

## **Project management and environmental sustainability**

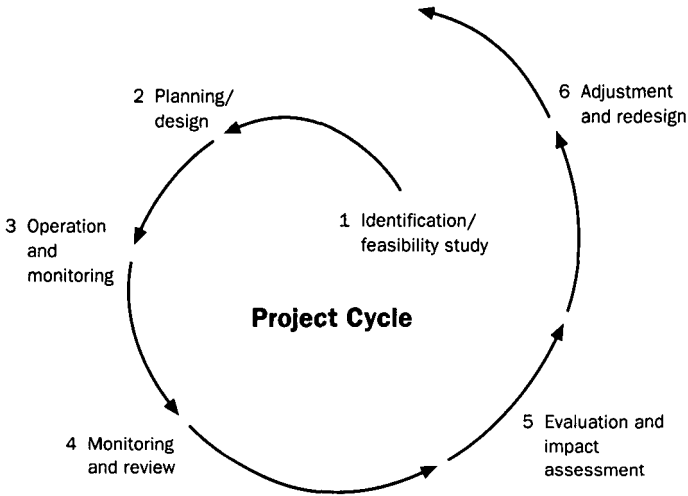
In this chapter, the management of projects is discussed from two particular perspectives: that of environmental sustainability and that of poor people's participation in development processes.

Projects are 'a scheme of something to be done', and essentially an instrument for organisations of people to reach a certain goal within a given time-frame.<sup>1</sup> Projects are an instrument for the management of people and resources, efficiently and effectively – to achieve agreed goals. They are a cornerstone of development as it is practised by NGOs, governments, and commercial enterprises alike. They may be what NGOs or grassroots groups 'do' in small villages or urban neighbourhoods, but they may also be popular campaigns or a series of lobby activities aimed at changing public policy.

The literature on project management distinguishes stages in what is generally known as a 'project cycle' and is sometimes described as a 'project spiral'. This upward or positive spiral might also be seen as a learning spiral. The project cycle can be divided into a number of stages, as Figure 4.1 illustrates. The stages in this cycle are essentially the same in all project management, whether in the private sector, the government sector, or the NGO sphere, although some of the language may be used slightly differently.<sup>2</sup>

At every stage of a project, it is critical that negotiation between stakeholders reaches some level of consensus. There is generally a marked difference in this sense between the small-scale, community-based projects of NGOs and grassroots organisations, and the large-scale development projects that are funded by governments and banks and often run by commercial enterprises. Section 4.1 touches upon such larger projects from the perspective of lobbying and campaigning. It asks what needs to be done to make large projects more accountable to affected people and prospective beneficiaries, and to make them more benign in environmental terms. To that end it discusses the Environmental Impact Assessment (EIA) of large projects, which is an important instrument in decision-making processes and

**Figure 4.1:** The project cycle



influential in policy making. EIA presents opportunities for NGOs and grassroots groups to access good information and influence what are often potentially harmful developments from both social and environmental perspectives.

EIA also offers some ideas for tools that are useful for NGO project management. In section 4.2 a practical perspective is taken, with a discussion of what to address in order to improve projects from social and environment perspectives. This section does not go as far as discussing in detail *how* to stimulate participation, facilitate negotiation, assess or measure environmental variables, but it gives a general picture and provides pointers for asking important questions in this regard. It thus gives an overview of EIA-type guidelines for small-scale, community-based projects. The special situation of humanitarian disasters and the (project) approach needed to assess and mitigate environmental impacts are discussed in sub-section 4.2.3.

Section 4.3 takes us back to the sustainable livelihoods framework by looking at the elements of the framework that are the most obviously influenced by projects. It identifies the critical questions that the framework helps us to ask, and the impacts that can be expected of projects. Following on from chapter 3, this section elaborates on aspects of stakeholder participation and consultation in various stages of projects, and discusses how participation determines project aims and indicators for success, and also the implications of popular participation for environmental sustainability. The section presents a 'hybrid'

approach which makes use of learning about popular participation, the sustainable livelihoods framework as a tool for analysis, and some aspects of EIA also. In the final sub-section the recovery of livelihoods and rehabilitation of environmental resources is discussed, referring back to the more precarious of situations and more extreme forms of poverty and deprivation.

## **4.1 Environmental Impact Assessment: large-scale projects**

In this section the common way of assessing potential environmental impact of big projects is discussed, and the implementation of environmental management plans. This is of particular interest for those who want to influence local policy processes, stimulate the participation of citizens in decision making, and claim their rights to information about often negative impacts on livelihoods and environments.

### **4.1.1 Screening, scoping, and full EIA**

With the growth of concerns about the environmental impacts of large-scale developments such as dams, the expansion of manufacturing industry, the construction of whole new towns, irrigation schemes and highways, planners looked for ways to mitigate these impacts, but within certain financial and economic parameters. Environmental Impact Assessment (EIA) was developed for that purpose and has now been adopted by the majority of countries, in the North and South; and development banks and bilateral development agencies have adopted internal guidelines to this end.<sup>3</sup>

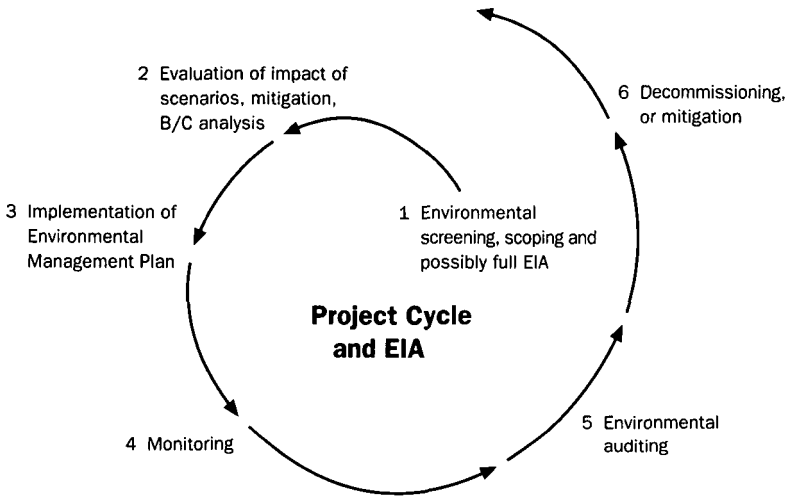
EIA can be seen as an add-on to the project-management cycle, and indeed steps or stages are usually distinguished in parallel to the stages of the project cycle. However, the focus of EIA is on the identification, planning, and design stages, early in the life of projects (see Figure 4.2). The first steps in this EIA-project cycle are the most critical ones, and they are what literature and practitioners focus on.<sup>4</sup> They are also the moments when many important decisions are made by technical experts without much (if any) public involvement.

#### ***Environmental screening***

The earliest step in EIA is usually called environmental screening. It aims to assess proposed projects against some basic criteria, in order to decide whether further investigation of potential negative environmental impact is necessary at all. This stage makes use of checklists with types of projects that are likely to have significant adverse impacts on environments, as in the example from the Philippines overleaf.

**Figure 4.2:** The project cycle and Environmental Impact Assessment

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### **Environmental screening criteria in the Philippines<sup>5</sup>**

Legislation about Environmental Impact Assessment was established in 1978. The following types of project are defined as environmentally critical and therefore in need of a full EIA:

- heavy industries
- resource-extractive industries
- infrastructure projects.

Projects in the following critical areas may also require a full EIA:

- national parks, watershed reserves, wildlife reserves, and sanctuaries
  - potential tourist spots
  - habitats for endangered and threatened species
  - areas of unique historical, archaeological, or scientific interest
  - areas traditionally occupied by ethnic minorities or tribes
  - areas frequently affected by and/or hard hit by natural calamities
  - areas with critical slopes
  - prime agricultural lands
  - recharge areas of aquifers
  - water bodies.
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Further criteria to determine whether some type of in-depth environmental analysis is actually necessary include project size and cost, and the level of uncertainty regarding potential impacts. Most (government, development) agencies require this early step to result in a brief screening note that is kept on file. The note would contain an explanation of the main environmental risks and set out what the next steps are, which could be to initiate a full EIA or to take an intermediary step: the commissioning of a less detailed study, usually called Environmental Analysis.

### **Scoping (or Environmental Analysis)**

In the scoping stage, potential environmental impacts are identified in more detail, without embarking on an elaborate study. General and secondary data are collected (which will function as important baseline data), and the most significant potential environmental impacts are determined on the basis of expert experience and consultation with local people and other stakeholders. Qualitative statements dominate this assessment. Scoping should lead to terms of reference for a detailed assessment of environmental impact (if that proves to be necessary), but will already provide the basics. It makes use of checklists of the possible impacts of certain types of projects. It should also access data from Geographic Information Systems (GIS) that provide and overlay maps of various kinds, including maps of local demography, topography, hydrology, and soil quality, and maps displaying climate factors like rainfall. Scoping or Environmental Analysis tends to focus on a limited number of environmental issues.

In the scoping stage, an aid to visualising the potential environmental impacts of the proposal may be provided by diagrams of various kinds, including *network diagrams*, *problem trees*, and *systems diagrams*, all of which show relationships between (potential) environmental changes, their implications, and project activities. Particularly well known is the Leopold matrix, in which both the *magnitude* and the *importance* of possible impacts of proposed project components (on one axis) are scored in relation to particular aspects of the environment (on the other axis), as in Figure 4.3.

### **Full EIA**

If projects are big and costly, and deemed to have significant impact on environments, a full Environmental Impact Assessment (EIA) needs to be initiated through the earlier stages of screening or scoping. EIA is usually a multidisciplinary study, making use of detailed field research that is specifically commissioned. In most countries, formal guidelines have been published by a specialist government agency, providing criteria for deciding whether an EIA needs to be initiated, and, if so, how it should be conducted.

**Figure 4.3:** Outline of the ‘Leopold matrix’ for the scoping of environmental impact

		Proposed/possible project activities			
		Road construction	Oil pipeline installation	Dam building	Etc.
Environmental characteristics	<b>M=magnitude I=importance of possible impact 1=low; 10=high</b>				
	Ground water quality	M I	M I		
	Forest cover	M I	M I	M I	
	Local air quality	M I			
	Etc.				

An EIA focuses on the most important potential impacts; detailed physical, biological, and chemical data will be collected, use may be made of simulation models, and experts dominate the process. Through the process of EIA, a number of scenarios with a range of potential environmental impacts are usually formulated. The negative environmental impacts of these scenarios are predicted, sometimes with the aid of ‘risk analysis’ that uses quantified potential impacts and statistical methods. Certain mitigation measures are normally evaluated as part of the formulation of alternative scenarios.

A detailed assessment of the potential environmental impacts of various scenarios needs to be accompanied by a statement of financial benefit-cost ratios, and usually some unquantifiable benefits and costs too. Benefit-cost

(B/C) projections include the environmental costs and benefits of the original proposal and of the range of possible mitigation measures (see also sub-section 2.2.4 on environmental economics). The actual EIA process involves costs that are generally below one per cent of total project cost (or below 0.5 per cent in very large projects, where economies of scale operate). Mitigation measures in response to negative impacts often involve costs too, and they may be well above one per cent of the total, for example the cost of equipment to reduce air pollution from factories, or the costs incurred by adopting longer trajectories for new roads in order to bypass sensitive wildlife habitats. Both the actual EIA and the mitigation measures often result in financial benefits too. Including environmental externalities and improving the quality of local people's environments and health, or protecting existing livelihoods, does in many cases make economic sense, even by conservative standards. Higher energy efficiency, reduced water contamination and soil pollution, less disturbance of landscapes, conservation of forests, and so on may imply reductions in immediate expenditure, savings in terms of future clean-up costs, and measures to safeguard the sources of livelihoods of people who do not benefit from the project. For example, highly polluting industries may cause diseases or even cost lives, destroy livelihoods of fisher people, and necessitate large repair or clean-up undertakings at some future date: EIA and mitigation costs should be off-set against the benefits that stem from preventing pollution and other environmental degradation.

