/regional levels (through qualitative assessment of linkage and multiplier effects).

- A multi-method appraisal approach that aims to open up analysis and reflection, making use of diverse and appropriate methods and tools. Simple cost/benefit analysis, for example, may be appropriate to look at one issue, while in-depth qualitative analysis may be appropriate for another.

- A longitudinal appraisal that unpacks the differentiated pattern of 'livelihood pathways' evolving in different sites, and generates reflection on what how change happens to livelihoods after land reform. This involves adopting an historical or biographical approach to reflect on the micro-histories of fields, farms, individuals, households, schemes and regions.

- An inclusive and participatory appraisal process that encourages reflection on ideas of 'success' and 'viability' from different participants – including generating a dialogue that engages land reform 'beneficiaries' with planners and officials (as well as researchers using more conventional

approaches) – to debate and refine criteria and metrics, in the hope of generating more effective tools for future appraisal.

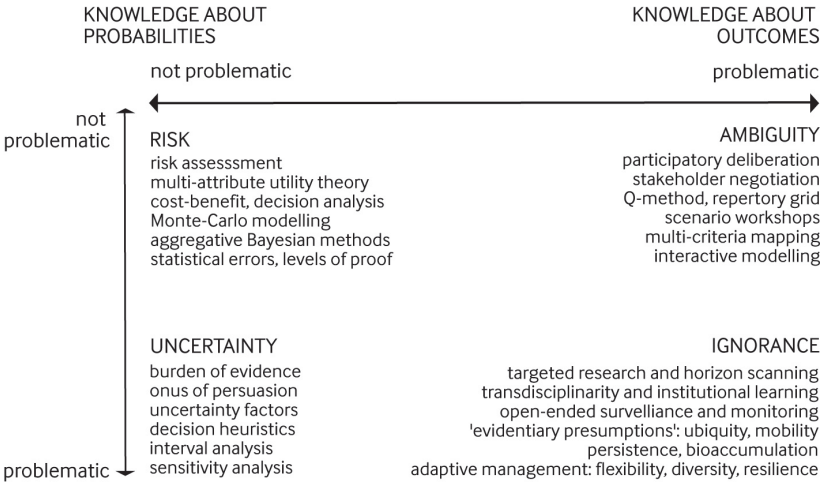
The project is only in its inception phase, and has many challenges to confront. In addition to those focused on methodological innovation (largely focusing on combining old methods in new ways), perhaps the largest is to see whether new appraisal methods – and the data, new practices and ways of framing they generate – can help shift well-entrenched discourses and practices that have dominated assessments in the past. Of course, appraisal methodologies – and the framings they imply – have powerful institutional homes, and strong, long-held professional and disciplinary affiliations, which are very often resistant to challenge and change, and even debate. This is perhaps especially the case in and around debates about agriculture and rural livelihoods in southern Africa, given the professional and institutional histories - over the past century from the colonial period to the present – of the agriculture and rural development field. Recasting designs for land reform in southern Africa in favour of a more open-ended, livelihoods-focused and pathways-oriented approach certainly requires more than just new appraisal methodologies and frameworks. Shifts in this wider 'design infrastructure' – and the institutional and professional politics this implies – will certainly be the greatest test for this project in the years ahead.

TAKE A DYNAMIC PERSPECTIVE AND BE HUMBLE ABOUT INCERTITUDE

A further dimension of the broadening out of appraisal concerns the adoption of a dynamic perspective. In short, this means moving beyond static 'snapshot' approaches to the assessment of benefits and impacts. Instead, it requires an approach that attends directly to the passage of time. This applies both retrospectively as well as prospectively – involving an empirical grounding in historical knowledges (as illustrated in Box 6, and in the case of biodiversity assessment in Box 5), as well as the use of a longitudinal framework to look forward to the future (as illustrated in Box 7). It is only in this way that appraisal can give proper consideration to issues such as path-dependent events, and additive, cumulative, synergistic or life cycle effects (ESTO, 1999). A historically-grounded, longitudinal approach can also help reveal the complex and sometimes unexpected consequences of individual and organisational behaviour, as shaped by different contexts and governance arrangements (EEA, 2001).

A further crucial feature of such a dynamic perspective is that it prompts greater humility over the implications of uncertainty, ambiguity and ignorance discussed in the first section of this paper. Figure 5 offers some examples of a range of methods, which can be applied in the frequent conditions where incomplete knowledge dominates appraisal. It differentiates those methods appropriate where narrow situations of risk prevail (in the strict sense), with less reductive-aggregative approaches of the kind that are necessary under conditions of uncertainty, ambiguity and ignorance. Collectively, the latter approaches are increasingly well-documented as elements of more 'precautionary' approaches to the appraisal of environmental and human health threats (Stirling, 2007b).

Figure 5: Methodological responses to different forms of incertitude



A crucial feature aligning these methodological responses to incertitude with a dynamic perspective in appraisal, is their common orientation towards an adaptive approach to learning. Instead of seeing the relationship between appraisal and commitment as a monolithic linear sequential procedure, it becomes instead a more multi-stranded and finely iterated process of interactions between deliberation and intervention – allowing continuous adaptation to shifting knowledges, values and priorities and the persistent inevitability of surprise. Appraisal is undertaken not as a means to produce and defend claims to definitively complete bodies of knowledge (Collingridge, 1980), but as a means to catalyse, facilitate and empower more effective social learning. A premium is placed on qualities of flexibility, resilience, reversibility, option values and diversity (Alcamo et al., 2003; Stirling, 2007c). It is in this way that the neglected

approaches identified in Figure 5 are able to help provide more effective means to address properties of dynamic stability, durability, resilience and robustness.

An example of the use of one specific approach identified in Figure 5, of a kind that displays many of these crucial dynamic characteristics, is the application of scenario workshops to the appraisal of pastoral development in Ethiopia discussed in Box 7.

Box 7: Future pathways for pastoral development in Ethiopia[10]

Ethiopia has a long history of intervention in pastoral development dating back to the 1960s. Past attempts recommended a particular pathway of change focused on, inter alia, settlement of pastoral populations, a ranching model of production, market development and integration within the wider economy. These interventions drew on a dominant narrative about pastoral systems: that these were unproductive, not commercially oriented, damaging to the environment and socially backward. This framing affected the project appraisal designs in fundamental ways, excluding other understandings and visions of future pathways for pastoral development. Despite the fact that such approaches have invariably failed, there has been a dogged persistence in these views reflected in continued attempts to transform pastoral production and livelihood systems in the rangelands of Ethiopia and elsewhere.

