

# Environmental Assessment Sourcebook 1999

## CHAPTER 3

### SOCIAL AND CULTURAL ISSUES IN ENVIRONMENTAL REVIEW

Development projects are intended to modify social and natural environments in order to create or enhance the economic, health, educational and other benefits that are valued by society. This goal, however, can be denied through unanticipated or unintended negative social or environmental impacts that reduce desired benefits or, if severe enough, threaten the sustainability of the project. Environmental review provides an opportunity to identify major environmental impacts so that measures can be proposed to avoid or mitigate negative ones and to reinforce positive ones. An environmental assessment should identify the social changes, evaluate the social costs of long-term continuation of the project, and formulate strategies to achieve the desired objectives. Information on social processes gained through environmental assessment is likely to be useful in other areas of project design.

Social analysis in EA is not expected to be a complete sociological study nor a social cost/benefit analysis of the project. Of the many social impacts that might occur, EA is concerned primarily with those relating to environmental resources and the informed participation of affected groups.

Social changes resulting from projects can have positive or negative, as well as temporary or permanent, effects on environmental resources. For example, in Brazil, large-scale farmers whose lands were expropriated for a dam and reservoir received sufficient cash compensation to purchase replacement farms elsewhere, but the smallholders' shares were insufficient to compete in the steeply rising prices of the local market. The latter had little choice but to clear public forest lands for agriculture. In another case, diversion of water for an irrigation scheme in Mexico killed riverine reeds used by mat weavers living downstream. The unemployed weavers adjusted to this loss by producing charcoal to sell to urban consumers, exacerbating deforestation problems that were already serious. Similarly, the clearing of brush from a river bank for a dam in Kenya eliminated tsetse-fly habitats, which in turn stimulated unanticipated growth of agricultural settlements in the area, which eventually seriously depleted wildlife and exhausted fuelwood in the region.

Frequently in the past, environmental impacts from social change resulting from Bank projects have not been anticipated or systematically incorporated into project preparation and appraisal. The social analysis component of the Bank's EA OD now furnishes the means to achieve both of these objectives.

Chapter 3 is devoted to practical discussion of key issues in social analysis related to environmental review. It provides a description of specific core concerns and an overview of social issues in ecologically sensitive areas. In addition, five topics of particular significance to Bank projects are discussed: indigenous peoples, cultural property, involuntary resettlement, new land settlement and induced development. The EA OD requires that, where they are relevant, these topics are to be explicitly addressed in the EA.

#### CORE CONCERNS IN SOCIAL ANALYSIS

1. Social assessment for EA purposes focuses on how various groups of people affected by a project allocate, regulate and defend access to the environmental resources upon which they depend for their livelihood. In projects involving indigenous people or people dependent on fragile ecosystems, social assessment is particularly important because of the close relationship between the way of life of a group of people and the resources they exploit. Projects with involuntary resettlement, new land settlement and induced development also introduce changes in the relationships between local communities and their use of environmental resources. To identify and assess social impacts that arise in these cases, information is needed in the following areas.

## Variation Within Communities

2. Communities are composed of diverse groups of people, including, but not restricted to the intended beneficiaries of a development project. Organized social groups hold territory, divide labor and distribute resources. Social assessment in EA disaggregates the affected population into social groups which may be affected in different ways, to different degrees and in different locations. Important social differences which may be environmentally significant include ethnic or tribal affiliation, occupation, socioeconomic status, age and gender.

. Ethnic/Tribal groups. A project area may include a range of different ethnic or tribal groups whose competition for environmental resources can become a source of conflict. Ethnicity can have important environmental implications. For example, a resettlement authority may inadvertently create competition for scarce resources if it grants land to new settlers while ignoring customary rights to that land by indigenous tribal groups. These issues are covered in more detail in the "Social Issues in Ecologically Sensitive Areas" section.

. Occupational groups. A project area may also include people with a wide array of occupations who may have diverse and perhaps competing interests in using environmental resources. Farmers require fertile land and water, herders require grazing lands, and artisans may require forest products such as wood to produce goods. A project may provide benefits to one group while negatively affecting another. For example, while construction of dams and reservoirs for irrigation and power clearly benefits farmers with irrigation, they may adversely affect rural populations engaged in other activities living downstream of the dam.

. Socioeconomic Stratification. The population in the project area will also vary according to the land and capital they control. Some will be landless poor, others will be wealthy landowners, tenant farmers or middlemen entrepreneurs. Disaggregating the population by economic status is important because access to capital and land can result in different responses to project benefits. For example, tree crop development may benefit wealthy farmers, but displace the livestock of poor farmers to more marginal areas.

. Age and Gender. A social assessment should include identification of project impacts on different individuals within households. Old people may be more adversely affected by resettlement than young people. Men, women, and children play different economic roles, have different access to resources, and projects may have different impacts on them as a result. For example, a project that changes access to resources in fragile ecosystems may have unanticipated impacts on local women who use those resources for income or domestic purposes.

## Control Over Local Resources

3. All local communities have some degree of sovereignty or spheres of semi-autonomous action regarding environmental resources, whether recognized formally in law or not. Sovereignty is defined here as the actual capability of people to make major decisions regarding uses of natural resources upon which they depend for livelihood. Social assessment in EA begins with sorting out the degree of local control over natural resources.

4. A forest area, for example, may be formally owned by the State and managed by a specialized agency of government. But at a practical level the forest area is often the habitat of local communities which determine to a great extent what happens to the forest. For example, rights to farm land or fish at a favorable spot on the river may be vested customarily in a kin group or village, but such rights may not be recorded or registered outside the area. Rights to use an area which vary seasonally, as when one group grazes cattle on land that another group farms, may not be recognized in law. Community grazing areas may be formally common property for use by everyone, but in fact be set aside for the poorest members of the community. Village wood lots which are legally common property may actually be harvested by families powerful enough to deny access to others. People who are legally landless may actually depend for most of their income upon gathering fuel, grass, medicinal plants and other products on public lands.

## Variation Within Production Systems

5. Obviously, production systems have environmental implications, but the components of a production system are also more complex than they appear to outsiders. A farming system, for example, typically involves management of over one hundred plant species in fields, orchards, gardens, grasslands and forests as well as livestock species.

An important, but often overlooked, farm strategy to minimize risk is to cultivate a mixture of perennial and annual crops (the latter being interplanted and maturing at different times) and to work separate plots of land. Changes in such patterns can have unexpected consequences. Farm families are also often engaged in processing and marketing activities and off-farm wage labor. Fishing communities typically divide production activities between the water, beach and inland areas, with the latter two often providing more than 50 percent of dietary intake. Nomadic pastoralists who depend largely upon their livestock may also own land along their annual migration route, which they rent to sedentary relatives and others.