A summary document that is sometimes called an Environmental Impact Statement then plays a central role in decision making (this is step 2 in Figure 4.2), usually carried out by government officials and financiers, and only sometimes with the direct involvement of local people (who are nevertheless in many cases the most negatively affected).

### ***The use of EIA guidelines***

Recent research has shown that the many EIA guidelines that are now available are not as effective as their authors will have hoped. Policy makers, advisers, field officers, and consultants appear to use them at best occasionally, or not at all when their use is not obligatory. Guidelines are perceived to be weak because they lack legal status, because they are often constrained by lack of time and inadequate financial support, they are too technical and/or bureaucratic, and because they focus almost entirely on negative (potential) impacts. They rarely convey 'best practice' and they do not respond to all the needs of the users, such as direct guidance on the formulation of terms of reference for EIA studies, assistance with training, and technical guidance. Furthermore, by their very nature, guidelines will appear inflexible, and sometimes they do not demonstrate the practical experience that should underlie their recommendations.

Obviously all guidelines can be criticised, and they cannot serve all the possible goals that different users may want them to serve. Research also suggests that there are important gaps in the guidelines that are currently available, for example a lack of customised guidelines for particular types of stakeholder and for specific contexts, such as small-scale and community-based development projects (see section 4.2). However, it has been argued that improvements in the practice of EIA might not come from rewriting guidelines or adding new ones, but from 'better institutional organisation and management'.<sup>6</sup> In addition to that conclusion, it seems obvious that ethnic-minority groups who are potentially affected by plans for mining of their lands, or urban slum dwellers who are threatened by industrial expansion, yet are well organised and articulate in their approaches to national or local authorities, can demand that, as a minimum, the national guidelines should be applied as the law or public regulation stipulates.

### ***Statutory and organisational requirements***

EIA was promoted in the 'Rio Declaration', one of the core outcomes of the UNCED in 1992 (see also section 2.1.2 and Appendix 1), and most countries have adopted national legislation in which the use of EIA or similar processes is made mandatory for projects with strong potentially negative impacts on the environment. Thailand and the Philippines were among the early adopters of such legislation in the late 1970s and early 1980s. However, countries vary widely in the demands made by their national laws, for example in terms of public consultation and information, and there is also great diversity in terms of national capacities to enforce legislation and regulation.

This diversity of legislation and mandatory procedures cannot be summed up here, but national procedures are usually summarised in literature and should be accessible to interested parties in a particular country. Studies of the effectiveness of legislation in developing countries show some common problems with EIA, besides enforcement difficulties. They include a lack of funding; very limited popular participation; a lack of guidance materials; excessively centralised EIA authorities; limited national capacity in terms of data availability, technical skills, and research facilities; and various ways in which authorities are co-opted by the business interests in large development proposals.

Most bilateral development organisations (governments of donor countries), UN agencies, and all the large development banks have produced and formalised internal EIA requirements in their procedures for project appraisal and implementation. These processes need to be matched, obviously, to national requirements, but that seems rarely to be a problem. In fact, where international funding is available for projects, the resource constraints and some of the other problems with EIA tend to be less

pronounced. Nevertheless, internal World Bank studies and assessments of EIA effectiveness show that in these cases also there are many shortcomings.<sup>7</sup> These include a general lack of monitoring and auditing of actual environmental impact, which implies a missed opportunity for learning by all involved.

#### **4.1.2 The Environmental Management Plan and its implementation**

The scoping (i.e. Environmental Analysis) and/or a full EIA having been conducted, and a decision about the preferred project scenario having been made, an Environmental Management Plan (EMP; see step 3 in Figure 4.2) is written up and agreed. This plan articulates the agreed environmental aspects of project implementation, monitoring, evaluation (or audit), and – if relevant – decommissioning of infrastructure. It may articulate the following.<sup>8</sup>

- Mitigation measures that are to be taken to minimise negative environmental impacts.
- Measures that enhance environmental benefits.
- Environmental risks and uncertainties.
- Environmental legislation and standards that are relevant to the programme.
- Institutional support for and from agencies with regard to environmental management.
- A monitoring and auditing programme.
- Details of consultation and participation of various stakeholders.
- Resources and budgets that are required to implement the EMP.
- Contractual arrangements.

#### ***Monitoring***

Monitoring of project implementation and operation should be done over the life of the project (see step 4 in Figure 4.2). Monitoring may be the responsibility of a sector Ministry, local authorities, or the national EIA authority, and will normally be led by the actual project-management structure or organisation. A good monitoring plan specifies locations for monitoring, and indicators and methods for assessing them. Monitoring needs to be both rigorous and feasible, and may include qualitative criteria that are informed by participatory research methodologies, in particular with regard to the social impacts of the project.

#### ***Auditing environmental impact***

An environmental audit may be done at a later stage in a project, and is similar to or part of a review or evaluation (step 5 in Figure 4.2). The purpose of an audit is to establish the actual environmental impacts. EIA guidelines normally do not seek to support both planning and post-project impact

assessment: rather, they concentrate on the former, while it is the latter that can be expected to contribute most to institutional learning and improving practice. Learning from audits towards the end of the project or after the project is phased out happens in only few cases.

An audit is most useful on industrial sites where pollution increases over time. It should be related to environmental standards, laws, and licences, and it will uncover liabilities. Further mitigation of environmental impact, such as the clean-up of polluted areas, may be proposed as a result of an audit. In countries where the particular liabilities are not clearly articulated in national legislation, environmental audits can serve as very important ammunition for campaigners, if the results are made public.

The term 'environmental audit' is also used by organisations and enterprises that operate in other contexts. Their performance may not threaten the environment, may not be big, and may not be of major concern to the government or activists. Nevertheless, an audit tends to uncover ways in which environmental impacts and often costs can be reduced, and sometimes it leads to net savings. For example, analysis of energy use in an office block can lead to investments in energy-saving bulbs; the existence of a market for waste paper can make separate collection and paper recycling cheap or lead to modest gains; and fairly traded products can strengthen their appeal to consumers with guarantees that products, production methods, and packaging materials are 'environment-friendly', organic, or sourced from recycled materials. These kinds of audit tend to be voluntary and may be regulated by parastatal organisations or business associations.

#### **4.1.3 Participation in EIA and citizens' rights to information**

The discussion of EIA has so far focused exclusively on environmental impacts, and on processes and decision makers that virtually exclude local people and the social impacts of developments. There is, however, a clear trend to widen EIA to encompass social-impact assessments, and to promote the active involvement of various stakeholders.<sup>9</sup> EIA legislation and regulation usually does stipulate that the public has certain rights to information and consultation, even though that may not be widely known or recognised by all civil servants and private enterprises involved.

There are thus legal and also moral rights that entitle affected people and others to be involved in decision making regarding potentially harmful developments. More pragmatically, it has also been argued that a range of practical benefits may be produced by participation. Such benefits may include (a) improved data arising from local knowledge, (b) improved focus on relevant issues, (c) better response to the needs of the stakeholders involved in the EIA, and (d) a reduction in costs, contingent upon reduced

incidences of conflict and communication failure. Stakeholders in EIAs include the local people in whose environments proposed development projects take place, the enterprises that propose the projects, various levels of government, and beneficiaries such as the users of electricity that is generated from power stations or from water reservoirs behind dams in rivers. Development NGOs, business associations, and academics are often important, as are national associations for the protection of wildlife.

EIA is usually not really participatory, but it is consultative to some degree. Agencies conducting EIAs seek advice, organise public hearings, interview people, and in some cases invite representatives of stakeholder groups to serve on some form of panel or commission that oversees the process. Nevertheless, analysis of EIA practice suggests a number of constraints that inhibit the substantial involvement of stakeholders in EIAs, including the following.

- 1 Stakeholders are all too often short of time and money.
- 2 Low literacy levels and language differences may cause problems, because EIA results are often presented in complex reports and are not expressed in the local vernacular.
- 3 Insensitivity to gender-related matters during consultation processes and women's weak participation in decision making often mean that their voices are unheard during EIA.
- 4 Cultural differences and communication problems are particularly pronounced between indigenous people and non-indigenous experts.
- 5 Political and institutional cultures of decision making are often authoritarian, and officials may perceive citizens' groups and NGOs as threats.
- 6 Mistrust between other stakeholders, in particular between private-sector developers and citizens' groups, may limit popular participation.
- 7 Ineffective project management may cause EIAs to start too late in the project cycle and cause a lack of co-ordination between departments or sectors of the organisations involved.
- 8 Conflicting rights to manage natural resources, leading, for example, to land disputes, may enhance controversies between modernisers and those who want to maintain local and/or traditional livelihoods.
- 9 Ambiguity in legislation and guidelines complicates attempts to encourage better consultation.
- 10 The scale and complexity of projects, such as the Flood Action Plan in Bangladesh, may be so huge that citizens can no longer confidently engage with them.<sup>10</sup>

These constraints are hard to overcome, in particular by the most marginalised stakeholders, such as people who are displaced by dam building. They are, however, not unique to the EIA-aspects of large projects, and local action, supported by national and international networks and funds, has in some cases achieved much change. Polo Petrolândia, for example, a Brazilian NGO, has campaigned since 1979 for mitigation of the devastating social and environmental effects of the Itaparica dam in the São Francisco River. This huge dam displaced tens of thousands of people from the area of the reservoir upstream of the dam. The displaced people were given empty promises of compensation of various kinds for the loss of their land and livelihoods, following the completion of the dam in 1986. However, so far full compensation has not been paid. The lobby work of Polo Petrolândia has nevertheless led to important concessions from the government and the World Bank (which was the main financier of the dam), and a regional investment plan of US\$290m in compensation was pledged a few years ago. The work of Polo Petrolândia was strongly informed by EIA studies that were done under the guidelines of both the national government and the World Bank. Further lobbying will have to ensure actual investment in accordance with the promises, but the coalition of Polo Petrolândia, local groups, and national groups with some international support may do just that.

## **4.2 Environmental Impact Assessment of community development projects**

The effectiveness of conventional EIA in small-scale, community-based projects has been questioned, in part because it is difficult for rigid government-led or business-led processes to involve local people.<sup>11</sup> Other criticism regarding its application in NGO-type projects is also unsurprising, namely that EIA tends to fail to identify socially differentiated impacts and that it is usually meant to minimise negative environmental impact, instead of enhancing positive impacts on both people and their environments. NGO projects often target the poorest and most vulnerable women and men, and in many cases they are concerned with regenerating and sustaining environmental resources in order to improve health and increase livelihood opportunities. EIA costs may also be prohibitively high in the context of low-budget projects. Nevertheless, there are cases where the methodology is useful, for example where very limited negative impacts of many individual community-based projects add up to significant impact when put together.

This section gives a flavour of internal environmental assessment processes and guidelines of and for NGOs. It presents an overview of the

potential environmental impact of small enterprises, which is accompanied by an example of the environmental impact of small engineering workshops in Bangladesh. In the final sub-section, project responses to mass displacement are discussed, and the question of how negative environmental impacts can be mitigated.