However, over the last decade or so there has been a steady flow of research results, combined with more organised advocacy, demonstrating that alternative pathways are possible, and perhaps more desirable given the challenges of livelihood sustainability in dryland areas. Within Ethiopia, the government at both regional and central levels, as well as civil society organisations, such as the Ethiopian Pastoral Forum, have begun to accept this challenge with a recent initiative to develop a new policy framework for pastoral areas. Responding to this, in late 2006 the Pastoral Communications Initiative of the UN Office of Humanitarian Affairs based in Addis Ababa, Ethiopia, together with the Future Agricultures Consortium coordinated by IDS, initiated a more open-ended process of appraisal based on a scenario analysis approach (cf. Schwartz, 1996; Ringland, 2002; Fuller-Love et al.,

[10] See also UNOCHA-PCI (2006).

2006).This workshop was held over two weeks and involved around 20 senior government officials across a range of ministries and departments, parliamentarians, as well as representatives from civil society groupings, including the Pastoral Forum and traditional leaders from pastoral areas. The aim was to explore contemporary debates about pastoral development drawing experiences presented by resource persons from different places, both within and, critically, outside Ethiopia. This was combined with a reflection on the nature of policy processes and how effective policy needs to respond to a combination of political, bureaucratic and wider governance factors which affect how policies work in practice. Given the experience of largely top-down, externally driven policy interventions in the past, where prescriptions are imported from elsewhere by consultants and development experts, this is of course especially relevant in the Ethiopian context.

The workshop group defined an overall objective for the scenarios exercise which unfolded over several days. This was: "Creating sustainable livelihoods and improved living conditions, reducing vulnerability, risk and conflict in pastoral areas, to be achieved with enhanced socio-economic integration, recognition of pastoralists' voice and maximising the potential of the pastoral economy". Drawing on the wider experience sharing which preceded this, the participants then defined a list of 'key drivers' which would affect the achievement of such an objective over the next 20 years. From a long list, three key drivers were identified. These were: a) environmental change and resource pressure; b) market activity and integration; and c) conflict. These were seen to be dominated by uncertainty. Another key factor in defining these three issues as 'drivers' was that change was seen to be (largely) outside policy control, at least within the remits of Ethiopian pastoral policy development. Many factors affecting outcomes were global in scale, driven by processes outside immediate control.

These drivers of change were then used to explore different possible scenarios. Different paired permutations were taken to look at what major shifts would entail for pastoral systems. To define a limited set of scenarios in the first instance the first two were explored in depth, with conflict being seen as a cross-cutting dimension. A simple matrix was constructed and four scenarios – each affected by the conflict driver in different ways – were explored (sustainable pastoral livelihoods, export-led trade boom, adding value for diversified livelihoods and alternative livelihoods). Participants named these to reflect the extreme situation of what might happen by 2025 and developed a simple narrative or storyline to reflect the pathway of

change imagined. While in many respects artificial and based on substantial speculation and guesswork, the construction of the scenarios pushed people to think out of the box, to imagine alternative futures that had not been part-and-parcel of standard prescriptions over the previous 40 years.

In groups, workshop participants elaborated the four scenarios. This involved assessing how they would address the overall normative development objective set and who would be the winners and losers (including poverty impacts, equity effects and gender/age consequences). A set of first step interventions were then proposed for each scenario defining what needed to be done in order to move from the current situation along the pathway to the proposed scenario. A key part of the appraisal was to examine the 'killer assumptions' underlying the scenario storyline, including potential risks and uncertainties which might undermine the achievement of objectives. This encouraged participants to examine the wider resilience properties of each scenario. Each scenario was thus tested against other possible drivers of change – including conflict, climate change, economic collapse, major disease outbreaks and so on – to see the degree to which it withstood these shocks and stresses, and continued to meet (broadly) the wider development objectives set.

A prior trawl of statistics from the national statistical authority and other research sources provided a resource on which to draw during this phase of scenario building. What was striking, however, was that often these resources were woefully inadequate. Framed by other pathways for development, data and its analysis very often reflected old biases and assumptions, and was unable to address alternative imaginations of the future. The scenarios work therefore helped define other research questions and data needs with different framings – on issues of dynamics (e.g. changing land quality distributions, and the availability of 'key resources' due to recurrent drought), as well as governance (e.g. interactions of formal and informal institutions in pastoral areas).

Once the four scenarios were elaborated and presented to the wider workshop group as well as a panel of external resource persons, they were examined together. What became clear very quickly was that they were not alternatives, but needed to be interlinked. Some scenarios might be envisaged for some people in some places, while others might be appropriate for others in other places. While there were some important trade-offs between scenarios (for example, a focus on external trade with

terminal markets in Addis Ababa might undermine informal cross-border trade), there were also many synergies. For example, all scenarios required some basic first-step building blocks, such as transport infrastructure connecting small market towns, tele-communications facilities for sharing market information and basic formal education and skills training for pastoralists, particularly women and young men. Thus in envisaging processes of implementation, scenarios could be envisaged together. In analysing the roles of different actors, many options required some inputs by the state to get things going or provide an investment, regulatory and social protection framework (e.g. appropriate research, basic infrastructure provision, formal education and health, etc.), but individuals, pastoral groups, diaspora connections or the local or international private sector were seen as important in moving things forward.

In assessing the overall resilience of scenario options, it also became clear that an approach based on diversity was critical. Some of the more risky scenarios – notably 'export-led trade boom' – had to be complemented with others which added value and generated employment locally (e.g. 'adding value for diversifying livelihoods', involving support for business focused on, for example, local processing of pastoral products such as milk, cheese and meat). And all scenarios, whether focused on external markets or informal cross-border trade and domestic supply, required a broadly sustainable and productive pastoral system based on mobility, and the focused management of 'key resources' to sustain production. Even the scenario which envisaged a substantial exit from pastoral production ('alternative livelihoods') saw the persistence of a sustainable pastoral system as critical, as this would provide demand for services, as well as be a route for investment for successful entrepreneurs pursuing alternative livelihoods, who, at least on a part-time basis, might re-enter pastoral production in the future.

Questions of politics, policy and governance were also seen to be interlinked. A successful export-focused trade from the pastoral areas would demonstrate at a political level the integration of pastoralists in the national economy, with foreign exchange and taxation benefits flowing to the state. Successful entrepreneurial growth in small towns would encourage wider economic growth linkages, but also an urban, and so politically-connected network of advocates for pastoral development, stretching from mobile pastoralists on the rangelands to small town entrepreneurs to diaspora links globally. Seeing scenarios together in this way provided a vision for a more sophisticated advocacy for pastoral policy in the Ethiopian context.

The scenario workshop in December 2006 was very much work in progress: it involved a limited group in a constrained period of time, and did not benefit from the wider reflection and deliberation on the drivers, scenario storylines and policy options that it might have done. Would it have resulted in different suggestions if it was held in a pastoral area or if there was greater involvement of women? Probably, yes. However, the work continues. The workshop summary was presented at the government-supported national pastoral day celebrations in January 2007, and the scenario workshop group continue to interact among themselves and others across government and NGO sectors – creating a new 'discourse coalition' or 'advocacy network'. Opening up debate on pastoralism in Ethiopia has been a long struggle over many years. There are many reasons – technical, professional, economic, bureaucratic and political – why things close down easily. Capturing the opportunity when, for a range of reasons, pastoral development is on the agenda in Ethiopia, to open things up has been important. This approach to appraisal, drawing on a scenario workshop approach, perhaps offers one way of pushing open the doors for a more rounded and open debate about the future.