## Institutions

6. Access to natural resources, decision making regarding use of resources, conflict resolution among competitors for access to resources, and relations with groups outside the local community seeking access to resources take place within an institutional setting. The term institution implies an authority or leadership structure, a set of procedures or customs for handling issues, and a system of incentives and constraints or rewards and sanctions which govern and guide the behavior of people. Depending upon the society, relevant institutions may be village councils, elders of a clan, a religious brotherhood or an agency of local government. They may have customs which are locally unique, as well as elements of cultures with regional, national, and international distribution.

7. It is through institutional structures that individual participation in activities is mobilized and controlled; followers are made responsive to leaders; leaders are made accountable to followers; and competition and conflict are resolved and cooperation occurs. Social assessment in EA identifies the local structure of incentives and constraints that guide and govern behavior with respect to natural resources. This is particularly important to the process of consultation with local communities in conducting an EA, and involves the forging of links between agencies of government (project) and the traditional institutions of the people. Mechanisms to promote community participation in project design are provided in Chapter 7.

## Use of Social Information in Environmental Assessments

8. Social information in the areas indicated above is useful at several levels. First, the information is used to verify or modify existing assumptions about the local population that may be pivotal in environmental assessment. Actual patterns of access to and use of natural resources by local communities, for example, may differ considerably from what people in a capital city believe. Officials appointed to manage natural resources by a central government may in fact have little practical authority and no influence over locally powerful groups. The findings of social analysis may challenge prevailing assumptions and introduce more accurate information.

9. Second, social analysis is used to predict the likely response of local groups to a project. In a hypothetical example, a project requires the resettlement of farming villages from a watershed area where the average holding is 5 ha. Compensation for acquisition of 5 ha is sufficient for the farmers to buy 3 ha of replacement farm land, which is enough to resettle without further project assistance. Disaggregation of the affected population, however, reveals that the average of 5 ha results from a few families owning large parcels while the majority farm marginal plots of less than 1 ha and still others who rent or sharecrop the land. Compensation for less than 1 ha will not be sufficient to buy a plot large enough to support a family. Moreover, fifty percent of the village is technically landless and these families receive no compensation with

which to resettle. One likely outcome would be clearing of forest in the upper watershed for agriculture by the marginal farmers and landless in order to survive.

10. Third, social analysis is useful in the process of formulating social strategies for addressing environmental impacts. Probably the most important individual criterion of a viable social strategy to manage environmental impacts is that it is self-supporting and, therefore, can be sustained by local people when political fashions change. Strategies that require inputs or subsidies from beyond the area usually cease when external priorities shift or when external budgets are otherwise constrained. Equally important, a viable social strategy must fit the social organization and institutional structure of local communities. For example, if social analysis reveals the importance of decentralized corporate groups led by elders who lack authority beyond a single settlement, then an environmental management strategy calling for consolidating control over, say, forest resources under one individual elder would produce resistance on the part of the other settlements.

#### SOCIAL ISSUES IN ECOLOGICALLY SENSITIVE AREAS

1. Development investments in zones of unique biological diversity or ecologically fragile ecosystems, such as tropical forests, coastal and marine areas, may entail significant social changes for human populations whose livelihoods and cultures are dependent upon them. Social changes in communities dependent upon ecologically sensitive areas may lead, in turn, to unacceptable environmental risks. The EA should identify potential social changes which may result in negative and positive environmental impacts and formulate strategies to prevent or mitigate undesirable impacts and enhance positive impacts in ecologically sensitive areas.

##### Relationship to Bank Investments

2. Some human communities have occupied ecological sensitive areas for thousands of years, while others have moved into these areas only recently. Because of the fragility of the environmental resources in ecologically sensitive areas, human populations are normally small and have often not increased in size or density over many centuries. In addition to their small numbers, people traditionally presented little threat to sensitive ecological zones because their production systems were sustainable and resource-extensive, dispersed over a large territory, and they had the power to keep encroachers, poachers and others out of the area. These factors are changing in each of the major types of ecologically sensitive areas. The EA should therefore assess the likely social changes which will accompany a development investment and which have the potential for changing resource access and use patterns in the following areas.

##### Forest Areas

3. Tropical forests and temperate forests in mountain regions are considered by the Bank and others as fragile ecosystems. Tropical forest zones are fragile in part because high annual rainfall is concentrated in brief but violent storms so that areas of even slight slope have a high level of erosion when not protected by vegetation. Temperate forest zones on the steep slopes of mountain regions are also subject to high erosion hazard. Forest cut in zones prone to erosion and other forms of soil degradation can be regenerated only under controlled conditions and at great expense.

4. Human communities in forest areas depend on agriculture, gathering of forest produce, fishing and hunting for the bulk of their diet. They collect resins, seeds, nuts, fruits, roots, fibers, and medicinal products of many kinds for cash income. Social changes introduced by projects in fragile forest areas can entail displacement of people or changes in forest policies and/or resources which require changes in the subsistence patterns of populations living there or the introduction of additional settlements.

##### Coastal Marine Areas

5. Some of the most biologically productive ecological zones in the world are coastal marine areas. They include beaches, sand dunes, estuaries, mangrove and other swamps, marshes and coral reefs. Estuaries, mangroves, marshes and other wetland areas provide the breeding grounds, nurseries and habitats for many major commercial species of shellfish and finfish consumed worldwide. Coastal marine ecological areas are fragile because the complex food chains and life cycles of all species are easily damaged when a few are affected by environmental changes. Thus, dumping urban and industrial wastes or runoff of agricultural chemicals may damage a relatively small area, but the impacts may ricochet throughout the rest of the ecosystem.

6. Development projects that may adversely affect coastal marine areas commonly involve mariculture, tourism, port and harbor improvements, energy generation from dams and thermal power stations, industrial effluent discharges, runoff of agricultural fertilizers and pesticides, and improper watershed management. The abundance of marine resources in certain seasons is marked by scarcity in other seasons, leading to a "boom and bust" cycle characteristic of fishing communities. For this reason, human communities in coastal marine zones traditionally exploit not only the sea but also the beach and inland areas through agriculture, hunting and gathering. As much as half of diet and income may be derived from beach and inland areas of the zone. Women run the communities while men are at sea or working inland during the heights of boom and bust periods. Social changes associated with development investment in coastal marine areas include restricted access to one or more of the sub-zones of the area, over-exploitation of selected species to meet demands of new markets, population displacement, and attraction of new settlements. Adjustment to these social changes often leads to additional environmental impacts elsewhere in the coastal marine zone.