#### **4.2.1 EIA guidelines for community development projects**

Some bilateral agencies have produced or are preparing EIA guidance for NGOs, in part in order to enable them to comply with the planning procedures of donors,<sup>12</sup> but this guidance often concentrates on minimising harmful impacts. Existing guides or manuals on EIA (or, better, *environmental screening* or *scoping*) for low-budget projects are not necessarily participatory in their approach, may cover just a few of the great diversity of sectors addressed by NGOs, and are not usually incorporated in NGOs' mandatory planning and evaluation procedures. There are also indications that where guidelines exist they are not used often. In short, guidelines for small-scale projects appear to suffer from many of the same shortcomings as their counterparts for large projects. Nevertheless, EIA, and in particular environmental screening, does offer checklists that have proved to be useful in situations where experts are not available and development workers need to be confident that a full range of questions about environmental resources is being asked.<sup>13</sup>

##### ***Guidelines for screening and scoping***

Below there is an example of generic practical guidelines for rural community-based projects, produced by the Canadian Council for International Co-operation (CCIC).

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#### **CCIC guidelines for environmental screening of NGO projects<sup>14</sup>**

This 'kit' presents the very basics of potential environmental problems and solutions, and checklists with key questions related to (a) domestic water supply and sanitation, (b) irrigation, (c) small dams and reservoirs, (d) pesticides and integrated pest management, (e) coastal ecosystems, and (f) dryland agriculture. It is thus geared to address rural problems.

It explains how to incorporate environmental aspects into the project cycle:

- (a) define the goals and objectives of the project;
- (b) identify alternative methods to achieve those goals and to minimise negative impact on the environment;
- (c) evaluate the costs and benefits of the alternatives;

- (d) select the best project design (maximise benefits for the people, minimise costs to the environment); and
- (e) incorporate a monitoring programme.

This is not fundamentally different from conventional EIA, albeit that costs are here not expected to be simply expressed in monetary units. The underlying assumption still seems to be that environmental impact is always negative and must therefore be minimised. However, the guidelines do provide ideas for alternatives, like the use of non-chemical pest-control measures.

The kit mentions eight 'sources of information', including local villagers, farmers and residents, and suggests for this the use of Rapid Rural Appraisal (RRA) methods – in other words, it promotes a consultative approach (compare this with other forms of participation in the typology in section 3.3.1). It provides many annotated references and addresses of organisations in Southern and Northern countries that work in the field of environment and development.

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There are also cases where guidelines for small-scale projects were developed for specific contexts. An example of this is guidelines produced for the Independent Development Trust in South Africa, which deals with urban and rural community projects that range from the building of health clinics and schools, the construction of urban housing and water and sanitation systems, to rural energy supply and agricultural development. These guidelines consider social and economic impacts too, give some technical support, and provide pointers to relevant laws and organisations in South Africa. They are surprisingly brief on the issue of *whom to involve*, and they do not offer suggestions for *how to involve* beneficiaries or other stakeholders.<sup>15</sup>

Sector-specific guidelines, or guidelines for certain ecological and social realities, have also been developed, with increasingly strong notions of the need for participation by local people. Good examples come from the World Conservation Union (IUCN) and the International Institute for Environment and Development (IIED).<sup>16</sup> IUCN focuses on nature conservation in relation to community development, and IIED on gender, participation, and environment, and, with collaborators, on soil-fertility management, all with a strong rural bias. These guidelines provide many practical tools for assessing local ecosystem properties, social relations, people's needs, and environmental change; they are often based on PLA (RRA/PRA) diagrammatic tools<sup>17</sup> and earlier ideas from so-called agro-ecosystems analysis.<sup>18</sup>

### ***Internal guidelines for NGO project appraisal***

Most NGOs have long assumed that the negative environmental impact of their projects is negligible, but some anecdotal analysis in the early 1990s suggested that appropriate guidelines could be useful.<sup>19</sup> In 1991 Oxfam incorporated a question about environmental impact in its grant-appraisal procedure. The question is ‘... *what will the environmental impact of this project be (where relevant)?*’. Policy aims related to sustainable livelihoods were reflected in a one-page set of guidelines for the staff responsible for answering this question.<sup>20</sup> These guidelines are not a checklist, but they propose six fundamental questions, which reflect the sustainable livelihoods framework. In fact, these questions can be asked in any situation of appraisal, in the project-identification stage, during planning, grant assessment, monitoring, or evaluation. The questions are reproduced below.

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#### **Initial questions for sustainable livelihoods analysis**

When thinking about **natural resources** (*such as water, agricultural land, rangeland, urban land, air, forest, flora and fauna*), and **human-created resources** (*such as shelter, water supply, sanitation, health-care systems, schools*), you could ask yourself ...

- What resources are important in local livelihoods?
- What is the quality of those resources? (*e.g. soil fertility, drainage potential, pasture quality, accessibility and quality of hospitals/schools, congestion, sanitary conditions, etc.*)
- Who uses which resources? (*women, men, children, disabled, ethnic groups, social classes, etc.*)
- Who controls decisions about how these resources are used?
- Who is helping to sustain local resources, and who benefits from this?
- And how will the situation be affected by the project?

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These suggested questions were distributed widely among Oxfam staff, but brief surveys suggested that four years later they were not being used extensively, even though almost half of all Oxfam grants have some direct bearing on environmental resources.<sup>21</sup> The relevance of these questions in relation to the sustainable livelihoods framework and the implications of ‘merging’ EIA with participatory approaches to appraisal and learning (in several stages of the project cycle) are discussed in section 4.3.

Partly for reasons of cost, few NGOs appear to have adopted more than very basic internal procedures for pursuing environmental sustainability in

their development programmes. NGOs may learn from bilateral development agencies and UNDP, who published a brief and accessible *Handbook and Guidelines for Environmental Management and Sustainable Development*. This publication outlines basic criteria for project screening and makes suggestions for preparing 'environmental management strategies' (see also chapter 5).<sup>22</sup> See below for a summary of what the guidelines propose with regard to project management. They reflect a structure very similar to what was outlined in section 4.1 on conventional EIA for larger projects.

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## **Summary of UNDP project management (environmental guidance)**

### **Step 1. Project identification**

Check against environmental criteria that come from the Environment Overview of the Country programme (EOC).

### **Step 2. Project formulation**

At this stage an Environment Overview of the Project (EOP) must be prepared, which (a) describes the natural environment of the project area; (b) gives details of the three most important environmental issues; (c) describes economics and the environment in the project area and how the project will affect this; (d) highlights environmental management capacities and laws in the area; (e) describes potential impacts on the environment and socio-economic impacts; and (f) proposes alternative project designs to mitigate environmental degradation and to take opportunity of environmental potential.

### **Step 3. Screening proposed projects**

A checklist of project types helps to decide whether additional information is required, or changes to the proposal are necessary, or a detailed Environmental Management Strategy (EMS) is needed.

### **Step 4. Improvement following project appraisal**

If necessary, the EMS is prepared at this stage.

### **Step 5. Project approval**

Approval happens if the steps of this process have been taken satisfactorily. Some questions that help this consideration are (a) Has the EOP been prepared? (b) Does the project document include actions to

protect and conserve the environment? (c) Have sources of positive or negative environmental impact been properly identified? (d) Have those who will be affected by the environmental impact been properly identified? (e) Does the project include environmental mitigation measures? (f) Have potential conflicts of interest been properly addressed?

### **Step 6. Project implementation**

Environmental criteria should be considered when selecting project advisers and implementing agencies.

### **Step 7. Project monitoring and evaluation**

In annual reviews and monitoring efforts, reference must be made to the EOP and EMS, and unanticipated negative and positive environmental impacts should be noted.

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There appear to be no standards to determine what environmental impact is acceptable or desirable in UNDP project proposals, or in EIA guidelines produced by larger agencies and national governments, or in the little that is formalised by NGOs on the subject of environmental impact. In as far as standards or criteria exist, they amount to standards of procedure – of good practice – and not standards of actual environmental impact. This is probably a very good thing: it is important to agree *how to* improve environmental sustainability, and it is impossible to generalise what environmental changes are ‘good’ in all contexts and according to all key stakeholders. Nevertheless, governments around the world have set standards for maximum permissible pollution and for tree planting following commercial logging. These standards are important, and commercial undertakings as well as NGO projects should respect them.

### **NGOs and environmental data**

A lack of access to environmental data is a key problem for small NGOs and grassroots organisations, and also for many of the larger international NGOs that embark on environmental assessment with the help of the above key questions or checklists and technical manuals. NGOs are rarely well linked to meteorological services, they do not usually know where to get aerial photographs, and they have few if any means to make technical assessments of pollution. Nevertheless, data are often available; satellite images may be captured from simple receivers; and the internet provides more and more geographical data (see Appendix 2 for several data sources and websites). Data are often available ‘somewhere’, in Ministries or larger development

programmes, and accessing them may be just a matter of exercising some persuasion. Generating data is likely to be prohibitively costly, but basic assistance may be all that is needed for interpreting existing data, and that can prove invaluable.

During a review of a food-security programme in Niassa, Mozambique, five-day rainfall totals were obtained from a local meteorological station that had been functioning for the greater part of the previous three decades, despite war. The data were used for basic assessment of relative drought-stress for crops; they correlated directly with farmers' explanations of (recent) droughts and good agricultural years. This was important information for assessing project impact, because it expressed the comparative importance of climatic factors to project innovations with regard to crop yields.<sup>23</sup>

For the participatory assessment of land-tenure and ownership disputes in northern Tanzania, aerial photographs were photocopied and enlarged from a scale of 1:60,000 to about 1:45,000. The original photographs dated from the early 1970s – and thus pre-dated major resettlements of rural people in Tanzania. The photocopies were collated with tape. The resulting quality was obviously extremely low, but some villagers still managed to interpret them. They were used as an aid in an attempt to make a large sketch-map of the community (including pastures and forest), which served as a basis for discussion. Cross-checking the photographs with the map and with statements by local Maasai people about land claims and claims to hunting rights in the buffer zone of a national wildlife park greatly enhanced understanding of the problems by NGO staff from outside the area. NGOs support the local people in campaigns and legal cases to reclaim what are rightfully their pastures.<sup>24</sup> Some of those legal cases have now been successfully concluded.

#### **4.2.2 Environmental impact of small enterprises**

Small enterprises are increasingly important for generating employment in both urban and rural areas of developing countries.<sup>25</sup> They are crucial suppliers of consumer goods to local markets, and increasingly to foreign markets too. They also provide essential capital goods for infrastructure development and other production, for example the output from brick-making and metal-engineering workshops. It is often assumed that 'small scale' equals 'no environmental problem', but there are many grounds on which that could be challenged, in particular in the manufacturing sector. Nevertheless, small-scale and NGO-supported projects are rarely considered for a full EIA or an elaborate scoping exercise, either at the planning stage or later, retrospectively. Consider the case study below, which is one of few examples of such an exercise (see also section 3.1.1).

## **EIA of 'informal' engineering workshops<sup>26</sup>**

A rare example of the use of a conventional approach to EIA in an NGO project is ITDG's support for small-scale engineering workshops in Bangladesh, known as the Dholai Khal project. In fact, this EIA is more like an audit of existing enterprises, and a means to provide baseline data for a three-year project aimed at improving the workshops.