ATTEND TO RIGHTS, EQUITY AND POWER

Although they hold profound practical implications, many of the issues focused on in this paper this far have necessarily tended to be rather general and conceptual in nature. The key motivation throughout has been to expose and explore the obstacles presented in appraisal to the empowering of the needs and perspectives of the poorest people. Yet the particular imperatives of equity and poverty reduction have not thus far assumed a central focus. This is because many of the most important such obstacles are actually due to quite general challenges of framing effects, incertitude and the complex path-dependent dynamics of the social, technological and ecological systems themselves. These can thwart even the most well-intentioned attempts to prioritise the interests of marginalised groups. By broadening out the dimensions of appraisal in the fashion discussed in the preceding sections, we may at least hope to open the door to more robust and respectful treatment of these over-riding interests.

Taken on its own, however, a broadening out of appraisal is far from sufficient. Though this may open the door to the more effective prioritising of the concerns and priorities of the poorest and least powerful groups, it does not provide any

guarantee that these will actually be treated with the seriousness that they are due. The effects of entrenched power structures operates in more persistent and concrete ways than simply through framing – and this needs to be challenged by more direct measures in appraisal. In particular, the remedy here lies in a shift away from three dominant tendencies:

- First, rather than viewing different policy options purely in terms of utilitarian trade-offs, appraisal might also adopt alternative 'lexicographic' frameworks (Spash, 2001) – for instance highlighting consequences in terms of the fundamental rights and entitlements of the poorest groups in society (Sen, 2001).

- Second, rather than concentrating predominantly on aggregate notions of economic benefit, social utility, human welfare or 'the public good', appraisal should focus more on distributional issues and impacts on equity and equality with respect to all these (and other) parameters (Rawls, 1971; 1993).

- Third, against the tendency to concentrate on apparently transcendent qualities like 'objectivity', 'authority', 'representativeness' and 'legitimacy', appraisal should deliberately reflect on the ways in which such qualities (even when ostensibly progressive) can become re-defined and manipulated through the exercise of power (Pellizzoni, 2001; Stirling, 2005).

In other words, considerations of rights, entitlements, equity and power are not only issues that should inform the framing of appraisal, they should themselves also be subject to deliberate, inclusive appraisal.

Of course there are countervailing dangers that appraisal oriented explicitly to issues of rights, entitlements, equity and power relations can become blinkered to the more general questions of framing, incertitude and system dynamics addressed earlier. Here, it is important not to neglect these conceptual dimensions of the broadening of appraisal, otherwise there is no guarantee that ostensibly progressive counter-narratives around rights, entitlements, equity or empowerment might themselves reproduce power asymmetries. For example, appraisals intended to address rural poverty around water inaccessibility could lead to apparently progressive technical or organisational interventions which ease the supply of usable water. Yet in a complex interconnected system, these same interventions may also operate in perverse unpredicted ways. For instance, technical improvements to water supply may in some ways worsen the position of women as the most underprivileged groups within poor communities, if

they serve at the same time to further fragment women's social networks by reducing the crucial social solidarities that can be fostered in communal water collection. Thus, attention to rights, entitlements, equity and power must be accompanied by the other dimensions of the broadening of appraisal.

Box 8 presents a detailed discussion of one specific arena within which debate over these questions has become particularly sophisticated and explicit: the debate over the implications of large dam projects.

Box 8: The World Commission on Dams: the 'rights and risks' approach[11]

The World Commission on Dams (WCD) was an independent agency sponsored by the World Conservation Union and the World Bank. It involved a wide array of stakeholders ranging from members of the dam industry to dam critics and academics. Its mandate was to investigate the myriad aspects of dams concerning economic growth, equity, environmental conservation and participation as well as come up with guidelines for future decision-making in water resource development. It concluded that while dams have made a considerable contribution to human development, in too many cases unacceptable costs have been borne in social and environmental terms. Some of the guidelines around decision-making processes included participatory and comprehensive needs assessment before new dams are built and a thorough investigation of all options and alternatives to the proposed project. Furthermore, the Commission called for free, prior and informed consent of indigenous peoples. It also demanded demonstrable public acceptance of binding formal agreements among all stakeholders with implementable arrangements for monitoring and addressing grievances before a scheme is implemented (see WCD, 2000).

A central proposal of the World Commission on Dams was the adoption of a 'rights and risks' approach as a practical and principled basis to identify all legitimate stakeholders in negotiating development choices and agreements. This recognises that past problems with dam projects often derive from a lack of recognition of the rights of the adversely affected population (not only those resettled, but others affected such as downstream communities), the 'involuntary' risks to which they have been subjected, and their associated rights at risk.

[11] This is largely from Bird et al. (2005).

WCD recognised that one of the key challenges in water resources management is to reconcile competing interests and balance social, environmental and economic considerations: 'By bringing to the table all those whose rights are involved and who bear the risks associated with different options for water and energy resources development, the conditions for a positive resolution of competing interests and conflicts are created' (WCD, 2000: xxviii).

The 'rights and risks' approach therefore offers an operationally relevant mechanism for use at different stages of decision-making to:

- improve stakeholder identification and analysis - by identifying more objectively the rights, risks (including 'rights at risk') and responsibilities of each interest group;
- define who must be involved, especially those whose interests / losses have largely been ignored in the past – by recognising to what degree rights are at risk;
- improve criteria for evaluation of options and within project-alternatives - by enriching and expanding sustainability criteria related to development performance and reflecting stakeholder views;
- enhance consultation and deliberation based on those interests in order to reach a negotiated outcome – by providing greater clarity on the issues;
- seek to achieve consensus-based equitable outcomes and turn losers into winners; and
- help redress power imbalances in decision-making – by achieving clarity and transparency on the rights, risks and responsibilities of interest groups.

In 2004, Bird et al. (2005) tried to operationalise the rights and risks approach and argued for the need to add "responsibilities" as the "third R". The responsibilities dimension can provide a means to inform decision-making at different levels. Moreover, rights are often incomplete without clarity on duties, obligations and responsibilities. Defining the roles and responsibilities of different actors can help monitor and evaluate decision-making processes. It also creates necessary conditions for constructive negotiation at different stages, building on previous experience, as well as

providing mechanisms to seek accountability and redress when rights are violated or when risks are borne disproportionately by individual interest groups (e.g. those to be displaced, the poor and vulnerable). An overarching pre-requisite to this framework is the notion of 'good faith' negotiation and the responsibility of all interest groups to engage in constructive dialogue based on a fair and open approach, the sharing of information and absence of duress.