#### Rangeland

7. Land with natural or semi-natural vegetation that provides habitat for domestic ruminants and wildlife is generally defined as rangeland. The term is often used interchangeably with arid and semiarid land, shrubland, wasteland, savanna and grassland. These areas are characterized by low population densities, human populations that are heavily dependent on herds of domesticated livestock, mobility over an extensive area, and complex cultures specially adapted to the harsh conditions of drought-prone areas.

8. Development projects that affect rangeland commonly involve dryland farming, plantation forestry, irrigation, sedentarization and settlement, livestock development, dairy production, tourism and conservation wildlife parks. Rangelands are often perceived to be little utilized, so social impacts may not be readily perceived. Human populations are mobile within a territory which often includes marginal lands with meager resources which may not be used most years, that are nonetheless critically important in drought years. Such areas may contain traditional "famine food" consumed only when hungry livestock and people must turn to them. Contrary to common assumptions, property ownership in most rangelands is highly skewed, often with a small percentage of families controlling most livestock. Many communities that use rangelands are organized along tribal lines and rights to water sources and grazing are regulated by clan elders. In other cases, water points and grazing may be controlled by certain families powerful enough to dominate others. Social changes commonly associated with development investments in rangeland areas include worsened land/population ratios, exacerbation of income inequalities, loss of territory and consequent population displacement and health risks associated with conversion of subsistence products like milk to commodities for urban consumption. Sedentarization of migratory or nomadic herders almost invariably leads to significant environmental deterioration and impoverishment of affected people.

#### Zones of Unique Biological Diversity

9. Many zones of biological diversity have been remote or isolated from development processes until recently, and scientists may have incomplete knowledge of the full range of species present and the environmental functions served may not be well established. For example, tropical forests provide habitats for the greatest variety of plant species of any ecosystem, but only a fraction of these have been identified, systematically studied, and their biological, medicinal or economic values estimated. Fragile forest areas, coastal marine areas and rangelands may also be viewed as zones of biological diversity that constitute

unique habitats for indigenous plant and animal species, and at the same time serve environmental functions at little or no cost. Development investments that may introduce social changes which impact upon zones of unique biological diversity are generally those which "open up" previously remote areas to resource extraction and new human settlements. In such circumstances the role of local indigenous knowledge becomes critical to the definition of unique biological diversity zones and to the identification of issues in the protection of natural resources that might be endangered by development projects.

## Guidelines for Environmental Assessment

10. The EA should assess the changes in pressures on natural resources in ecologically sensitive areas likely to be introduced by the development investment. A first step is to disaggregate the human population found in and around the area. Normally there are at least three broad categories of resource users: people who have lived in the area for several generations, people who have recently moved into the area, and non-resident populations who enter the area periodically to extract or utilize selected resources. Each category could be further divided into subcategories.

11. Social groups that have lived in ecologically sensitive areas for generations, while well aware of environmental constraints on their activities, have been able to evolve stable, low-energy, sustained-yield production systems which are well adapted to the environment and compatible with contemporary approaches to environmental management. Development investments should be designed to increase natural resource yields result in modifying stable and sustainable practices, with negative impacts on the people and their environment.

12. Stable, low-energy, sustained-yield production systems are based on knowledge transmitted from generation to generation that contain a wealth of information about the natural resources of the area and resources management practices. The EA can be strengthened by including local knowledge of plants, animals, ocean currents, hydrology, soils and other aspects of the environment that may be affected by the development investment. The EA can help avoid harmful impacts by assuming that where stable systems of this kind are found that most natural resource use practices are environmentally appropriate.

13. Recent settlers into ecologically sensitive zones may be another type of social group residing in the area. In contrast to groups which have traditionally lived there, settlers usually have little knowledge of environmental constraints or sustainable resource use practices. As a result, settlers sometimes colonize areas which are unsuitable for the production systems they operate; for example, some areas in the humid tropics where lush vegetation is mistakenly thought to be an indicator of fertile soil.

14. Where agriculture fails, settlers may derive the bulk of their income from logging, often in the employ of neighboring plantations or cattle estates which are attempting to expand the cleared-land area they exploit. The EA should define the effects of colonization, the social institutions and processes which produce them, and alternatives for mitigating their impacts.

15. Non-resident populations that extract or utilize selected resources include fuelwood suppliers to urban areas, logging concessions, mining and petroleum companies, hunters or poachers, tourists, electricity companies, cattle ranchers, and plantation enterprises. With some exceptions most enterprises of this kind are controlled by absentee owners.

16. Development investments that have major impacts on forests commonly involve road construction which directly leads to land clearing and new settlements; forest clearing for mining, agriculture, forest plantations, or industry; commercial logging for construction materials, manufacturing paper, forest-products processing, wood-based industries as well as fuel consumption; and, closure of forest areas for commercial or conservation purposes.

## INDIGENOUS PEOPLES<sup>1/</sup>

1. Special action is required when Bank investments affect local communities composed partly or entirely of indigenous, tribal, low caste, or ethnic minority groups. This is particularly true where their social status restricts their capacity to assert or defend their interests in the land and other resources upon which they depend for their livelihood. Because of their powerlessness such groups are vulnerable to dislocation and impoverishment in conditions of rapid socio-economic change. This can lead, in turn, to the adoption of inappropriate production systems with negative environmental impacts. To lower the risk of impoverishment

and environmental degradation, special development plans tailored to the social, cultural and ecological conditions of these groups are required.

### Concepts and Definitions

2. The terms indigenous, tribal, caste and ethnic minority emphasize the different historical, cultural and social contexts in which these groups have become vulnerable as well as certain features of their social organization.

. Indigenous generally refers to native peoples distinguished by their close cultural attachment and economic dependence upon ancestral lands or upon lands to which they have been pushed by dominant groups. Indigenous peoples threatened by the encroachment of dominant groups have increasingly sought the protection of their lands and their rights to self-determination under domestic and international law. Indigenous groups may be organized into tribes, loosely-knit bands or villages. While tribes have a strong leadership hierarchy, band or village headmen lead by force of personality and have little mandate to make decisions for the group.