The impact on the environment of 68 existing workshops, most of them with between five and ten employees, was assessed at the outset of the project in 1998. The EIA methodology was mostly that of a normal scoping exercise. It included mapping of land use with the aid of GIS (geographical information systems), the collection and analysis of soil, air, and water samples, and measurement of noise levels. The EIA team also held extensive consultations with several stakeholders, and through observations and discussions assessed waste production and waste re-use. The study found that the aggregated impact on wider environments is not negligible but extremely hard to quantify, spread thinly over a larger area, and not a cause for particular concern. There is some waste production and pollution, but that is not significant when set against 'background pollution' of the densely populated area and the traffic on the roads where the workshops are located. Still, all the workshops combined do have cumulative effects on the environment, probably comparable to the water contamination and air pollution and waste production of one larger enterprise with the same total production.

However, important health and safety issues must be addressed. Workers have eye problems from unprotected welding, respiratory problems from exposure to metal dust and heat, eye and respiratory problems associated with paint aerosols, and skin diseases associated with the use of oil and toxic chemicals. Workers are exposed to electrical and fire hazards, which are in part related to space constraints, and fire hazards are also important for others in this densely populated area. Workers' appreciation of all these hazards is very limited. The environmental management plan – that is, the recommendations emerging from the study – included various mitigation measures related to the occupational risks and also to the environmental impacts. Central to the improvements is the inclusion of messages regarding health and safety risks in skill-training programmes.

This case study confirms some of the objections against EIA in community development projects, for example the fact that it was expensive in the context of the overall project, and that, despite interviews and consultation, it remained difficult to engage workers and workshop owners in thinking about the notion of 'environment' at all. Nevertheless, in

this case the methodology does not appear to be wholly inappropriate, because it has identified important issues that need to be addressed, in particular in connection with health and safety, and as a result waste production and pollution are likely to be reduced as well. Workshops may also make financial savings from such changes, following only minor investments. The study has played an important role in the early stages of the project and has helped to determine strategies for the training of workers and other project activities.

A known limitation in transplanting EIA to NGO-type projects is that EIA guidelines normally do not seek to support both planning and post-project impact assessment: they concentrate on the former. It is the latter that can be expected to contribute most to institutional learning and improving practice. NGOs need to learn from practice, in particular because of their limited financial resources available for training staff, hiring consultants, and contracting out planning exercises.

The ITDG project in Bangladesh has planned to assess the environmental impact of the workshops (including the occupational hazards) again after a project period of three years. The study has not been set in a wider framework, like 'sustainable livelihoods', but the overall project does consider a broad context. Gender-related factors were identified (most owners and workers are men, but not all), and further gender study has been initiated. The main aim of the project concerns improvement of human, financial, and social capital – the latter in terms of support for an association of the workshop owners.

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In general terms, the environmental impact of small (manufacturing/processing) enterprises should be considered in relation to the following factors:

- resource use (water, fossil fuels, and other sources of renewable energy, agricultural products, capital goods, chemicals);
- space use (and noise pollution);
- occupational environment (health and safety);
- pollution (of air, water, land; with (for example) dye effluent, oil, or fumes from welding);
- waste production (and waste re-using and recycling).

In most cases, the latter three are of central importance for the environment and for the employees and enterprises, as we saw in the case history from Bangladesh. They are also usually the ones where most can be done to reduce environmental and occupational risks without negatively affecting financial returns.

The small-scale, informal (i.e. unregulated, often unregistered, or even illegal) manufacturing sector might actually be seen as large, because in many countries it forms a very important part of the manufacturing sector, if not the larger part. Environmental impacts of many small enterprises could thus be compared with the aggregate impact of the few large enterprises in the same sector. In manufacturing or, for example, food processing, it cannot be assumed that 'many times small' is better for environmental quality than 'one-time large', but comparisons entail practical and methodological problems. Production processes on different scales usually make use of different technologies, and measuring the impacts of small units can be prohibitively expensive and time-consuming. Different production processes (leading to the same product) can also affect the environment in different ways. Research by ITDG found, for example, that brick-making in Zimbabwe in large enterprises produced more carbon dioxide (CO<sub>2</sub>) per unit product than such activity in small and medium-sized enterprises, but large enterprises contribute less to land degradation. The latter is the case because large enterprises do not use fuel-wood and thus do not contribute to deforestation. Instead they use coal, which pollutes the air with sulphur dioxide (SO<sub>2</sub>).

Small enterprises are often unregulated and even unauthorised, which makes accessing them and assessing their impact a sometimes controversial process. Fragile, small, and emerging businesses often perceive regulation as inhibiting their chances of developing successfully. Government standards that aim to limit pollution, regulate risks to health and safety, and set down rules for resource-use will often be perceived negatively as uneconomic hindrances, rather than as offering positive support to small entrepreneurs. Implementation of standards is also generally ineffective where authorities would need to deal with a large number of small enterprises, yet have very limited capacity. Indeed, exemption from all sorts of standards is often made official for enterprises with a small number of employees. Nevertheless, impact on the health of workers, on environments, and (indirectly) on the health of neighbours and future generations, impacts on flora and fauna, the quality of life, and other people's livelihoods can be significant. At the same time, a lot can be done with increased awareness and knowledge to limit impacts without affecting productivity and the immediate financial returns of the enterprises.

Criteria or indicators to judge progress in this sense should thus be mainly related to trends and processes, rather than to externally set standards and limits. For example, when introducing new skills to metal workers, attention can be paid to health and safety and to simple ways to limit pollution and re-use waste materials. Financial incentives can also be used in order to

improve working conditions and reduce pollution and waste production. A further important way of reducing negative environmental impact is through 'voluntary compliance'. This could be the result of peer pressure from similar enterprises (united in industrial associations or artisans' organisations) and pressure from consumers, neighbours, and authorities: a 'stakeholder' approach to enforcement. Following a training programme or other support activities, it may be possible to establish a trend among workshops in a particular sector to adopt those practices and indeed to reduce negative environmental and occupational effects. This can be done through a number of in-depth interviews, simple observations, and perhaps a brief questionnaire survey. Success or failure can often be assessed without elaborate soil sampling, air testing, or other physical measurements.

#### **4.2.3 Mass displacement and environmental quality**

We have been considering well-planned development projects, but a wholly different situation arises when large groups of people are displaced as a result of war or some other catastrophe. In these cases, the very highest priority must be accorded to human safety and survival. That has environmental aspects too; 'the environment for survival' and human vulnerability are briefly discussed in section 2.3. Furthermore, the responses in aid of displaced people are projects themselves, even though planned and implemented in haste.

International NGOs such as CARE and the German bilateral development agency GTZ have made attempts to assess the environmental impacts of refugee movements and also the effectiveness of mitigation responses by relief agencies. Some NGOs have developed very basic guidelines for their internal appraisal processes, aiming to ensure at least a minimum of consideration for environmental resources, but few initiatives have achieved much. In 1994 the UNHCR produced draft environmental guidelines for use in work with refugees and also host populations and environments.<sup>27</sup>

#### ***EIA in crisis?***

The UNHCR does not present a version of Environmental Impact Assessment (EIA) for refugee settlements, but the guidelines do display some EIA characteristics. In fact, EIA is not fully relevant for refugee situations in its original form as a project-planning and decision-making tool. This is in part because refugee movements are largely unplanned, so that responses cannot be easily planned either, although preparedness and precautionary measures are taken in most cases. A more important problem is that the EIA methodology was designed for project planning, whereas in situations involving refugees (and camps) the need to assess the impact of the actual

arrival of the refugees is more important than assessing the impact of the project, i.e. the response effort. EIA was also designed to do cost-benefit analysis of environmental changes and mitigation efforts, which is extremely difficult in refugee situations and immediately encounters controversial questions about the price of human life.<sup>28</sup> The UNHCR guidelines do, however, promote the assessment of costs and benefits of measures that mitigate negative environmental change, but primarily from a perspective of financial efficiency.

The four best-known tools of EIA still have some useful application in assessing impacts on the environment, to inform programme adjustment and the formulation of mitigation measures at later stages of the emergency.<sup>29</sup> These are (a) checklists to identify possible environmental impacts; (b) matrixes that show project activities and potential impacts (the 'Leopold matrix', see section 4.1); (c) network diagrams that show causal relationships and/or spatial distributions of environmental change; and (d) maps that combine factors such as demographic, rainfall, soil, and topographical data. A problem with the latter in particular is that the availability and quality of data are often very limited, despite advances in the use of aerial photographs, satellite imagery, GIS, computerised databases, and access to the internet (by the UNHCR in collaboration with others).

### ***UNHCR guidelines on environmental impact***

The UNHCR guidelines were finalised in 1996 and complemented by specific guidelines on domestic-energy use, forestry, and livestock keeping in refugee situations. UNHCR has also appointed special officers in important operations. Humanitarian agencies (that is, mostly international NGOs) with a focus on refugees normally work under UNHCR co-ordination at field level and may thus be expected to take note of those guidelines. National and also international agencies that work with 'internally displaced' people will find some relevant material in these guidelines too, whether or not the UNHCR is present.

The UNHCR guidelines describe a number of 'principles of environmental activities' that are worth mentioning: (1) differentiate the 'emergency' phase, 'care and maintenance' phase, and 'durable-solutions' phase in deciding environmental activities; (2) follow an integrated approach with other sectoral activities in refugee assistance; (3) stress prevention and mitigation over 'curing' environmental problems; (4) stress cost-effectiveness and net-benefit maximisation of environmental mitigation and repair; and (5) encourage the participation of the local host population, experts, and also refugees. Table 4.1 summarises the 'environmental measures' that the guidelines recommend as options.

**Table 4.1:** Environmental measures in refugee responses (UNHCR)<sup>30</sup>

<b>Institutional measures (UNHCR)</b>	<b>Emergency phase</b>	<b>Care and maintenance phase</b>	<b>Durable-solutions phase</b>
<ul style="list-style-type: none"> <li>• Include environmental concerns in other (sectoral) guidelines.</li> <li>• Promote environment-friendly procurement of goods and services.</li> <li>• Co-ordinate environmental policy with other UN agencies, governments, and donors.</li> <li>• Promote environment-friendly technologies.</li> <li>• Upgrade the environmental database (a kind of GIS).</li> <li>• Train staff in environmental issues.</li> </ul>	<ul style="list-style-type: none"> <li>• Consider environmental aspects in contingency planning.</li> <li>• Include an environmental specialist or 'focal point' in the emergency team.</li> <li>• Establish a working relationship with environmental authorities and other actors.</li> <li>• Conduct a post-emergency assessment.</li> </ul>	<ul style="list-style-type: none"> <li>• Assign an environmental co-ordinator or 'focal point'.</li> <li>• Prepare an Environmental Action Plan and in some cases an Environmental Master Plan.</li> <li>• Establish a local Environmental Task Force with representatives of local authorities, other agencies, the host population, and refugees.</li> <li>• Include environment in budget planning.</li> </ul>	<ul style="list-style-type: none"> <li>• After refugees have left, undertake environmental rehabilitation (with others).</li> <li>• Follow 'development' guidelines of other agencies regarding environmental considerations in local settlement and in repatriation of former refugees.</li> </ul>

The guidelines stress that mitigating what is usually negative environmental impact should not happen in isolation; it should rather be integrated with other sectors' concerns and activities. The guidelines present a range of activities that can be tried in these sectors to reduce environmental impact and in most cases actually improve the sector's efficiency and reduce short-term and longer-term cost, as summarised in the next table. For livestock, forestry, and energy there are now also separate guidelines, which are more detailed and prescriptive.