In sum, the 3 Rs approach allows for interesting and unique ways to achieve openness and breadth in designs and appraisals. But they fall somewhat short of tackling issues concerning unequal power relations amongst different stakeholders and how power might determine whose rights, risks and responsibilities prevail. Furthermore, in most situations stakeholder negotiation, where it is practised, is largely seen as a way to inform decision-makers at the political level of the convergent and divergent views and degree of consensus on a project. To date stakeholders are rarely empowered to make the final decision on whether to develop a dam project or not; this is seen primarily as the responsibility of government or parliament.

4. TOWARDS EMPOWERING DESIGNS

As the last part of this paper has highlighted, moving towards more progressive, empowering forms of appraisal requires both an explicit normative focus on issues of rights and equity, and a broadening out of the inputs to appraisal. But even when these demanding imperatives are taken together, they are still not enough. Appraisals are conducted by particular groups and institutions, and are embedded in particular institutional and governance contexts. As we go on to suggest in this part, more attention needs to be paid – by all those involved – to how institutional processes shape the conduct and consequences of appraisal, through moves towards greater reflexivity in appraisal, and the 'opening up' of the ways in which appraisal 'outputs' into wider process of governance. This needs to be done on a collective as well as individual basis.

REFLEXIVE APPRAISAL

The notion of reflexivity, and reflexive governance, is a prominent theme in STEPS Working Paper 2 on Governance. It also suggests a number of concrete implications for the design of social appraisal, although in the wider literature these implications are sometimes obscured by loose and ambiguous treatments of this rather over-used and hotly contested concept (Voss et al., 2006). To consider the implications more precisely, it is useful to highlight a distinction between reflection and reflexivity in appraisal (Stirling, 2006). Reflection refers to the substantive elements of broader based appraisal discussed in the last section – in the sense that the knowledges thereby constructed and articulated help to provide a deeper, more comprehensive reflectiveness over the systems under scrutiny.

In its more specific sense, however, reflexivity refers to something more than this kind of mere reflection (see Beck, 1992, Adam et al., 2000, Lash et al., 1996). In order to appreciate why, we need to refer back to the key issue of 'framing' discussed earlier. Rather than simply gathering more extensive or deeper forms of knowledge (as implied by reflection), full reflexivity entails acknowledgement that any body of knowledge thereby constructed in appraisal will be conditioned by the ways in which it has been produced. In other words, reflexive appraisal compels attention not only to the object of the knowledge in question, but also to the subjects of this knowledge, and the ways in which their various interests, intentions and institutional positions and contexts can affect the process of knowledge production and use in appraisal.

One way to think about the different motivations and contexts bearing on appraisal is to distinguish between 'normative', 'substantive' and 'instrumental' rationales and imperatives (Fiorino, 1989; NRC, 1996; Stirling, 2005). These concepts apply as much to structured expert analysis as to participatory engagement. Each may be legitimate or appropriate in particular contexts. Any given instance of appraisal may be seen, from different viewpoints, as an example or opportunity for each approach. Yet each holds starkly divergent implications for the appropriate design and implementation of appraisal.

Normative rationales relate to the ways in which processes of appraisal are undertaken, rather than to the specific natures of the knowledges or outcomes which they yield (Pellizzoni, 2003). In participatory deliberation, for instance, normative commitments might relate to broadly inclusive, equitable democratic processes, whether defined in Habermasian (e.g. Habermas, 1975; Renn et al., 1995), Rawlsian (Rawls, 1971; Dryzek, 1990; Bohman, 1996) or other terms. In

more reductive-aggregative, quantitative approaches, the normative commitments concern Mertonian principles of idealised scientific practice, like 'sound evidence' and 'analytic rigour' (Merton, 1973).

Instrumental rationales and imperatives, by contrast, approach appraisal as a means to secure the particular outcomes that are favoured according to some specific set of values or interests (Collingridge, 1983). These may variously take the form of support or criticism for particular technologies, policies or institutions, depending on the point of view.

Finally, substantive rationales and imperatives are also defined with respect to outcomes rather than the process of appraisal. In this case, however, the aims are characterised not by reference to specific values or interests, but in terms of more general publicly-reasoned criteria such as human health or environmental protection (Bohman, 1996).

The point in each case is that reflexivity in appraisal compels explicit acknowledgement of which rationale or approach it is that is being prioritised. This applies both at the level of institutions and methods and at the level of individual practitioners and commentators[12]. In both cases, the challenges are considerable. For institutions constrained by statutory frameworks or responsibilities to particular stakeholders, this can be difficult not only in terms of the required levels of humility, deliberation and communication but also in terms of legal duties, administrative remits or political accountabilities. In the case of individuals, the required degree of self-reflexivity can be in stark tension with principles of professionalism – under which the distinguishing imperative is often seen to lie precisely in disengaging from (and by implication denying) one's own personal subjective context and commitments (Eyben, 2006). On this note, it should be mentioned that this is the reason for the explicit declaration of normative commitment right at the outset in the present paper – though the implications of the particular ways in which the issues have been framed extend far beyond this and present a matter for further acknowledgement and investigation.

Box 9 provides one example of a recent case – involving authors of the present initiative – in which many of these issues came to the fore in discussions over the use of participatory methods.

[12] The authors are very grateful for helpful comments on this point, as on many others, by Robert Chambers.

Box 9: Citizens' juries and genetically modified crops in India

In recent years attempts to encourage greater inclusivity in deliberations on controversial policy issues have involved experimentation with citizens' juries. As one among a number of new approaches to fostering more deliberative explorations of ordinary peoples' views on issues of wider interest, citizens' juries emerged in the US in the 1970s (Rowe and Frewer, 2000). Since then, a range of related approaches have been applied under a variety of names to a broad range of policy issues, including major challenges of radioactive waste management and genetically modified (GM) food production (see www.juryworld.com). Since 2000 a number of such processes have been conducted around the future of farming, and especially the role of GM crops in the developing world, including in India, Brazil and, most recently, Mali (IIED, 2006a). The Prajateerpu citizens' jury in Andhra Pradesh, India, held in 2001 (Pimbert and Wakeford, 2001, 2002), proved the most controversial to date, generating substantial institutional and policy reaction and an extensive reflection on – and reflexivity about – institutional and methodological implications.

A classic citizens' jury process involves a number of key steps. A question is defined, a selection of jurors is made, a panel of 'experts' is invited, a deliberation on the issues is convened, including a cross-examination of expert witnesses, and, finally a judgement is made (Wakeford, 2001) . The overall aim is to encourage a broadening out of debate, going beyond a narrow, closed, expert-driven appraisal process. Through a thorough deliberation of issues, involving a representative group of stakeholders, the end result, it is hoped, is a decision or recommendation which has been tested rigorously by diverse opinions and perspectives. And, with an inclusive approach, it hopefully allows for wider ownership and buy-in to the result. In sum: better, more robust policies and recommendations.