. Tribes are people organized into local descent group lineages and clans.<sup>2/</sup> Genealogical position in the clan often determines the right to use land held in customary ownership by the tribe. Tribes are often stratified into age sets, whereby young men and young women in one generation are treated as a "set" for their entire lives. Age sets cross lineage and clan ties. Resource management activity is often organized along age set lines, but decision-making authority for management of land, livestock and other resources is usually vested with elders of the lineage or clan.

. Castes are social and occupational categories based on beliefs in religious purity. People often occupy prescribed positions in society by virtue of the caste group to which they are born. Society is stratified into a complex system of exchanges of ritual, social and economic services among castes. Lower castes are often technically landless, but many in fact survive by cultivation, livestock rearing and gathering on public lands and forests.

. Ethnic minorities are a segment of society set apart by dialect, race, religion or historical origin, characteristics which often are taken as the basis for discrimination against them by other groups. Ethnic minority groups may identify with specific territories, but generally lack an organizational structure based on ethnicity alone.

### Group Variations and Legal Status

3. In some countries the rights of indigenous peoples to own or use lands and other environmental resources are established in special constitutional provisions, government policies or legal rulings. However, in practice these formal arrangements may be nullified by local social, economic and political restrictions on the ability of indigenous people to manage their own affairs. For example, many indigenous tribes in lowland Latin America do not have security of land tenure or other normal protections of their country's legal system despite constitutional guarantees. In other countries, indigenous languages, land tenure systems, and other customs important to survival of the group are not recognized under law or are insufficiently supported by public officials and conventional development programs.

4. Most rural areas of Africa are inhabited by people who belong to tribes and it is not uncommon for towns and cities to be divided into separate wards, each identified by the predominant tribe of its inhabitants. Tribes in most countries in Africa are elements of the national culture and the basic building blocks of society. There is a tendency for national politics in some countries to be dominated by certain tribes, and for the interests of other, weaker tribes to be ignored or denied. In some countries dominant groups define tribal differences as an obstacle to development, thereby downplaying inequality among different groups by promoting nationalism. In such contexts the label tribal may be considered pejorative. The situation is similar in North Africa and parts of the Middle East. Tribes remain important forms of rural and urban social

organization in some countries, whereas in other countries tribal groups have given way to less cohesive ethnic, language and religious groups.

5. The population of Asia is made up of highly diverse cultures, many of which are distinguished by their caste, tribal and ethnic social status. Nomadic graziers who migrate through arid regions or mountain areas of the Himalayan region are tribals, as are many highland agricultural people in Southeast Asia and forest-dwelling people of the Indian subcontinent. Millions of these people are traditionally allowed to occupy and use state-owned lands, but have no constitutional or legal rights to the land or resources. Several million people in China are classified as National Ethnic Minorities. Some of these are tribal, and occupy prefectures which have been granted varying degrees of semi-autonomy. In South Asia the caste system is reflected in the constitutions of most countries through special protection for certain "scheduled" tribes and lower castes, but in parts of West Africa and China where castes also occur no such formal protection exists.

#### Bank Policy

6. The Bank will not assist development projects that knowingly involve encroachment on lands being used or occupied by vulnerable indigenous, tribal, low-caste or ethnic minority people, unless adequate safeguards are provided to at least mitigate the negative or adverse effects of such projects on these people, their cultures and their environments. This is particularly applicable to development projects which affect relatively isolated and unacculturated indigenous groups.

7. It is important to recognize, however, that some indigenous groups are not isolated and participate in the economy, political processes, educational system and other institutions of the larger society. Many are fully convinced of the value of development and want a share of their country's economic resources. Others have a strong antipathy to what representatives of the dominant society define as the benefits of development or are convinced they will not benefit from development projects. Still others do not know enough to choose. Key concerns in EA, therefore, relate to the preferences of indigenous, tribal, low-caste or ethnic minority people and their responses to development opportunities.

#### Relationship to Bank Financing

8. Vulnerable indigenous, tribal, caste and ethnic minority groups are usually dependent upon a specific territory. Many have developed stable, low-energy, sustained-yield production systems which are well adapted to their environment. Others have been pushed by more dominant groups into marginal and fragile environments where traditional production systems fail to adequately sustain them. Still others occupy ancestral lands, the quality and size of which have been reduced by population growth and pressure from dominant groups. Development investments which threaten further reduction or degradation of the natural resources of the territory may impoverish these people. Since such groups have little recourse but to intensify exploitation of remaining marginal and fragile environments, the result is environmental degradation.

9. The experiences of vulnerable indigenous, tribal, caste and ethnic minority groups affected by development investments have rarely been satisfactory. Two of the major reasons have been failure to understand the needs of such groups or to formulate and appraise a development plan tailored to the local situation. This has often led to under-designed and under-financed development programs in which investments did not achieve development objectives for the affected groups. The most significant environmental impact of failed development programs for indigenous groups is impoverishment and the environmental degradation that poverty produces.

#### Guidance for Environmental Assessments

10. Environmental assessments for projects which will affect vulnerable populations should explicitly address any significant environmental impacts that may result from the project's effect on these social groups. Significant social and environmental impacts usually occur in areas where new infrastructure and

new production systems are introduced or where existing infrastructure and production systems are modified. Assessment should therefore take place during the formulation of development plans so that the needs of indigenous people can be taken into account in preparing the project proposal.

11. An environmental assessment of project impacts on vulnerable groups should include information such as the following:

- . Formal Legal and Customary Use-Rights. Determine actual workings of constitutional, legislative, administrative, contractual or customary rights to use natural resources.
- . Resource Use Patterns. Assess changes in patterns of access to or use of land, water, forest, pasturage or other natural resources affected by the project plan, including farming, livestock rearing, manufacturing, gathering systems.
- . Use of Area by Non-Residents. Analyze data on use of seasonal resources by graziers, fisherfolk, collectors of forest products, logging companies, suppliers of industrial materials.
- . Community Participation. Determine the extent to which indigenous groups feel proposed development is environmentally sound and culturally appropriate, which environmental constraints are to be addressed in project design and implementation, which environmental opportunities are to be enhanced, and so forth.
- . Identification, Demarcation and Registry of Area. Evaluate effectiveness of local mechanisms to resolve territorial disputes; establish boundaries and buffer zones; develop ways to keep out loggers, encroachers.
- . Inventory of Flora and Fauna. Survey and analyze fauna and flora and habitats, particularly endangered species, under both adverse and normal conditions; uses by resident and nonresident people; indigenous knowledge of biodiversity.
- . Social Infrastructure. Evaluate impacts on schools, medical facilities, communications/transport networks, markets; impacts on water supply, drainage, waste disposal systems.
- . Public Health Conditions. Evaluate health risks and diseases in the area; environmental pollution; health, sanitation and hygienic conditions; traditional medicines and practices.
- . Institutional Assessment. Determine capacity of local organizations and indigenous groups to participate in decisionmaking, implementation, operations and evaluation.