**Table 4.2:** Sectoral activities to reduce the negative environmental impact of refugees<sup>31</sup>

<b>Sector</b>	<b>Measures to reduce negative environmental impacts</b>
Supplies and logistics	<ul style="list-style-type: none"><li>• Adequate supplies to avoid burden on local environment.</li><li>• Avoidance of excessive transportation.</li><li>• Environment-friendly procurement policy.</li></ul>
Physical planning of refugee settlement	<ul style="list-style-type: none"><li>• Respect the 'carrying capacity' of site and surroundings, e.g. in terms of wood and fodder supply and waste-sites absorption capacity.</li><li>• Avoid environmentally sensitive areas, such as wildlife reserves.</li><li>• Take special measures, including the supply of environment-friendly or sustainably gathered building materials and construction of drainage channels.</li><li>• Avoid radical clearing; protect existing vegetation.</li></ul>
Water supply	<ul style="list-style-type: none"><li>• Carry out adequate assessment of quantity and quality of water resources.</li><li>• Protect water sources against pollution.</li><li>• Control chemicals, including chlorine.</li></ul>
Sanitation	<ul style="list-style-type: none"><li>• Establish a system for the disposal of human excreta.</li><li>• Ensure proper management of waste water.</li><li>• Set up a waste-management system, with special precautions for medical and toxic waste.</li><li>• Take dust-control measures (e.g. provide ground-cover).</li><li>• Take measures to control insects and rodents; include non-chemical methods.</li></ul>
Health	<ul style="list-style-type: none"><li>• Identify potential impacts on health, including vectors, climate, local disease patterns, water supply, and sanitation.</li><li>• Train staff and the refugee community.</li></ul>
Food	<ul style="list-style-type: none"><li>• Provide food that requires less or no fuel to prepare (emergency phase).</li><li>• Promote energy-efficient and low-smoke stoves and utensils.</li><li>• Promote energy-efficient cooking methods, including pre-soaking of beans and whole-grain maize, also (community-based) grinding of grains.</li><li>• Select foods with low transport, handling, and packaging needs.</li></ul>

**Table 4.2:** Sectoral activities to reduce the negative environmental impact of refugees (continued)

<b>Sector</b>	<b>Measures to reduce negative environmental impacts</b>
Domestic energy	<ul style="list-style-type: none"><li>• Promote energy efficiency, in particular through fuel-efficient stoves (first choice).</li><li>• Supply alternative fuels (second choice).</li><li>• Provide fuelwood in a sustainable manner (third choice).</li></ul>
Forestry	<ul style="list-style-type: none"><li>• Assess forest resources and draw up forest-management plan; monitor.</li><li>• Prevent deforestation with site selection and during site planning.</li><li>• Mitigate forest degradation through controlled wood extraction, establishing fuelwood plantations, and regulation of charcoal making, wood trading, and hunting.</li><li>• Rehabilitate forest through tree planting and protection for natural re-growth.</li></ul>
Agriculture	<ul style="list-style-type: none"><li>• Do soil and land surveys.</li><li>• Ensure secure access to agricultural land.</li><li>• Support sustainable ('low-input') farming methods, supply appropriate farming inputs and extension services.</li></ul>
Livestock	<ul style="list-style-type: none"><li>• Determine carrying capacity of camps and immediate surroundings.</li><li>• Restrict livestock in refugee settlements, in order to avoid animal-borne human diseases (e.g. tuberculosis).</li><li>• Reduce livestock pressure on the environment by negotiating or supporting the sale of livestock, slaughtering, alternative grazing land, pasture improvement.</li><li>• Promote health care for animals.</li></ul>
Community services	<ul style="list-style-type: none"><li>• Identify locals and refugees with skills and experience in environmental activities.</li><li>• Encourage the establishment of a local environmental task force, representing the full range of refugee and local community interests; encourage refugees to take part in cleaning and resource protection'.</li><li>• Facilitate interaction and conflict resolution on environmental issues between the local population and refugees.</li><li>• Assist in the mobilisation of refugee labour for environmental projects.</li></ul>

**Table 4.2:** Sectoral activities to reduce the negative environmental impact of refugees (continued)

Sector	Measures to reduce negative environmental impacts
Education	<ul style="list-style-type: none"> <li>• Develop environmental teaching materials and environmental education programme.</li> <li>• Train teachers to deal with environment-related subjects.</li> </ul>
Income generation	<ul style="list-style-type: none"> <li>• Promote income-generating activities that contribute to sound environmental management.</li> <li>• Identify and discourage environment-hostile income-generation activities.</li> <li>• Design and implement environmentally sound vocational training.</li> </ul>

UNHCR has now developed a training module for increasing the environmental awareness of its own staff (UNHCR, 1998d). It complements an important effort to improve the plight of refugees, host populations, and 'the environment'. Nevertheless, there is only scant evidence available that all this is actually implemented *and* achieving reduced long-term environmental degradation. There is no doubt that occupational environmental aspects and (short-term) health concerns are of key importance, and it is thus a reasonable assumption that implementing the above suggestions will help refugees and local hosts immediately. Also, *irreversible* and *long-term* environmental impacts of refugee settlements tend to be limited, whereas the conversion or substitution of natural capital to infrastructure (i.e. *physical capital*; see section 3.2.4) can by no means be called environmentally negative in every case and every sense. In fact, a large influx of refugees in an area with poor infrastructure, inadequate markets, and limited livelihood opportunities may in some ways be a boost for local economic development, although the poorest of the host population tend to suffer from increased commodity prices and reduced quality and availability of environmental resources. Furthermore, guidelines in general, and environmental guidelines in particular, are not used often: the impact of notional policies and good intentions is limited, and real change comes from good management and such measures as encouraging a 'learning culture', even in situations where there is great pressure to deliver practical results.

### ***Participation in humanitarian responses***

Perhaps the most challenging issue, one that is not fully explored in the UNHCR guidelines, is not specifically related to the environment: it is the matter of involving the important stakeholders in genuine participation, and not mere consultation. Limited experience of introducing negotiation and

mediation processes into work with refugees, host populations, and a range of national and international actors suggests that this is a difficult matter indeed. Initial lessons from such experience do not appear to be fundamentally different from what is being learned in 'development' contexts, but they manifest themselves more sharply in highly pressured situations. The lessons include the following:<sup>32</sup>

- High expectations are often generated among people who are invited to take part – expectations that cannot be met by the emergency-response projects.
- Project managers need to be flexible in response to the stakeholders' analysis, especially where participating host populations want support that is seen as 'non-emergency' and outside the mandate of (for example) the UNHCR.
- It is important to cross-check data from multiple meetings, methodologies, and sources, which is a challenge for any good analysis.
- Participatory processes must be managed to ensure the involvement of women, and in general a 'positive bias' towards the weaker stakeholders. Participation costs time.

These are important lessons, but expectations of genuine participation in emergency responses must be kept low, for example because the staff of disaster-response agencies usually have limited experience of using participatory approaches, and because they are always acting under pressure, working against the clock in difficult circumstances.

#### ***Minimum standards in humanitarian relief***

The UNHCR guidelines and the idea of improving stakeholders' participation are about improving practice – doing things better. Important benefits can also come from simply adhering to the recently developed minimum standards for work with displaced people by the so-called Sphere Project, which is a collaborative effort by several relief and development agencies. Table 4.3 shows some examples of key indicators that express *minimum* standards (as distinct from *best* practice).

### **4.3 Projects, participation, and the sustainability of livelihoods**

Following the explanations of EIA-for-community-development projects in section 4.2, it can be said that there still is a strong need for an approach that combines the strengths of EIA with those of participatory approaches, and tools to improve understanding of social relations and interactions between people and their physical environment. A hybrid form of existing approaches and tools is thus required, and some of the literature has attempted to develop that.<sup>33</sup>

**Table 4.3:** Sphere Project: examples of agreed minimum standards for emergency relief<sup>24</sup>

<b>Sector/activity</b>	<b>Examples of indicators/standards with environmental relevance</b>
Water supply	<ul style="list-style-type: none"><li>• At least 15 litres of water per person per day is collected.</li><li>• There is at least one water point per 250 people.</li><li>• The maximum distance from any shelter to the nearest water point is 500m.</li></ul>
Excreta disposal	<ul style="list-style-type: none"><li>• Maximum 20 people per toilet.</li><li>• Toilets no more than 50m from dwellings.</li><li>• Toilets available in public places such as markets.</li></ul>
Vector control	<ul style="list-style-type: none"><li>• Vulnerable populations are settled outside the malarial zone.</li><li>• Vector breeding and resting sites are modified where necessary and practicable.</li><li>• Intensive fly-control is carried out in high-density settlements when there is risk or presence of diarrhoea epidemic.</li></ul>
Solid-waste disposal	<ul style="list-style-type: none"><li>• Domestic refuse is removed or buried.</li><li>• No contaminated or dangerous medical waste left at any time in the living area or public spaces.</li><li>• There is an incinerator within the boundaries of each health facility.</li></ul>
Drainage	<ul style="list-style-type: none"><li>• No standing waste water around water points.</li><li>• Storm-water flows away.</li></ul>
Family shelter	<ul style="list-style-type: none"><li>• If demand for construction materials is expected to cause deforestation, some or all basic materials are supplied to families within two days of their arrival.</li><li>• There is immediate protection of vegetation that is important for erosion control, wind breaks, or shade.</li></ul>
Household items	<ul style="list-style-type: none"><li>• People have access to and make use of fuel-economic, low-smoke stoves, and cooking pots with lids.</li></ul>

**Table 4.3:** Sphere Project: examples of agreed minimum standards for emergency relief (continued)

Sector/activity	Examples of indicators/standards with environmental relevance
Site planning	<ul style="list-style-type: none"><li>• It is not less than 3 metres above the anticipated ground-water table in the rainy season.</li><li>• Land rights and permitted use are firmly established.</li><li>• The site is at least 10km from protected or fragile areas.</li><li>• The site is not prone to tidal waves or flooding, is not situated on land at risk from landslides, and is not close to an active volcano.</li><li>• The site provides 45m<sup>2</sup> space for each person, including infrastructure, shelter, markets, etc., but excluding agricultural land.</li><li>• There are 50m-wide firebreaks at least every 300m.</li><li>• During site planning, trees are spared as far as possible, and measures are taken to protect or conserve forests.</li><li>• Agreed levels of animal husbandry and agricultural activity by the displaced population are environmentally sustainable.</li></ul>

NGOs have made their own attempts since 1992, and this section builds in particular on that experience.<sup>35</sup> The hybrid takes the sustainable livelihoods framework as its main analytical tool, and Participatory Learning and Action (PLA) as its main approach to ensuring that excluded and deprived people take part in decision making; and it uses aspects of EIA to ensure that environmental sustainability remains a core element of change processes. The final subsection addresses situations of recovery and rehabilitation of livelihoods, where reduced vulnerability, rather than sustainability, is the main goal.