The Prajateerpu citizens' jury process set out to achieve these aims. The jury was convened by a number of organisations, including the Deccan Development Society (DDS) in India and two UK-based organisations – the International Institute for Environment and Development and IDS. The timing and context was critical. The then state government of Andhra Pradesh had launched an ambitious plan for the transformation of the agricultural sector in the state. It had support from international donors, including the UK Department for International Development (DFID) and the World Bank. A core assumption of this '2020 vision' plan was that a competitive commercial agriculture, with GM crops being a key component, would provide the centre-piece of the future pathway for agriculture and

livelihoods. Many local commentators, farmer groups and NGOs objected to such a framing. Other alternative futures were, they argued, possible. In order to elaborate such options a series of short video films were produced which outlined several possible farming and livelihood futures.

A key concern of the convenors of the Prajateerpu process was that the livelihoods of poorer, marginalised farmers, particularly women and those from so-called 'tribal' areas, would be undermined by the 2020 Vision plan. Since they had not had any voice in the preparations of these official plans, it was essential that they be given the chance to become involved in the debate. For this reason the convenors selected jurors purposively rather than representatively across all groups in society, focusing on selection of marginalised groups, largely drawn from project areas where DDS and other NGO partners worked. A selection process was evolved whereby individuals were selected from different communities in different parts of the state. In the end 19 jurors attended, mostly of dalit or adivasi background and the majority women.

The jury process was held over several days, and 13 expert witnesses were invited, including representatives from the state government, Monsanto (who had been carrying out large-scale field trials on GM cotton in the state), a UK farmer opposed to GM crops, and other scientists and NGO personnel with diverse views and technical knowledge. An oversight panel of five was also invited, including a retired Supreme Court judge, officials from donor agencies and some local academics, whose role was to observe the process and ensure effective procedures were followed.

Following the hearing of witnesses, cross-examination and deliberation by jury, a verdict was produced which stated (among other things) that the jurors opposed land consolidation and displacement of rural people, contract farming, labour-displacing mechanisation and GM crops. On the other hand jurors stated how they desired food and farming for self reliance and community control over resources. Overall, they recommended a rejection of the state government's 2020 Vision plan. This provided an ideal advocacy opportunity, and there was substantial coverage of the result in both the local and international media. Follow-up activities included visits by selected jurors to the UK to present the results to DFID, alongside media interviews and a presentation to UK parliamentarians and others.

The Prajateerpu process generated a huge reaction, both in India and the UK, with condemnations from UK and Indian government officials and politicians, some of the witnesses involved, as well as the then directors of the

UK-based convening institutions. They argued that the process was rigged, and did not follow appropriately rigorous procedures to allow a 'balanced' and 'objective' outcome. They claimed that this was 'poor social science' subject to bias, lack of peer review and influence from interested outsiders. They rejected the result and called for the report to be withdrawn.

A subsequent e-discussion reflected on the methodological implications of this discussion (Scoones and Thompson, 2003), asking what lessons could be learned from the Prajateerpu process. While both the advocates and detractors continued doggedly to push their points, other broader methodological issues emerged from this process of reflection. These included:

1. The process clearly did succeed in opening up a previously closed debate. Attempts at censorship after the event, no matter what the limitations of the process, were clearly unproductive, showing a remarkable lack of reflexivity from leaders of reputed research organisations.

2. The 'unrepresentative' selection of jurors was clearly justified, given existing exclusions. This introduced a 'bias', but a legitimate one. Challenges to 'objectivity' are regularly part of the power-plays of knowledge politics, usually deployed by the more powerful against the least. Yet contemporary social science thinking demonstrates clearly how notions of objectivity are deeply associated with context and position.

3. Who convenes a process matters for 'invited participation' of this sort. A coalition of diverse partners encourages a wider ownership of the process and offsets the inevitable position of any organisation and associated key individuals.

4. Effective deliberations always involve argument and often dissent. This is an important part of the process, and by editing out dissenting views and aiming only for a singular conclusion – 'a verdict' – this contention and disagreement is avoided. A more effective option would be to delineate the different strands of argumentation, and avoid imposing simplistic consensus. That there was dispute with the framing assumptions and proposals of the 2020 Vision plan was clear, but there were more nuanced ways of presenting this opposition.

5. The exercise had to be seen as one of positioned 'advocacy' rather than simply 'research'. It had, at least for some participants, instrumental elements (advocating a non-GM pathway) as well as normative ones (opening up participatory debate). There is value in an instrumental, advocacy-focused approach, as long as prior positions and interests are made explicit and their impact on design and outcomes fully reflected on.

6. Extended peer review (cf. Guba and Lincoln, 1994) is important, but not necessarily according to restricted criteria. Peers should include researchers, citizens, development officials and others, and review, critique and dissent should be welcomed.

7. Opening up debate around issues of contested knowledge and policy is never going to be easily resolved in a single, event-focused appraisal process. It is necessarily part of an ongoing and political engagement, which should be encouraged rather than opposed – as both the advocates and detractors appeared to do when the e-forum reflection process on methodology was initiated.

Overall, the central lesson that emerged was the importance of reflexivity – the ability honestly and openly to reflect on framings, assumptions, interests and subject positions – among all parties. Processes that ensure reflexivity add both to the opportunities of inclusion and opening up, but also to methodological rigour and robustness, and ultimately effectiveness.

OPENING UP THE 'OUTPUTS' TO GOVERNANCE

A further manifestation of reflexivity in appraisal is to focus attention on the relationship between an appraisal process and the wider governance structures which shape it, and in which it is embedded (Fischer, 1990; Dryzek, 1990; Pellizzoni, 2001). All the dimensions of broadening out appraisal reviewed earlier have addressed various aspects of the inputs to appraisal (Stirling, 2005). The knowledges included, the perspectives engaged, the methods employed, the options compared, the effects considered and the uncertainties explored are all examples of different kinds of input, in relation to which appraisal might be relatively broad or narrow. The quality of reflexivity, by contrast, draws attention not just to these inputs to appraisal, but also to the outputs to wider governance (Stirling, 2006). In a similar way, outputs may also be broad or narrow, having the effect of 'opening up' or 'closing down' subsequent decision making, institutional commitments or political discourse.