12. This baseline sociocultural and environmental information should be taken into account in project design. A primary concern is whether or not the natural resources base is adequate to support the present population as well as potential growth. Increased density may call for special measures to address sanitary and public health conditions where none were needed before. Development may increase competition for certain scarce natural resources and thereby place them under greater exploitation. Introduction of mining or manufacturing increases the risks from pollution, as well as from new health and safety hazards. Agricultural improvements may affect certain soils, flora and fauna, and water sources which will require mitigation measures. Other users of the area may be negatively affected by indigenous development if they are denied continued access.

13. The economic viability of proposed production systems is a critical element of the assessment. If new production systems fail, people may turn to extraction of natural resources to achieve desired income levels. For example, an industrial forestry plantation project in India was designed to employ tribal groups who would be affected by clearing tropical hardwoods for export. After the primary forest had been cleared, the selected plantation species was discovered to be unsuitable for the area. The tribals did not benefit from the sale of a portion of the forest, but are today criticized for intensifying their use of what remains.

14. The infrastructure requirements of development require special emphasis. Access roads may be needed, which can be expected to induce resource extraction activities by loggers, hunters or others. Improperly designed roads may disrupt drainage systems, animal migration routes, and in sloping terrain become major sources of soil erosion. Contamination of water supplies from new economic activities, such as runoff from crop, livestock or manufacturing areas, should be examined. Introduction of a construction work force from outside the indigenous territory without proper health screening or health care of local people creates unacceptable health and safety risks. Outsiders may also disrupt areas of religious significance and induce social tensions. Employment of local people in construction of infrastructure lowers most risks introduced by an outside work force, but this must also be planned. Training to enhance employability of local people can be assisted by the Bank.

#### Plans for Affected Groups

15. In general, unless special measures are adopted, indigenous, tribal, low-caste and ethnic minority people are more likely to be harmed than helped by development projects designed to benefit groups other than themselves. In such cases the development investment should be designed so as to prevent or mitigate negative effects. Experience has shown that where vulnerable minority people are to be affected by a development investment, a separate plan for indigenous peoples, tailored to their specific needs and local situation, is necessary. The objective is to move toward the active participation of indigenous people in ways which enhance social and environmental conditions.

16. Satisfactory plans to achieve this objective should include the following:

. Baseline Data of Affected Area and Population. Census of population. Demarcation of lands and territories upon which they depend for livelihood. Maps of area. Environmental resources inventory and identification of constraints and opportunities for development.

. Development Policy and Legal Framework. Legal rights to develop lands and territories, including rights to possess and use natural resources (e.g., forests, wildlife, medicinal plants, etc.) vital to their subsistence and reproduction. Development objectives, strategies, grievance procedures, and legal assistance required.

. Participation of the Affected People. Formal mechanisms necessary for participating directly, or indirectly through NGOs, in decision-making, implementation, operation, and evaluation of development plan. Formal incorporation of indigenous knowledge, personnel and practice into land and natural resource management systems and environmental protection schemes.

. Development Plan. Detailed plans for development of infrastructure, education, public health, credit, or other services. Detailed plans for development of production systems in agriculture, transport, industry or manufacturing sectors. Monitoring and evaluation arrangements.

. Organizational Capacity for Implementation. Evaluation of departments responsible for development planning and implementation, natural resources management, indigenous affairs, public health protection; and line agencies expected to assist. Plans for staff training and organizational development.

. Cost Estimate, Financing Plan and Implementation Schedule. Activities, cost and financing by year.

17. Equally important is the capacity of institutions responsible for indigenous development to implement development plans. In Senegal a public health investment failed because health workers assigned to serve tribal beneficiaries were from different, antagonistic groups. In Brazil, despite agreed development plans, institutional weaknesses impede progress on demarcation of territories, public health care, effective registry and protection of land.

#### Special Issues Regarding Indigenous Peoples

## Involuntary Resettlement

18. Project design should avoid involuntary resettlement, especially where vulnerable minorities are involved. Where resettlement is necessary, Bank OD 4.30 should be consulted for policy guidance. During project identification and preparation, the advice of qualified social scientists and direct consultation with local ethnic and religious leaders are essential as the basis for planning. TMs should also encourage the affected groups to actively participate in the resettlement process. Replacement land of equal productive potential, ideally within areas of traditional occupancy, is also required.

## Protected Areas Management

19. In those areas where there is overlap between protected areas (national parks, ecological reserves, protected forests, etc.) and areas of traditional indigenous occupancy, the Bank's OD 4.00, Annex D on Wildlands (to be released) should be consulted for policy guidance. Indigenous groups should be incorporated as equal partners in the design and implementation of management plans. Copartnership arrangements, such as those implied in the "biosphere reserve" concept, should be implemented.

## Compensation

20. Where projects require the acquisition of land or the extraction of resources (e.g., water, minerals, timber, etc.) from indigenous territories, the indigenous people affected should be compensated in kind or in cash at replacement value for the expropriated assets. In other cases, the peoples concerned may want the benefits of ongoing participation in the design, operation and profits of resource extraction activities. Depending upon circumstances, it may be prudent to lease rather than acquire land outright from indigenous peoples.

## Tourism

21. Projects that promote tourism in indigenous areas should be designed in consultation with the indigenous population. In some cases, special measures may be needed to protect indigenous societies and cultures from disruption by tourism.

## Footnotes

1/ For background on this subject see: Tribal Peoples and Economic Development: Human Ecological Considerations. (Goodland, 1982).

2/ Local descent groups are composed of living members of a lineage: lineages are all descendants of a known ancestor and clans are several lineages claiming common origins.

## CULTURAL PROPERTY

1. "Cultural property" refers to sites, structures, and remains of archaeological, historical, religious, cultural, or aesthetic value. Many projects or project components have a potential impact on archaeological sites, building complexes, architecture, monumental sculpture, painting, inscriptions, and other physical remains left by previous human inhabitants and considered part of a country's cultural heritage.

In numerous cases cultural property sites coincide with important natural sites. Cultural resources are a part of the resource base, and it is therefore important that development options under consideration are screened for potential impacts on cultural property. As discussed in the World Bank Operational Directive 4.50: "Cultural Property" (Draft), the Bank's approach to the conservation and management of cultural property is to assist in the protection and enhancement of cultural property affected by Bank-financed projects.