#### **4.3.1 A generic approach: participatory environmental assessment**

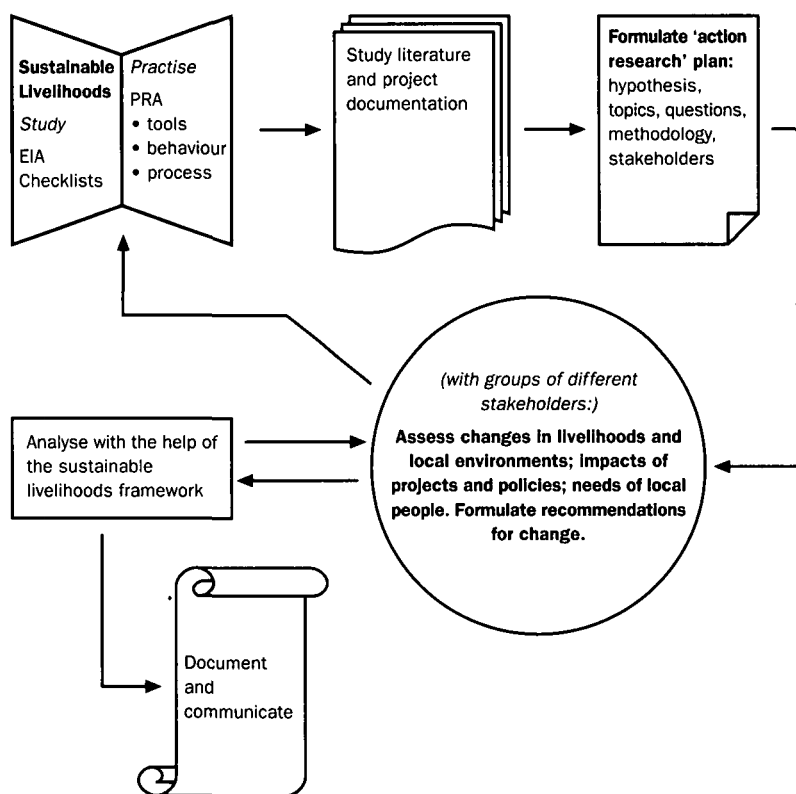
The hybrid approach presented here combines especially the framework of sustainable livelihoods, participatory tools, and environmental checklists. The latter are strong aids for understanding potential and actual, negative and positive environmental impacts. The sustainable livelihoods framework helps

one to ask questions about *what* changed or is expected to change, and *why* those changes (might) happen. It also shows relations between people and various resources (or capitals). The vast literature and body of experience on involving various social actors in projects helps to ensure that change can be pursued in the interests of the most vulnerable and poor people.

### Outline of the assessment process

NGOs have undertaken a number of exercises in which these tools were combined in learning processes with staff, counterpart staff, and also citizens' groups and officials. These exercises were training workshops, project identifications or needs assessments, project reviews or sometimes project-impact assessments, i.e. they happened in several of the stages of the project cycle. They took (and take) broadly speaking the steps depicted in Figure 4.4.

**Figure 4.4:** Participatory Environmental Assessment



In most cases a group of workshop participants consists of NGO staff, and often also some representatives of beneficiary-communities and local officialdom. These participants are generally of mixed background and skills and are composed of roughly equal numbers of women and men. The workshop participants are in fact the 'outsiders' or facilitators (see also section 3.3.2, where a generalised participatory process of analysis is outlined).

The first steps are to acquire a basic understanding of sustainable livelihoods and EIA processes, in particular checklists, which enable the reading of secondary documentation and the formulation of research questions. Some 'dry-run' practice in the use of the tools and behaviour of Participatory Learning and Action (PLA, also known as PRA) is generally necessary.

This group of people then become facilitators of meetings, dialogues, and interviews with various social *groups*, for example women and men from various neighbourhoods or ethnic groups, and particular social *actors*, including local leaders, citizens' associations, and officials at various levels. Sometimes stakeholders are brought together at a later stage to exchange ideas and experiences, which aims to reach a good level of shared analysis of impacts, needs, and/or recommendations for future action. The facilitators use their PRA skills, knowledge of secondary information, and analysis aided by (for example) the sustainable livelihoods framework in order to prompt questions, structure proceedings, and mediate between the stakeholders. Some of them document the findings.<sup>36</sup>

### ***Participation of stakeholders***

Participatory Learning and Action (PLA), also known as Participatory Rural Appraisal (PRA) or (incorrectly) as Rapid Rural Appraisal (RRA), is by now widely known as a methodology or approach used at project level. It has been variously described as a methodology for learning, communication, and research, and it is probably a bit of all of them. There are now vast amounts of literature on PLA, and its strengths and weaknesses are often hotly debated.<sup>37</sup>

Genuine participation of (local) people can be achieved with the use of PLA tools and learning processes through the facilitation of dialogues (also known as 'semi-structured interviews') in which much attention is paid to outsiders' behaviour, good questions, and simple analytical tools (diagrams) that enable the dialogue to focus on a particular subject. PLA tools include mental maps, time-lines that depict historical events, 'Venn' diagrams that depict the relations and power structures of organisations, and various matrices and other aids that enable the comparison of options and the articulation of preferences. The tools are the 'tricks' that can be learned, adapted, and interpreted quickly and easily (see also section 3.3.2 for more on PLA). The best ways to appreciate their finer points are probably to learn by doing and also to observe other people using the tools.

'Behaviour' needs to be understood in two distinct ways. The behaviour of persons who initiate dialogues with stakeholder groups in which tools may be used is of central importance in achieving constructive dialogue, real learning by all involved, and 'trustworthy' data. The behaviour of these often self-appointed facilitators should be to listen to and enable others, prompting them with open and intelligent questions. Of equal importance is the facilitators' awareness of other people's body language: the non-verbal communication of all those present. Sensitive and facilitative behaviour is not easy for all to learn, and it appears to be independent of educational level, social class, or gender: good and bad communicators can be found everywhere.

Facilitating or guiding groups of stakeholders through a process of progressive analysis and learning may, however, be the most difficult of the three aspects of PLA. It requires a good use of authority and understanding of relationships to be able to separate and (later) bring together social actors and disaggregated social groups. Succinct reporting on dialogues is difficult, and bringing several reports together even more so. Triangulating information and opinions from various sources and arriving at trustworthy conclusions that are acceptable to all is arduous, even in the most stress-free and harmonious of cases.

The tools, behaviour, and analytical process that make up PLA have been usefully applied in a very wide range of situations, from organisational analysis and project analysis to needs assessment; they have been used with non-literate people, intellectuals, and bureaucrats; in early stages of projects and in later stages; in the industrialised North and the developing South. The PLA approach can also help to produce large amounts of relevant and valuable information and insights on environmental and socio-political matters, past and present.

However, several aspects of PLA are contested (see also section 3.3.2). It is not always well integrated with existing project cycles, for example, although recently applications of the approach in Participatory Monitoring and Evaluation (PM&E) are being explored with renewed enthusiasm.<sup>38</sup> Experience suggests that enabling the participation of the most deprived and excluded becomes a bigger challenge after the early needs-assessment and needs-identification stages.<sup>39</sup>

PLA is often perceived as limiting participation exclusively to villagers or local people. Also, it may not manage to identify and work with the most important social *actors* and may merely work with social categories such as 'poor women' or 'young men' that are not necessarily socially cohesive and active groups of actors. Although this criticism is not always justified, in practice a broader outlook on key actors and stakeholder participation must be ensured, for which theoretical frameworks exist (see section 3.3.1) and practical training tools have been developed.<sup>40</sup>

PLA does not offer clear guidance on how to ensure high-quality data and trustworthy conclusions. What happens depends very much on the lead facilitators, although possibilities for various forms of cross-checking information ('triangulation') have been explored.<sup>41</sup> PLA became only recently more explicit on the analysis of social differences.<sup>42</sup> Furthermore, it is usually not supported by an explicit analytical framework and, for example, does not address questions about the meaning of (environmental) sustainability, or the relevance of environmental degradation in poverty alleviation. However, interesting work on participatory monitoring and evaluation of environmental change is now being documented, and looks very promising.<sup>43</sup>

### **4.3.2 Livelihood outcomes and environmental impacts**

Concerns that conventional monitoring and evaluation do not always provide good insights into the actual differences made by development activities have prompted development agencies to focus more on project *impact*. An increasing number of development programmes around the world are yielding lessons on how to assess impacts, and recording lasting and fundamental changes as a result of some development activity. Impacts can be changes of any kind, and include changes in livelihoods, in people's institutions, and in policies.

#### ***Indicators of change***

In much current practice of impact assessment, the importance of participatory approaches is stressed, with an increasing recognition that this implies something more sophisticated than merely the participation of a homogeneous group of beneficiaries. It is important to develop (and negotiate) impact indicators and ways to measure or assess those indicators. Impact assessment is concerned with changes both planned and unplanned. It has a strong analytical focus: one critical aspect of impact assessment is to find ways of actually attributing changes to development interventions. Much of this work takes a 'process' approach, conceiving longer-term processes in which multiple stakeholders operate in some kind of facilitated negotiation about changes, attribution of those changes to certain activities or policies, and modifications of development practice. The variables or indicators of change are negotiated in such a process, which means that indicators cannot be fully predetermined, or that agreed indicators may at a later stage be disregarded.<sup>44</sup>

The sustainable livelihoods framework that is discussed in section 3.2 presents a number of desired outcomes of people's livelihood strategies. These are generalised and 'ultimate' changes or improvements, which may be seen as areas or dimensions in which specific indicators are likely to be developed.<sup>45</sup> They include the following.

- more income
- increased well-being
- improved food security
- improved social equity
- reduced vulnerability
- improved sustainability of environmental resources
- secured 'non-use' values of nature.

Related to those livelihood outcomes may be changes such as 'greater livelihood diversity' as a proxy for *sustainability* of livelihoods, which is directly related to the *livelihood strategies* in the framework. In addition, projects may aim at impacts or changes that are intermediate to livelihood outcomes and that relate more to the *capitals* or to the *policies, processes, and structures* in the sustainable livelihoods framework. These desired changes may include strengthened capacities of project staff and beneficiaries to manage environmental resources, improved capacities to enable learning processes such as those associated with PLA, and greater capacities to run people's organisations and stimulate effective networking. Changes in public policies, such as those related to land reform and its implementation, can also be seen as fundamental or structural changes, and therefore as impacts if they are provoked (in part) by a project or campaign.

Important project achievements might be 'better communication between project staff and other stakeholders', 'better data quality', and 'more synergy from project activities' (that is, one project objective helps to achieve another). These are all removed from real impacts on livelihoods, however: they are *achievements* and possibly intermediary impacts, but not necessarily lasting or significant changes as far as poor and vulnerable people are concerned. They thus demonstrate the nature of projects: they are tools for achieving a greater goal.

Desired impacts or livelihood outcomes need to be articulated in detail and in very practical terms in any particular situation, such as a village, a community of minority people, a group of urban poor women, or a geographical part of a country. Indicators that say something intelligent and substantial about whether or not the desired impact of a project is being achieved need to be acceptable for all stakeholders. Roche (1999) writes that useful indicators that tell us something about impact should be both 'SMART' and 'SPICED':

**SMART indicators:** **s**pecific; **m**easurable and unambiguous; **a**ttainable and sensitive; **r**elevant and easy to collect; and **t**imebound.

**SPICED properties of indicator development:** **s**ubjective (stressing the particular position of an informant); **p**articipatory (those who formulate the indicators assess them); **i**nterpreted and communicable; **c**ross-checked and compared; **e**mpowering; **d**iverse and disaggregated (by gender, ethnicity, etc.).