If social appraisal is about closing down, then the aim is instrumentally to assist incumbent policy actors (or perhaps other sectional interests) by providing a means to justify particular decisions or support for decision making processes in general (Collingridge, 1980; 1982). Whether expert-analytic or participatory, the role of the appraisal process lies here in cutting through the messy diversity of interests and perspectives to develop a clear, authoritative, prescriptive recommendation to inform decisions. The output of this kind of closing down in appraisal takes the form of what might be called 'unitary and prescriptive' policy advice. This involves the highlighting of a single (or very small sub-set) of possible courses of action (or policy or technology choices), which appear to be preferable under the particular framing conditions that happen to have been privileged. These framing conditions and sensitivities will typically not be explored in any detail. The outputs will therefore have the instrumental merit of conveying practical implications for policy and a clear justification for decision making (Stirling, 2005).

On the other hand, if social appraisal is aimed at opening up, then the emphasis lies in revealing to wider policy discourses any inherent open-endedness and contingency. Instead of focusing on unitary, prescriptive recommendations, such appraisal poses alternative questions, focuses on neglected issues, includes marginalized perspectives, contrasts contending knowledges, tests sensitivities to different methods, considers ignored uncertainties, examines different possibilities and highlights new options. Under an opening up approach to social appraisal – whether expert-analytic or participatory – the outputs are what might be termed 'plural and conditional' policy advice (Stirling, 2003). This involves revealing systematically how alternative reasonable courses of action appear preferable under different framing conditions and showing how these links between framing and outputs relate to the real world of divergent contexts, perspectives and interests.

Once the general distinction is established between opening up and closing down, then the specific implications for expert-analytic and participatory approaches become clear. In an expert-analytic approach like risk, cost-benefit or logframe analysis, many of the same quantitative methods may be employed in opening up as in closing down mode. But instead of aggregating different metrics, methods and perspectives, an orientation towards opening up makes use of techniques such as scenario (Werner, 2004) and sensitivity (Saltelli, 2001) analysis or multi-criteria mapping (Stirling, 1997b; Stirling and Mayer, 1999) to reveal the implications of different assumptions and conditions. The reporting of deliberations highlights ambiguous findings, contending interpretations and dissenting views (SRP, 2003; 2004). With respect to more participatory approaches to appraisal, an opening up approach would employ pluralistic rather than

consensual discourse (Rescher, 1993; Bohman, 1996; Pellizzoni, 2001; Dryzek and Niemeyer, 2003), with deliberation emphasising the comparing of diverse perspectives rather than the forging of 'common ownership' of a single version. Appropriately conducted, processes such as scenario workshops (Ogilvie, 2002), Q-method (McKeown and Thomas, 1988) and deliberative mapping (Davies et al., 2003; Burgess et al., forthcoming) all offer practical approaches.

Box 10 illustrates one way in which these dynamics of opening up and closing down play out in the specific context of participatory appraisal in HIV prevention.

Box 10: 'Opening up' participatory appraisal in HIV prevention[13]

Approaches to prevention of HIV/AIDS at the community level in developing countries have often been dominated by the top-down provision of information, education and communication (IEC) on the assumption that this will bring about changes in individuals' behaviour. However, accumulated experience has shown that such expert-driven approaches focused on individual behaviour change often have little impact on people's ability to protect themselves from HIV infection.

Realising this, the International HIV/AIDS Alliance and the linking organisations that it supports to work with local NGOs in community prevention programmes, began from 1996 to adopt alternative approaches. These were characterised by two linked features. First, they broadened the framing and hence range of possible inputs to appraisal, by shifting the focus away from the behaviour of individuals towards HIV-related vulnerability within communities. The vulnerability framing opened up a far wider range of possible factors at play, ranging from access to risk-reducing technologies such as condoms, to people's power to make choices, to infection levels within the broader community and partners.

Second, the approaches turned to community members themselves to identify the specific complexes of factors at work in their own local settings. In this they drew on and adapted a range of tools and methods used in participatory rural appraisal, including social maps, discussion groups, Venn diagrams, ranking and scoring, body mapping, life-lines, causal analysis flow charts, and HIV 'wheels' where vulnerabilities are identified as segments

[13] This box is based on Edstrom et al. (2000, 2002).

in a pie chart. Such a 'toolbag' was applied with community members to identify issues of local concern, and their links to sexual vulnerability and HIV/AIDS. Emphasis was on creating and maintaining open deliberation amongst people with different perspectives on and experiences of vulnerability, airing and comparing the diverse views of different groups rather than establishing a single 'community view'. The HIV/AIDS Alliance and its partners realised that such participatory appraisal processes required highly skilled facilitation and attention to intra-community power dynamics to work effectively. Nevertheless in a number of instances, the approach has resulted in highly inclusive processes of project appraisal. These have led into the identification and implementation of projects that move well beyond awareness-raising and individual behaviour change, highlighting a diverse range of practical approaches that respond to people's diverse vulnerabilities as framed and experienced themselves.

In short, these kinds of broad-based, multi-method, participatory approaches to appraisal enable a greater degree of reflexivity over the ways in which the knowledges informing policy decisions are conditional on different framings. Instead of 'closing down' around a particular representation of the issues and perspectives in question, they 'open up' the outputs of appraisal to policy making and wider political discourse.

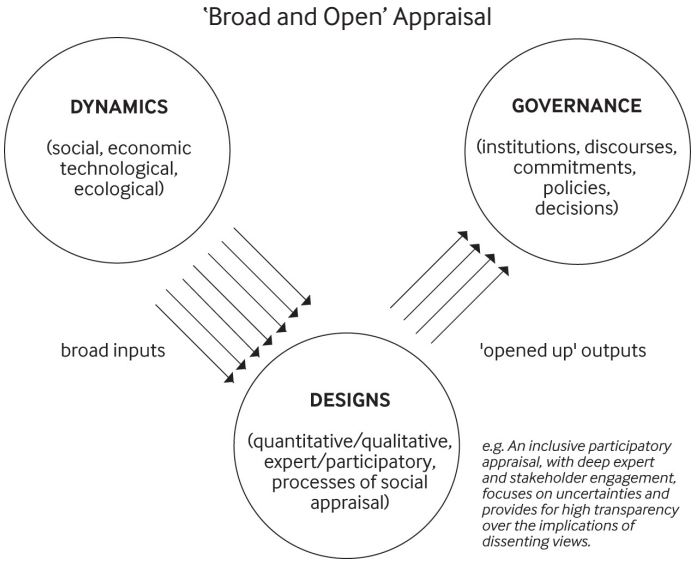
Of course, as with the broadening out of inputs discussed in the last section, provision for more opening up of the outputs of appraisal to governance might be viewed as a dauntingly complex and onerous addition to an already highly demanding activity. The crucial point here, however, is that the complexities and challenges are no less a feature of appraisal where they are denied, than where they are acknowledged. The argument in this paper, is simply that these issues of breadth and openness should be made more explicit in appraisal. This does not mean that time pressures or resource constraints might not sometimes justifiably curtail both the breadth and the openness of a particular appraisal exercise. There is nothing in this analysis that precludes that decisions might be arrived at in a reasonable fashion. The implications of this distinction between opening up and closing down in appraisal, is rather to ensure that any such decisions and commitments, when they are made, be justified not by appeals to some transcendant notion of objectivity or legitimacy of the appraisal process – thus denying the importance of framing. Instead, the thrust of this analysis is that (by highlighting how different disciplines, methods and knowledges rarely speak with one voice), an opening up view of appraisal might serve to make