## Policy, Procedures, and Guidelines

2. The Bank recognizes that socially stable development requires societies to retain and keep alive ties to their past and their cultural traditions. The Bank's policy as stated in Operational Directive 4.50 (which updates Operational Policy Note 11.03: "Management of Cultural Property in Bank-Financed Projects") is to assist in protecting and enhancing cultural property through specific project components and decline to finance projects which significantly damage cultural property, and assist only those that are designed to prevent or minimize such damage. Bank Operational Directives on environmental assessment, involuntary resettlement, and tribal peoples also deal with cultural property concerns.

#### Relationship to Bank Investments

3. Recognizing the value of their cultural heritage, most countries have enacted legislation aimed at the protection of their cultural properties. Unless development projects address the interests of archaeological and historical conservation as an integral element in planning, expensive delays can result and cultural resources can be inadvertently destroyed. Contractors can avoid costly construction delays by maintaining close contact with the appropriate department of antiquities or national museum of archeology. If archaeologists are notified well in advance, they can complete their investigation of a site before the construction begins, without affecting the contractor's schedule. If antiquities are encountered in the course of construction, a team from the department of antiquities and/or an international archaeological institute usually needs only a few days to excavate and record vital information. In most cases, the construction work can continue while the archaeologists are on site.

4. Any project which involves excavation, levelling or filling of earth as part of construction operational practices, is a potential threat to archaeological and historical remains (see OD 4.01, Annex A: "Environmental Assessment" and Chapter 1 of the Sourcebook for a listing of environmental screening category A and B projects). While it is not possible to generalize about the extent of impact of projects on cultural property, infrastructure and energy are the sectors most affected by cultural resource issues. Both urban and rural development schemes may also encounter cultural property in carrying out urban infrastructure improvement: road building, land reclamation, irrigation, drainage, etc. Public facilities (schools, hospitals, housing, etc.) can also affect cultural property if facilities are constructed upon or adjacent to archaeological sites.

5. The relationships between cultural property issues and a project can range from direct to indirect. A hydropower project may result in the inundation of cultural sites unless mitigating measures are implemented or relocation of the project are undertaken. A new road adjacent to an archaeological site or historic building may facilitate access and therefore increase the cultural property's vulnerability. Construction work near archaeological or historical remains may cause damaging vibrations and disturbances. The location of a new industrial facility may bring cultural resources into contact with airborne pollutants. Environmental projects aimed at improving air quality may have a notable effect on decreasing air pollution that damages stone structures. Reducing drainage problems associated with both irrigation and wastewater, which disturb building foundations, may also have a direct favorable impact on the condition of historic structures.

#### Guidance for Environmental Assessments

6. At the earliest stages of project identification and preparation, it is incumbent on the task manager, with advice and operational support provided by the Regional Environment Division (RED) and the Environment Department (ENV) to alert governments to potential cultural property issues. A first step would be to check the list of Unesco World Heritage Sites, which now numbers over 300 sites defined as constituting a recognized heritage of outstanding universal value. Responsible government agencies (including ministries of antiquities or culture), museums, university departments of archaeology, art history, or architecture, should be contacted for information and expertise about the cultural resources in the project area. National inventories of cultural resources can provide important data to assist project officers. International research institutes (foreign archaeological missions are present in a number of countries) are also sources of

expertise. Relevant nongovernmental organizations, such as the national committees of the International Committee of Monuments and Sites (ICOMOS), and the International Centre for the Study of the Preservation and the Restoration of Cultural Property (ICCROM), may also be helpful in gaining a full understanding of the cultural property that may be affected, its relative importance, and conservation needs. International organizations with expertise in cultural property protection (for example, Unesco) are other sources of expert advice.

7. To coordinate the various government agencies, a representative of the department of antiquities should be invited to participate in interagency meetings held at key points in the EA cycle, as well as in forum meetings with representatives of affected groups and relevant NGOs.

8. For certain types of projects that involve large-scale modification and/or disturbance of earth surfaces (such as dams, irrigation systems, ports, principal roads, pipelines, subways, sewers, mines, and land reclamation) and that are located in areas where there is reasonable evidence to believe cultural resources are present, a field survey by a qualified expert (for example, an archaeologist or architectural historian) is required. Informed decisions can be made about subsequent actions on the basis of this survey. Full inventories and further studies may be needed.

9. Detailed analyses, including review of project alternatives, mitigation measures, and institutional, training and monitoring requirements, should be used to assist the project executing agency and Bank staff in deciding whether to redesign or relocate the project so that sites and structures can be preserved, studied, or conserved intact in situ. In certain cases, it may be feasible for structures and remains of cultural value to be relocated, restored, preserved, and studied on alternative sites. Archaeological field survey, selective salvage, and preservation of excavated finds in museums prior to largescale excavation, land levelling or tilling may help to minimize the loss of or damage to cultural property.

10. Sites that are buried or not located by the survey may be discovered during project implementation, especially in the course of construction or mining. Such unanticipated discoveries of remains of an archaeological and/or historical nature, termed archaeological chance finds, are frequently found within 0-3 meters of the present surface. Most often they are concentrations of pottery, worked stone, and human and animal bones, without commercial value, but of significance to archaeologists, historians, anthropologists and paleontologists. In general, the following archaeological chance find procedures should be adopted in project design and construction contracts: . notification of the relevant department of antiquities; . request for a representative to make a site inspection; . cessation of work in the vicinity of the find until the visit of a representative; and . decision by department of antiquities on possible salvage or excavation (usually required within 48-72 hours of notification).

National laws normally assess penalties for violations of archaeological chance find procedures.

11. In projects with major impacts on cultural resources, consideration should be given to setting up a conservation unit located in a ministry or line agency. Efforts should also be made to develop local institutional capacity through technical assistance and training.

12. Archaeological and historic sites, settlements, and structures are vulnerable to disturbances of various types. Among these are flooding, changes in water table, deterioration of air quality, coastal erosion, seismic disturbances, vibrations caused by construction activities, building, or airplanes, and human intrusion. Cultural sites can tolerate finite numbers of visitors, just as natural sites, and this should be assessed in project design. The number of visitors and areas of access need to be controlled in order to prevent sites from deterioration due to overuse and physical proximity (visitors touching walls, paintings, sculptures).

13. It is not enough to acknowledge the existence of cultural property that will be affected by a Bank project. The site's long-term sustainability should be considered and a well-designed management plan be devised that addresses conservation and maintenance requirements. In this context, the Bank is willing to provide technical assistance for training in conservation and management.