### ***Developing indicators of change***

Impact indicators must be negotiated between different stakeholders, and must be flexible in the sense that in the course of projects they may have to change in the eyes of some or all stakeholders as a result of changing circumstances. Developing indicators of general change and impact can be done with certain practical tools from PLA, in particular through well-being ranking of households within a community or the ranking of communities within a district or province, following the same principle. The 'logical framework', a project-planning tool that is used by donor organisations and increasingly by national government departments and also by NGOs and grassroots organisations, expresses impact or general change-indicators at the highest levels of its hierarchy of objectives; it also makes explicit how intermediary achievements are expected to contribute to the greater goals. Consider the following example.

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#### **Developing impact indicators with NGOs in Honduras**

OCDIH, an NGO from Copan in Honduras, developed a log-frame (logical framework) for its activities. It aims to strengthen organisations in 12 communities, to improve citizen participation and self-management for development and local government, to strengthen a new culture of participation, and to improve soil conservation and sustainable production through farmer-to-farmer exchanges.

Its overall goal is to establish favourable conditions for sustainable human development. This goal and the more specific aims are what would have to be considered in an impact assessment; for that purpose, impact indicators are needed. They articulate indicators of the extent to which women and young people participate in leadership, the dynamism of enterprises, and the existence and functioning of local organisations. Indicators that relate to food security include 'numbers of farmers practising sustainable agriculture and also traditional farming techniques', and 'percentage of families with access to staple food'.

Some of their indicators relate to what the sustainable livelihood framework models under *capitals*, including capacities of farmers' groups and individual farmers in terms of agricultural techniques. The assumption that improved capacity leads to higher levels of food security and sustainability would of course have to be tested, but the link is not unlikely. Impacts on environments *per se* are not made explicit, but environmental sustainability is implied in the use of productive and environment-benign agricultural technologies.<sup>46</sup>

Project managers were asked to rank communities where OCDIH works in terms of their 'relative civil participation'. Occasional questions in the course of ranking (*why is this or that community ranked higher or lower?*) resulted in indicators that included '*OCDIH is comparatively well known in the community*'; '*people participate more*'; '*they forward more proposals*'; '*more productive structures*'; '*better (strong) leadership*'; '*people are more aware of their civil rights*'.

Answers to the *why?* question obviously result in subjective opinion, but the same exercise can be done with other stakeholders and at other moments, and thus cross-checking can increase trust in the resulting indicators. The actual question that initiates the comparing and ranking of communities determines the type of indicators, too. If the communities were ranked in terms of household food security, agricultural production, or environmental security, different answers would suggest different indicators; indeed, such comparing was also done.

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In the example above, indicators emerged from a process of interaction between NGO leaders and representatives of a donor organisation. More negotiation has happened and should happen in similar situations between those and other stakeholders, in particular strong social actors within the communities concerned (representatives of a women's union or a church group, municipal councillors or officials, or a rich landowner). Reconciling and prioritising indicators for practical monitoring and evaluation is then the critical task, which will require negotiation, mediation, and generally speaking a lot of facilitated (and structured) interaction between stakeholders. In such a process, 'positive biases' are likely to be necessary, if intra-household changes are to be valued, if the needs of the least influential groups are to be addressed, and if the most deprived are to benefit from changes in livelihoods and environments.

### ***Attribution of change: impacts***

Assessing changes in a society and in livelihoods and environments of poor people is one thing, but attributing changes to a policy, project intervention, or campaign is more complex. Studies of impact, whether participatory or not, tend to start with an assessment of change, intended or unintended, by valuing the trend in one or another indicator of 'impact' (or better: of change). After this the reasons for that change emerge from combining various data and doing analysis of causal links, possibly structured by the sustainable livelihoods framework. In section 3.1, three comparatively elaborate case histories are presented, which all show some changes and actual impacts.

The study of improved democratic space in Recife showed that, despite the improvements in popular participation in public life and government, the poor in the *favelas* have as yet seen very few material and environmental improvements. NGOs can be credited with enabling people to take part in forums set up by municipal authorities, and some played a role in the national democratisation process. Nevertheless, they need to collaborate more and help citizens to generate the power that is needed to make sure that budget allocations for improvements increase, and that they are actually spent.

The Niassa Food Security Programme (in Mozambique) had an important impact in recovering crop production and thus livelihoods following the civil war, but the impacts on environment, livelihoods, social relations, or policies of the agricultural extension programme are so far limited. Agricultural technology has not changed much (yet) in the direction of developing more sustainable technologies; nor has women's position in the communities and in households improved much as a result of the programme. This is despite enormous changes in the lives and livelihoods of people, which are largely attributed to the possibilities that were opened up for people's own initiatives following the peace accords. Nevertheless, the need for food is still huge, markets are only just emerging, and social and environmental dangers as well as opportunities exist: there is an important role for this participatory programme in helping deprived people to articulate their needs and to find appropriate paths to better livelihoods, environmental management, technology development, and improved food security.

The various development programmes in Lung Vai commune (Vietnam) have had some important impacts, in particular with regard to land-tenure policy. Changes in livelihoods over five years are very significant, and the programmes have played their part. Wives' names are now included in land-use certificates, and improved land distribution as a result of project support has stimulated farmers to invest in land. Nevertheless, government policies are most important in these changes, apart from people's own initiatives. Subsidising agricultural inputs has been decisive in changes to almost all livelihoods, although the gains of the poorest families in increased food production and income have been very small. The marked reduction in shifting-cultivation practices is a very positive development, since the risks of soil erosion have been reduced significantly, which is mainly due to government policy. The programmes have also helped by setting up tree nurseries, stimulating tree planting, and promoting wider agro-forestry activities; but the effects are not unambiguously positive, because unequal distribution of tree saplings suggests that future livelihood inequality may be expected.

Below are two more examples of livelihood outcomes of people's own efforts and the support of development programmes.

## **Examples of rural livelihood and environmental outcomes**

Short-term review processes that are unlike conventional external evaluations are illustrated by assessment of the impact of conservation farming in Kenya, and also by the review process in a large refugee-settlement project in Uganda.<sup>47</sup>

In what is known as **the organic farming programme in Kenya**, Oxfam supports nine local NGOs and collaborates with larger, national NGOs in efforts to develop local capacities. Agricultural technologies were introduced in a context of community organising, health, and women-centred work initiated by local NGOs. A review in 1997 and a sequel in 1999 revealed a range of positive impacts, including better diets, more (independent) income for women especially, fewer risks to health arising from the reduced use of agrochemical inputs, and less dependency on financial capital and suppliers of inputs. The projects are mainly targeted at an 'average' group of women and men: full-time farmers in the (generally poor) communities, including some of the more vulnerable.

The various stakeholder-participants in the review were challenged in many encounters by differences of opinion and conflicting information regarding the effectiveness of conservation-farming techniques and the potential of the conservation-farming approach for achieving fully closed nutrient cycles and 'going organic'. There were some (limited) positive impacts on the sustainability of soil fertility and on productivity of staple foods. The local NGOs and grassroots organisations had little, if any, impact on national research and extension policies, which would be important for the millions of farmers who are not reached by NGO projects, especially given the relatively large resources for agricultural research and extension in Kenya. As a result of the impact review, NGOs began engaging more closely with national and international research organisations.

In **the Ikafe refugee settlement in Uganda**, conflict between local leaders, international agencies, national authorities, and several rebel forces caught many Sudanese refugees, project staff, and also members of the host community in cross-fire (literally). The review process concerning the international and Ugandan efforts to help the refugees was one of negotiation between conflicting interests, supported by various pieces of research and consultation.

Refugees were supplied with small plots of bush land for agricultural production and also the necessary inputs for farming, in an attempt to make them less dependent on handouts. Forest and wildlife were affected by the influx of people, but only to a limited degree, because of comparatively low population densities. Land was made productive

without any apparent risks of soil erosion. Even here, some positive environmental action took place: deforestation and other environmental impacts of the arrival of refugees were mitigated through an afforestation component that was mainly directed towards the local 'host' population.

Nevertheless, here – as in other situations of conflict and breakdown of societies – 'participation' and formal rights to resources were no solution to the problems. Environmental resources (especially land) had become central to a violent power struggle, and poor people who were directly dependent on these resources became more vulnerable; few had a direct interest in considering long-term environmental sustainability.

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***Critical outcomes: participation and sustainability***

The sustainable livelihoods framework describes environmental sustainability as one key livelihood outcome, which acquires particular meaning when we consider future generations, i.e. the children of deprived people, whom most development activity aims to support. In fact, in the schematic framework presented in section 3.2, this means that people who earn a decent living can invest some of their surplus in maintaining and building up the various capitals.

Equally, participation – in the sense of strengthened democracy and the active involvement of deprived and poor people in decisions that affect their lives – may be seen as a goal in itself, or, in other words, as a livelihood outcome.<sup>48</sup> With it, livelihood strategies tend to strengthen and diversify, and material outcomes become more easily attainable. The framework models this interpretation of participation in the civil-society part of *policies, processes, and structures*, because the strength of local people's voice is dependent on national policies and laws. Furthermore, the strength of social networks and the ability of individuals to organise or actually speak out are aspects of social capital and human capital respectively.

Participation and the goal of environmental sustainability both form part of the 'hybrid' described in this section, which suggests that they can and often do mutually support each other.

A process in which decisions are made collectively, or indeed through comparatively harmonious negotiation and compromise between many different stakeholders, must find ways of involving social actors in different ways. In such a participatory process, problems are gradually analysed, in separate groups and together, and solutions arise from research, discussion, and various interactions. These processes are not strictly defined and structured, and decisions emerge gradually from them, instead of being taken at fixed and predetermined moments by particular people. It is no longer

obvious that technocrats prepare a set of scenarios for development, with different impacts in terms of the environment and in other respects, from which decision-makers would choose – as is the case in formalised EIA processes (see sections 4.1 and 4.2). Indicators (and environmental standards) of what constitutes good development practice and desired impact are no longer ‘objectively verifiable’, but they are mostly qualitative and often subjective.

The implications of this for policies under headings such as ‘sustainable development’ can be huge. Participatory methodologies need their own ways of increasing the trustworthiness of data and conclusions, especially through cross-checking information from multiple sources (which is often called ‘triangulation’). When many stakeholders are involved, the aims of just one of them may well be modified, and that can be the strong poverty focus of one actor, or the environmental care of another. This means that some environmental resources may be used unsustainably, or the very poorest in a community may not always benefit from the project, in particular at the earlier stages.

A participatory process in which local (and poor, vulnerable) women and men are central, and in which local NGOs and authorities and possibly national and international organisations have a say, will concentrate on the use and management of *local* natural resources and possibly on national environmental health and well-being. The participatory approach makes it unlikely that international environmental concerns are considered, unless that perspective is somehow added by project management or, for example, national government. Poorer countries, let alone poorer local people, cannot be expected to be very concerned about their contribution to problems such as global warming. In any case, the dominant cause of that phenomenon is high consumption in industrialised countries, where political will is generally not strong enough to curb energy consumption in any radical way.<sup>49</sup> Thus using a participatory methodology has implications for what is called environmental sustainability and for what can be achieved in terms of environmental management at a non-local level. Synergy between environmental care and participation of the poorest and most deprived (or more diverse social groups and actors) is not automatic. Nevertheless, development practice does suggest that, where local women and men do get better access and more control over environmental resources, they start investing in them, and environmental quality and the livelihoods of their children are an important driving force for that.