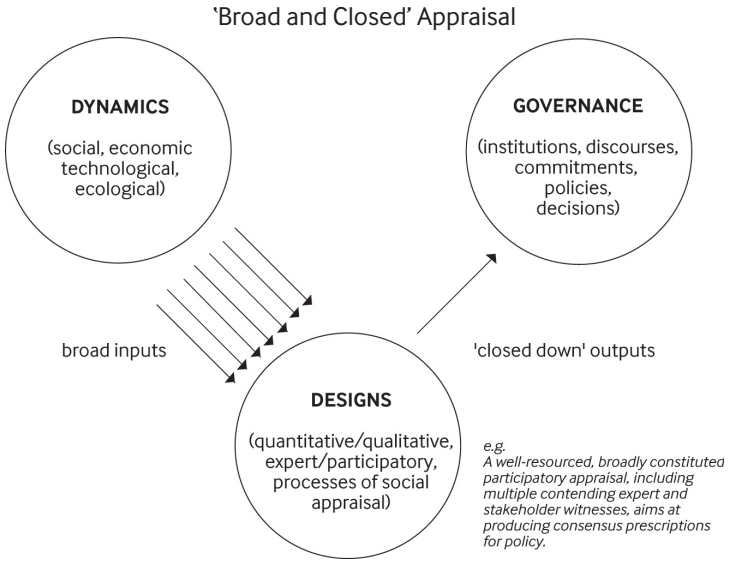
associated decisions more rigorously accountable. Nowhere is such accountability more important, than in relation to the interests of those who are already most disadvantaged and marginalised.

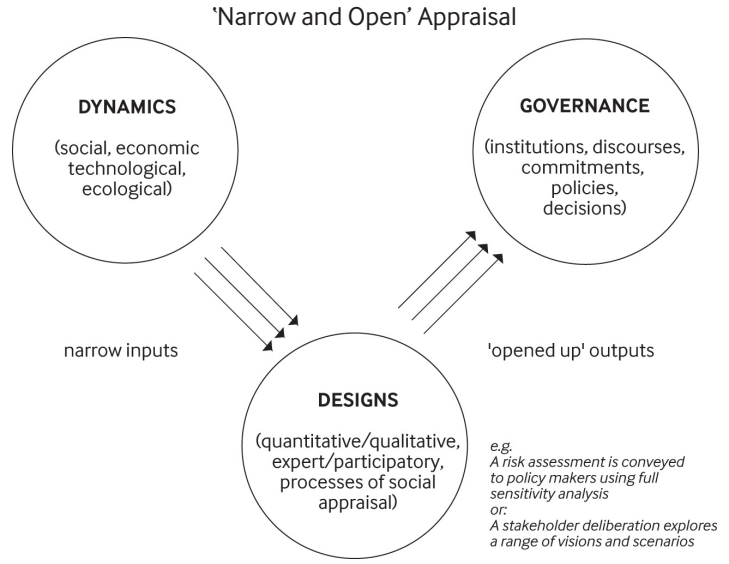
DESIGNING SOCIAL APPRAISAL

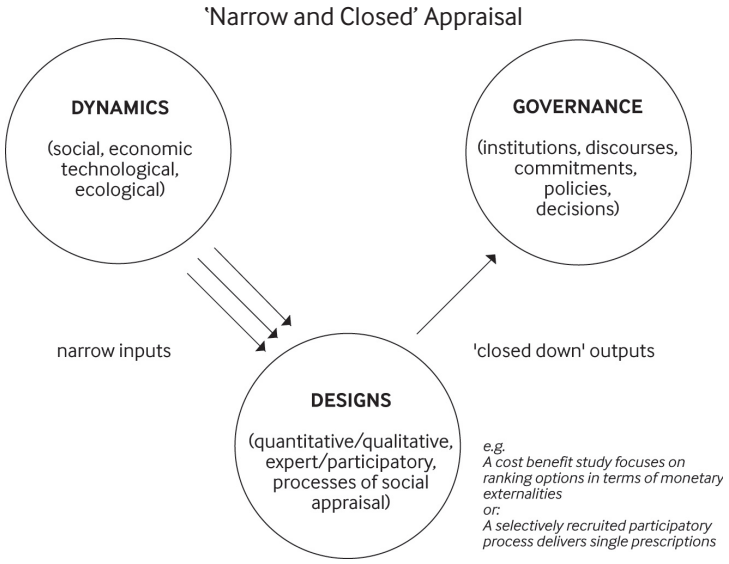
Beyond this general aspiration to facilitate accountability, one further more specific application of the framework developed here lies in the design of particular appraisal frameworks for use in different contexts. Bringing together these discussions of 'broadening out' and 'opening up' appraisal, we can envisage four possible permutations of appraisal approach – depending on the degree to which inputs to appraisal and outputs to governance and decision-making are broad or narrow. Figure 6 illustrates each of these ideal types diagrammatically, together with a stylised example for each.

Figure 6: Permutations of breadth and openness in appraisal




'Broad and Closed' Appraisal
DYNAMICS
(social, economic technological, ecological)
GOVERNANCE
(institutions, discourses, commitments, policies, decisions)
broad inputs
'closed down' outputs
DESIGNS
(quantitative/qualitative, expert/participatory, processes of social appraisal)
e.g.
A well-resourced, broadly constituted participatory appraisal, including multiple contending expert and stakeholder witnesses, aims at producing consensus prescriptions for policy.


'Narrow and Open' Appraisal
DYNAMICS
(social, economic technological, ecological)
GOVERNANCE
(institutions, discourses, commitments, policies, decisions)
narrow inputs
'opened up' outputs
DESIGNS
(quantitative/qualitative, expert/participatory, processes of social appraisal)
e.g.
A risk assessment is conveyed to policy makers using full sensitivity analysis
or:
A stakeholder deliberation explores a range of visions and scenarios



Within this schema designs of social appraisal can be evaluated in terms of the degree to which inputs are responsive to the dynamics of social, economic, technological and ecological systems, as well as the degree to which the outputs offer broad options for policies, institutions, commitments and decisions (governance) (Smith and Stirling, 2006). Different design qualities are evident. 'Breadth' refers to the depth, extent and scope with which appraisal designs succeed in fostering effective reflection over the full character of dynamic systems and diverse knowledges of them. 'Openness' refers to the degree of reflexivity with which appraisal designs convey the plural and conditional nature of relevant knowledges into wider processes of governance.