14. Where sites are considered sacred, as in the case of religious shrines, the impact of relocation is complex. In such instances it is strongly advised that a team be formed to develop mitigation measures. The team should have an art or architectural historian knowledgeable about the particular cultural tradition, an architectural conservator, an anthropologist familiar with the population of the area, and a coordinator who would bring together the relevant government organizations, experts, and community leaders. It is important that such interventions be scientifically sound, and that they respond, as completely as possible, to patterns of social organization and existing social and cultural institutions. Project staff should ensure that the cultural heritage of nondominant cultures are accorded the same care as that of the dominant cultures.

## INVOLUNTARY RESETTLEMENT

1. Bank-financed activities that entail land acquisition usually cause involuntary resettlement. Most irrigation, hydropower and water supply projects, but also some urban, transport and industry projects can only be implemented if people are resettled from land required for civil works. Involuntary resettlement is complex because lost income sources such as farmland, forests, pastures, shops, and other production resources, must be replaced, or equally productive alternative assets provided, if affected people are to reconstruct their lives and economic productivity. Even acquisition of small strips of land, where the loss makes farming nonviable, or where people are dislodged from their homes and shops for highways or transport lines, require planning for involuntary resettlement.

### Bank Policy

2. Treatment of resettlement in Bank projects is covered in OD 4.30: "Involuntary Resettlement" (June 1990). Due to the social and economic disruption it causes, World Bank policy enjoins staff to avoid or minimize involuntary resettlement. When forced resettlement is unavoidable and fully justified, Bank policy requires that a resettlement plan be formulated and financed to ensure that people displaced are provided development opportunities to improve, or at least restore, the standards of living they had before the project.

3. The first objective of an EA on a resettlement project should be to estimate the capacity of the receiving area to sustain additional population under the conditions introduced by the resettlement operation. Second, the EA should identify the environmental risks the resettlement plan will entail, such as those stemming from increased pressure on natural resources, construction of infrastructure, and others mentioned above. Third, an Environmental Management Plan should be formulated which addresses these risks to mitigate impacts on and protect the natural, human-made and social environments.

### Social Aspects of Resettlement

4. Involuntary resettlement in the past has been one of the least satisfactory components of Bank-assisted development projects. A major reason has been failure to appraise a resettlement plan in the field. This has often led to under-designed and under-financed resettlement components, which turned into relief rather than development operations. The most significant environmental impact of poor resettlement operations is impoverishment and the environmental degradation poverty produces.

5. The risk of impoverishment in forced resettlement operations is high because of the loss of a productive resource base. In addition, unlike voluntary settlement which involves self-selected, younger families, involuntary resettlement compels everyone to move. This means that resettled communities must support not only the able bodied but also less productive people, such as the old, the incapacitated and the unskilled. Moreover, wealthier and bettereducated families tend to split off, taking with them important sources of local investment capital and socioeconomic support, leaving a disproportionately poor community to be resettled.

6. For these reasons the Bank stipulates that the Resettlement Plan should be prepared so as to be ready at the time of appraisal, at the latest. This is true regardless of the size of the operation. Where the number of people displaced is relatively small (hundreds), a modest plan may be adequate; where the displaced people number in the thousands, the resettlement plan should be comprehensive and part of wider or regional development strategies. In all cases resettlement planning should be started as early as possible, as part of the feasibility stage.

7. In accordance with OD 4.30, resettlement plans satisfactory to the Bank should provide information in the following areas:

. Organizational Capacity for Resettlement and Development. Department responsible; line agencies to assist; plan for organizational development, training.

. Participation of Affected People. Strategies for direct or indirect participation in decision-making, implementation, operation, and evaluation of the resettlement of both settlers and host populations.

. Baseline Data on Affected Area and Population. Census of population; property and common areas inventory; map of receiving area; environmental constraints in receiving area.

. Resettlement Policy and Legal Framework. Definition of affected lands, structures; compensation and entitlement criteria; resettlement objectives; grievance procedures.

. Development Plan for New Sites. Detailed engineering plans and layouts; agricultural development packages; non-agricultural employment packages; monitoring arrangements; environmental protection.

. Transfer Arrangements. Information campaign; transition monitoring; maintenance arrangement; mobilization schedule.

. Cost Estimate, Financing Plan and Implementation Schedule. Diagram of activities, cost and financing by year.

#### Environmental Impacts of Resettlement

8. EAs should include analysis of the impacts of the Resettlement Plan on natural, human-made and social environments. The most significant environmental impacts occur in the resettlement receiving areas to which people are moved and stem mainly from new productive activities they take up once there. Assessment therefore takes place once development plans are detailed enough to specify alternative resettlement sites and proposed production systems.

9. Environmental assessment begins with the section of the Resettlement Plan which analyzes the environmental constraints in the alternative receiving areas. Resettlement will mean increased population density, with consequences for local people as well as natural resources. Increased population densities may call for special measures to address sanitary and public health conditions where none were needed before. Relocated people may introduce new disease risks to which host people have little resistance. More people usually means more livestock, which increases competition with hosts for pasture. Game, fish and bird species may be more heavily exploited. Forests may be damaged by increased fuel and forest products gathering. Migratory or seasonal users of the area may be negatively affected by the new settlements. The information provided in the development plan for the new sites should encompass:

. Host Population. Census of people already residing in receiving area; social organization of the host communities; ethnic, linguistic, religious and other cultural features of groups; population density and growth rates.

. Resource Use Patterns. Customs which regulate access to land, water, forest and other resources; uses of resources in production systems, including farming, livestock rearing, manufacturing, gathering systems.

. Use of Area by Non-Residents. Seasonal use by graziers, fisherfolk, collectors of forest products, logging companies, suppliers of industrial materials.

. Formal Legal and Customary Use-Rights. Inventory of constitutional, legislative, administrative, contractual or customary rights to use resources.

. Inventory of Fauna and Flora. Surveys under both adverse and normal conditions; uses by host population.

. Social Infrastructure. Inventory of schools, medical facilities, communications/transport networks, marketplaces; information on water supply, drainage, and waste disposal systems.

. Assessment of Public Health Conditions. Epidemiology of health risks and diseases in the area; environmental pollution problems; sanitary and hygienic conditions.

. Institutional Assessment. Capacity of local, regional and national organizations to participate in decision-making, implementation, operations and maintenance, and evaluation of the resettlement.