### **4.3.3 Recovery and rehabilitation of livelihoods**

Both popular participation and environmental care are extremely difficult to ensure and are accorded a comparatively low priority in the extreme situations of conflict-related and environmental disasters (see also sections

2.3 and 4.2.3). However, following the end of war, the return of refugees, the immediate aftermath of an earthquake, or the subsidence of flood-waters, livelihoods are regenerated, and assets and livelihoods are rebuilt. In those situations, popular participation is both important and desired. A path from survival through reduced vulnerability to improved sustainability of environmental resources and livelihood activities is the almost too obvious goal of everyone who is affected by hazards.

Displacement of people, which often occurs as a result of war, is one type of human disaster. People, environments, and livelihoods are also devastated by floods, drought, cyclones, earthquakes, volcanic eruptions, or industrial disasters, which do not necessarily result in large-scale displacement. Common responses in rebuilding rural livelihoods include livestock-restocking programmes, and seeds and tools distribution programmes; in urban areas, rebuilding houses and public infrastructure tends to take precedence. These responses are briefly discussed in this section, through several practical examples.

### ***Recovery of urban infrastructure***

The examples of repairing urban infrastructure given below are responses to 'disasters' ranging from war to flood hazards that are exacerbated by human influence and river pollution. The region of the Rimac river in Peru is also prone to earthquakes. It is suggested by these examples that crucial to the successful reconstruction of infrastructure, the prevention of further disaster, and indirectly the rebuilding of livelihoods is some form of partnership between local authorities, NGOs, and community-based organisations. Good, appropriate technical advice, skill development, and (public) education are also central, as is some kind of 'trigger'. A trigger that sets off a human disaster, like a flood, outbreak of cholera, or earthquake can equally be an opportunity for rebuilding, better prevention, and, in a word, environmental improvement.

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### **Examples of the rehabilitation of urban infrastructure**

Oxfam's support for the rehabilitation of **the Phnom Penh water-supply systems** in the 1980s and early 1990s was an ambitious and unusual programme for an NGO. It was unusual in particular because of the scale (a total of £1.2 million was spent on the project), because it had such a strong civil-engineering focus, and also because it was about collaboration with a government ministry, in which there was very little community involvement. The main aim was to improve health, but the project did not concern itself with the general health situation and the health needs of individual groups. There were differences between

Oxfam's objectives and operational priorities and the Water Works Department's objectives, and the latter had very few skilled people available. In 1990, training became a focus of the project, but the project was phased out a few years later.

A workshop in 1995 which reviewed this experience maintained that there had been a real imperative for Oxfam to do something, since no other donors were committed at that time to supporting Cambodia, where the infrastructure of the capital city had been completely devastated during the Khmer Rouge regime. There was a felt need for a public campaign in the UK to draw attention to the continued suffering of the Cambodian people, who remained caught in the middle of Cold War politics. However, this campaign began to drive the flagship water project: money that was collected had to be spent, and success had to be televised in the UK. A reasonable degree of technical expertise was available in the Oxfam-Cambodia team, but the weight of the expectations created by the campaign in the UK, combined with difficulties in collaboration with the Cambodian government department, resulted in an assessment of mixed success some years after the closure of the project.<sup>50</sup>

**The Rimac river and valley in coastal Peru**, near the capital, Lima, is extremely vulnerable to violent floods, locally called *buacos*. These are floods containing mud, stones, and sometimes rocks that devastate the population and infrastructure of the 'new towns' (*pueblos juvenos*), which are settlements of recent and often poor migrants, in particular in the outskirts of Lima. The floods are exacerbated by changes in land use in the upper reaches of the river. Deforestation for fuel-wood and timber consumption, and human settlements with their houses and streets, reduce the region's water-infiltration capacity, thus contributing to rapid water run-off.

Since the *buacos* of 1983, PREDES, CIED, and other Peruvian NGOs have been working with local residents' groups, government agencies, and universities in an attempt to reduce people's vulnerability and mitigate the flood hazard. The NGOs have architects, engineers, and social scientists on their staff, and they advise community-based organisations (CBOs). PREDES in particular advised on how to construct flood-mitigation structures and riverbank reinforcements with local materials, on choosing safer sites for homes, and also on lobbying the local and national government.

Community organisation has been singled out as the most important factor for success in all this. PREDES indeed evolved from an organisation focused on disaster relief to one that addresses broader social and economic needs of residents.

The year 1991 saw an outbreak of cholera in Peru that developed into an epidemic in 1992; it was associated with severe pollution of this same Rimac river. OACA, a Peruvian environmental NGO established in 1992, also played an advisory role, supporting communities and municipalities along the whole of the Rimac river. The river is the main water-source for one quarter of Peru's 23.5 million inhabitants; it was also their main sewer and an outlet for pollution generated by various industries and agriculture.

Collaboration between mayors of municipalities and OACA led to the first water-treatment plant in the whole of the river basin, located in a small town in the upper reaches in 1995. The approach is holistic, in the sense that technical advice is combined with training and local skill development; the first treatment plant produces water for tree nurseries which are used to help reforestation of the highlands; and recycled sludge is used as fertiliser in agriculture. Solid waste is traditionally dumped in the river, a problem that is now addressed through a combination of collection, recycling, and responsible disposal.<sup>51</sup>

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### ***Recovering agricultural production***

In rural areas, humanitarian agencies often distribute crop seeds and agricultural tools in an attempt to regenerate agriculture-based livelihoods. Good practical guidelines are available for such undertakings.<sup>52</sup> One of the first strategic questions (if not the main one) that needs to be answered in rural livelihoods-rehabilitation work is whether seeds and tools distributions are appropriate at all. This depends on whether food security is a problem; what people's productive means and livelihoods were and are; whether soils and climate are favourable to agriculture at all (land may be mined!); *whose* livelihoods need to be revived; and, above all, on what local women and men themselves think about their needs and opportunities.

Once distributions of seeds and tools are seen as a strategic way of supporting livelihoods, issues such as control of land and access to it need to be clarified and possibly addressed; gender roles and relations with respect to food and agriculture must be understood; and a range of baseline data needs to be collected to enable decision making – as in 'ordinary' project cycles. Baseline data should include substantial information on current food sources and types and cover the breadth of the 'food economy' of communities, households, and women and men inside households. Assessment should involve all important social actors and classes. The decision *not* to proceed with the distributions should remain an option throughout this stage, and the assessment should identify the appropriate main beneficiary group of the project.

Section 3.1 refers to a study of the impact of activities related to food security in Niassa, Mozambique.<sup>53</sup> Oxfam began to work there in the late 1980s, with distributions of clothes and food to people who were displaced during the war. The support included fairly large-scale distributions of crop seeds and agricultural tools in 1993 and 1994, when a peace accord was signed and national elections were organised, when people had started returning to their areas of origin, and when relatively severe climatic drought problems persisted. These distributions of seeds and tools were problematic in terms of logistics but were reasonably successful in operational terms. Some of the distributions were part of goods-for-work schemes, which aimed to repair rural roads and bridges, thus rehabilitating transport systems and marketing routes as well. In 1994 a modest scheme to restock small livestock (goats and pigs) also took place. A review of this four years later confirmed that the survival rate of the offspring of the small animals was reasonable, and a livestock-rotation scheme was set up on a larger scale in 1998/9. The distributions of seed and tools have had a significant impact on the recovery of crop production.

Such distributions do not have to be free of charge, as the example from Mozambique illustrates: rehabilitation after disasters, war, and displacement needs much more than the re-commencement of food production, and some of that may be achieved in goods-for-work programmes. Common problems in these projects are several:

- Often assessment and planning are done in haste, and little participation or even consultation takes place, leading to blueprint 'solutions' and inappropriate projects in which (for example) low-priority crop species are distributed.
- A shortage of food or a lack of trust in the quality of seeds may prompt people to consume them.
- Late deliveries of seeds and low germination rates occur in many projects, the latter often due to a lack of technical expertise and extension.
- Projects do not always achieve differentiated responses to the needs of women and men, so, for example, tools that are culturally inappropriate may be offered.
- Tools of inferior quality have been distributed.

'Seeds and tools' projects aim primarily to restore local food self-sufficiency and rural people's livelihoods based on crop production or livestock rearing. The environmental implications of these projects are not usually strongly negative, but they may be – and they can be positive too. Heavy reliance on conventional agricultural technology with fertilisers and pesticides may be undesirable from the perspectives of production, environment, and health.

These 'external inputs' tend to be unavailable under normal conditions, or inaccessible to the most deprived rural dwellers; they do not support the environmental sustainability of production for anyone. Conversely, recovery of agricultural production may also be seen as an *opportunity* to promote the maintenance of the organic contents of soils, inter-cropping, and other methods of intensification with locally available resources. Genetically inappropriate seeds may be distributed, in particular if the seeds are hybrids that need annual replacement (hybrid seeds are usually highly productive, yet almost sterile as a result of in-breeding). Or seeds originate in different agro-ecological zones, they have low resistance to local climatic, hydrological, and pest conditions, and their widespread distribution can erode local 'gene pools'.

Restocking the animal herds of pastoralists and other rural people with cattle, goats, or pigs is an almost equally common rehabilitation effort, in particular in dry-land Africa. Restocking usually follows a drought in which many animals died or were slaughtered, and in environmental terms it is possibly more controversial than distributions of seeds and tools. Restocking programmes are often very costly, and must respond to challenges that they stimulate herders to acquire more cattle than is permitted by the 'carrying capacity' of the agro-ecological zone, i.e. that they stimulate 'over-grazing'. Some critics also hold that restocking is in fact no more than a short-term solution to an endemic problem of recurring drought, population growth, and cattle increase, and limited natural resources.

However, these programmes do not usually increase livestock numbers in the short term; rather they are a mechanism for redistribution. They are often implemented as rotating schemes, where limited numbers of animals are supplied to some families, who are then responsible for giving the first offspring to others. Most importantly, recent research and changes in theoretical approaches, in ecological science in general and pasture management in particular, suggest that the idea of carrying capacity as a fixed potential is limiting, if not wrong (see also sub-sections 2.2.1 and 2.4.4). Herders generally follow the logic that high numbers of animals and low density of vegetation, combined with dynamic movement of cattle, provide them with maximum security in times of relative drought, and maximum assets and income at other times. This is increasingly thought to be sound practice from the perspective of environmental and economic sustainability, partly because vegetation cover in dry-land zones is extremely responsive to rain (i.e. vegetation recovers quickly), even where all vegetation appears to have disappeared (as a result of herding and drought). Herders are no longer seen as culprits who cause the expansion of deserts. Nevertheless, over-grazing can be a problem, in particular near settlements and water-points: strategies

for spreading people and cattle are then important. In more general terms, for the intensification of agricultural systems, increased numbers of livestock can be a beneficial trend, in particular when integrated with crop cultivation, because cattle can be fed crop residues and deliver dung for soil fertilisation. However, in this case patterns of livestock keeping need to change: fodder is to be brought to the animal, at least some of the time, instead of the animal being taken to the pasture: Of major strategic importance in livestock programmes, and indeed restocking programmes, is the provision of veterinary care, possibly through village-based animal-health assistants and with local people's participation.<sup>54</sup>

In situations of disaster and recovery, the livelihoods framework is not the most obvious tool that development organisations look for, and full participation of local people and other stakeholders in project formulation and management may not be achieved, because of pressures of time and a focus on immediate needs. Nevertheless, good analysis of livelihood needs and strategies is essential, including new livelihood strategies such as agricultural intensification and livestock restocking. As a first priority, people's vulnerability to natural disasters such as drought must be reduced, and the sustainability of their livelihoods can grow from there.