Figure 7 provides a schematic representation of one way in which a variety of different methods widely employed in appraisal might be grouped in relation to these two dimensions. The fact that cases of more expert-analytic and participatory-deliberative appraisal designs are fairly evenly scattered, with strongly overlapping distributions, shows that contrasts between broad/narrow and open/closed are applicable equally to quantitative expert-analytic methods as to qualitative, participatory, deliberative processes.

Figure 7: A schematic space for examining individual methods in appraisal design

Of course, these idealised qualities are highly coarse-grained as a basis for describing (let alone understanding) the multi-dimensional complexities of appraisal in the real world. Appraisal designs display a host of other stylistic, structural, methodological and contextual features. Likewise, diverse socio-political perspectives may lead the same method to acquire divergent characteristics or interpretations. For example, Box 9 discussed the application of a citizens' jury approach that deployed a fairly well specified methodology, yet was interpreted in highly divergent ways, with some representing the inputs and outcomes as being narrow/closed while others viewed the process as both broad and open (Scoones and Thompson, 2001; Pimbert and Wakeford, 2002).

What are the implications of this framework for thinking about the design of appraisal approaches for the specific challenges of sustainability? Much of the preceding discussion has, in different ways, highlighted the strong value but relative neglect of broad and open appraisal designs. Developing, testing and adapting such approaches in diverse, dynamic settings and exploring ways these articulate with governance, policy and decision-making processes is a major challenge for the STEPS Centre work. Appraisal designs for sustainability will need to attend to various synergies, tensions and sequences in the articulation of different expert-analytic and participatory-deliberative methods, as linked into wider appraisal and governance processes. By analysing significant

tensions and contrasts, and by suggesting new complementarities or synergies, we hope to develop two distinct contributions. First, an enhanced understanding of the key features in appraisal designs, in relation to the dynamics of the social technological and ecological systems with which we are concerned. Second, a more rigorous and grounded picture of how new articulations of different methods might help resolve the problems of current relatively narrow, closed approaches, and so help address the concerns of marginalised communities.

5. CONCLUSIONS

This paper has reviewed the challenges of designing new frameworks for social appraisal aimed at sustainability and social justice. Drawing on (and complementing) parallel analysis set out in STEPS Working Papers 1 (Dynamics) and 2 (Governance), the paper has identified a number of key features of potentially more empowering 'pathways' approaches to appraisal.

An overarching challenge lies in the tendency for poorer people to be systematically marginalised and excluded by the power relations and governance institutions within which appraisal is conducted. Such problems are compounded by the fact that the dynamics of the social, technical and ecological systems affecting the poor are highly path-dependent, typically presenting many possible future pathways rather than a single obvious course. Each alternative pathway may suggest possible benefits, but not all of these are realisable – and certainly not all together. The ways in which such pathways actually unfold is highly complex, with interlinked social, ecological and technological changes that are hard to understand fully or predict. Particular challenges are presented in achieving interventions that are stable and durable (with regard – respectively – to shocks and long term changes in the systems themselves) and resilient and robust (in relation to shocks and longer terms changes in their contexts). As argued in Working Paper 1 on Dynamics, these qualities can be seen to form the main elements of sustainability. Even where there exists a political will, therefore, the challenges of complexity and dynamic path dependency often make it difficult to act in favour sustainable outcomes for the poor and marginalised.

The paper has argued that incomplete knowledges of these systems extends well beyond the conventional problem of 'risk' – as addressed in established 'science-based' techniques like risk assessment, cost-benefit, decision and logframe analysis. Rather, we face many situations of true uncertainty – in which

there is no firm basis to assign probabilities, so these techniques are formally inapplicable. In addition, we face problems of ambiguity, where the possible outcomes are also indeterminate or contested, and we must deal with the challenge of ignorance, acknowledging persistent exposure to unknowns and the inevitable prospect of surprises. Together, these distinct but inter-related states of incertitude mean that our knowledges of the determinants and implications of different possible future pathways are often mutually incommensurable (in that they are differently-constructed and context-dependent). In particular, it means that there often exist serious questions not only over how to achieve a better reflection of the interests of the poorest groups in appraisal, but sometimes also over what these interests may actually be.

Against the background of uncertainty, ambiguity and ignorance, appraisal is deeply conditioned by a multitude of framing effects. This applies as much to qualitative as to quantitative methods and to participatory as well as expert processes. Some of these framing effects reflect the particular contexts in which the methods are applied, others relate to inherent features of appraisal procedures and structures themselves. Crucially – as addressed also in Working Paper 2 on Governance – appraisal processes and outcomes are particularly susceptible to the exercise of power. This is true both of the deliberate and the inadvertent effects of individual privilege, cultural hegemony, institutional authority, political influence, economic leverage and physical domination. Accordingly, almost all conventional appraisal designs tend (intentionally or not and in different ways) to close down decision making – by understating, marginalising or even excluding the importance of incertitudes and framing effects such as to further marginalise the interests of the poorest groups.

The second part of the paper discussed some of the practical responses to this major series of challenges – first involving different aspects of a 'broadening out' of appraisal. These include drawing on a diversity of knowledges, especially the knowledges of those who stand to be most affected. They include extending the scope of appraisal to consider a range of different options for action; considering a wider array of complex and indirect possible effects; and triangulating by using a variety of different disciplines and methods. With reference to a variety of concrete methodologies, the importance of addressing a full range of associated uncertainties and ambiguities, as well as the potential natures of associated unknowns, was emphasised.

Together, it was argued that these responses offer better ways to help move towards more progressive outcomes for the poorest groups, and to ensure their stability, durability, resilience and robustness. At the same time, however, ap-

praisal should be designed to focus constantly on issues of equity, the rights of those who stand to be most affected and the ways in which power can operate to thwart these ends, both in appraisal and in wider governance.

In the final part of the paper, some provisional conclusions were sketched concerning the best ways to achieve more empowering appraisal designs – displaying all the features developed earlier. Relating this to current debates over 'reflexive governance' reviewed in STEPS Working Paper 2 (Governance), the distinction between 'reflection' and 'reflexivity' in appraisal was highlighted, arguing that both are necessary for empowerment in appraisal. In short, reflexivity implies not only a broadening out of the inputs to appraisal, but also an 'opening up' of the outputs to wider governance.

These contrasting dimensions of breadth (of inputs) and openness (of outputs) lead in turn to the identification of a range of options for the design of appraisal, which properly address the challenges of sustainability. Although the implications may in places be highly demanding on existing practice, the demands are intrinsic to the challenges of sustainable poverty reduction, rather than to any particular perspective. Though some of the prescriptions may appear onerous, there is no necessary implication of delay. Rather, the force of the analysis presented here points as much to the ways in which policy interventions are justified and rendered accountable, as to the time or resources required in their development. In the end, we suggest that it is only through these new designing visions, that appraisal can offer steps forward towards more empowering and sustainable progress in meeting poorer people's needs.

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