10. The economic viability of proposed production systems is a critical element of the assessment. If new production systems fail to restore or improve incomes, displaced people may turn to extraction of natural resources to survive. For example, studies of tribals relocated in India without provision of agricultural land to replace that lost indicate that almost half resorted to cutting and selling firewood after construction employment opportunities ceased. In the Philippines resettlement without provision for means to support themselves turned farmers into loggers and charcoal manufacturers, resulting in degradation of the watershed, reservoir siltation and reduction of the estimated useful life of the reservoir from 100 years to 30. In Mexico failure to maintain market roads to new settlement areas transformed relocated commercial agriculturalists into slash-and-burn subsistence cultivators in only a few seasons and resulted in degraded forests and erosion.

11. The infrastructure requirements of new settlements demand special emphasis. Access roads may be needed to establish resettlement sites, which can be expected to induce resource extraction activities by loggers and hunters. Improperly designed roads disrupt drainage systems, game migration routes, and in sloping terrain become major sources of erosion. Studies have shown that availability of potable water is a major element of successful resettlement; contamination of water supplies from the new economic activities, such as runoff from residential, cropping and livestock areas, should be examined.

12. The construction work force brought in to build new roads as well as schools, clinics, water supply systems, and so forth will require residential colonies to be established, together with equipment yards, supply depots, and commissaries. Spontaneous or voluntary settlements are likely to appear on the outskirts of planned settlements due to work opportunity, the provision or improvement of infrastructure, and new social services. Indeed, the construction work force for the resettlement operation (as well as the main project civil works) may be induced to remain in the area following completion of the work. Part of the solution to this problem is to employ displaced people in construction of infrastructure for resettlement sites.

13. Similar considerations apply in urban areas. Population densities and the health and safety risks associated with crowding are major constraints on involuntary resettlement. Land speculation together with the need to accommodate tenants and squatters often limits options for urban resettlement and results in greater nucleation than environmental health consideration would permit.

14. Like their rural counterparts, urban people depend upon a network of kin and neighbors who provide a large number of low-cost socioeconomic support services. These range from child care to diversification of income-earning opportunities to informal credit arrangements. Disruption of these networks due to involuntary resettlement places urban people, and in particular women, at risk. As in rural situations, compressing different and sometimes hostile ethnic groups into one area will introduce unacceptable risks. Resettlement site location in relation to people's jobs is critical, in that even small increases in transportation costs or time spent in travel may jeopardize employment.

Finally, in many societies urban households produce a substantial portion of their diet and some cash from garden, patio or yard areas. House plot areas must be sized and designed to accommodate customary social and economic production activity.

## NEW LAND SETTLEMENT

### Planned Agricultural Settlement

1. Many governments have invested in land settlement schemes with various objectives in mind. The division of large farms into small parcels for redistribution to settlers (Zimbabwe and Kenya), the clearing of apparently underutilized land for allocation to landless settlers represent types of approach which emphasize the redistribution of land (Bolivia). A second type is exemplified by the estate project approach, under which a commercially run estate supervises and purchases the produce (cash crops) of the small holders who are often settlers (Malaysia, Indonesia). Typically the estate type project produces rubber, oil palm, sugar, coconuts, and other cash crops. The Bank does not have a specific policy on land settlement in general but is developing an operational directive, expected to be issued in 1991. Further guidance is provided in World Bank Report Number 5625, Experience of the World Bank with Government-Sponsored Land Settlement.

### Guidance for Environmental Assessments

#### Impact on Local People

2. Any land considered to be suitable for a settlement scheme will have been used by people previously, unless it lies in an area from which endemic disease has been recently eradicated. Even though such areas bear few signs of cultivation, they often support sizable populations who gain their livelihood through hunting, fishing and the collection of forest products such as sago, rattan, traditional medicines, fruits, and fallen tree limbs for sale as firewood. Such people may also cultivate crops in valley bottoms and practice agriculture through land rotation to provide basic foodstuffs. Grasslands may form part of an intricate grazing system developed by transient pastoralists. Frequently such users of the land have no recognized title to the land, and the EA should estimate the effects which the proposed project may have on indigenous people socially, and its effects on their sources of livelihood.

3. Settlement plans need careful examination as there is a strong possibility that the other land is already used. The issue is not one of equity alone, but of virtually increasing the population density in an area in which the people already present live in an ecological balance with the natural environment. The resulting increase in population may lead to damage to watersheds and forested areas, due to the shorter land rotation cycles imposed by the newcomers and the ecological imbalance their presence brings.

#### Land Allocation

4. The area of land to be allocated to each settler will vary with land capability, the crops to be grown and the family income target. There is a tendency to overestimate the fertility of the soils of lands to be used for settlement, so that expected farm areas and yields can be checked against local performances. The size of holding provided should be workable within the amount of labor available and produce an adequate income, but without imposing a strain on its capacity for sustained production.

5. The EA should also examine the proposed tenancy arrangements in relation to their effects on the environment. A variety of land tenure devices may be employed. These range from a type of renewable tenancy under which lazy and otherwise unwanted settlers can be expelled to "free-hold" ownership of the land by the settler (usually after a period of probation). Whatever system of tenure is adopted it must provide settlers with a sufficient degree of security to provide the motivation to conserve their land as a viable asset and to invest their own resources in its improvement. Either the title itself, or general legislation, should discourage or prohibit the sub-division of farm holdings below the point that they can remain viable in terms of subsistence and saleable surpluses for their occupants.

#### Titling and Inheritance

6. In many parts of the world, women often hold land in their own right, or at least have an inalienable right to cultivate lands belonging to clans, families or other groups to which they may belong. Most settlement schemes seem to assume that wives are there to assist their husbands regardless of the type of division of labor normally practiced. This may work well in cases where the returns from farming are shared between men and women, but in situations where the women's farms provide subsistence and cash for children's needs the issue needs close attention. Bearing in mind that the acquisition of land is usually the greatest incentive for would-be settlers to volunteer, an appropriate form of title guaranteeing security for women and their children is a necessary part of the project design.

7. The EA process should analyze what is likely to happen to a settlement farm holding on the decease of the original settler. Will the wife inherit the farm, or will it be the eldest son? If polygamy is the practice, what will happen to the second wife, or to the wife(s) who is not the mother of the son who inherits. Also what will happen to the other children? These issues are not only related to equity, but to the environment. Unless there is provision within the settlement area for the allocation of new farms for the increasing population, or there are other employment opportunities open to settlers' children, greater pressure on the land resources, both on the farm holding and on the surrounding forests (sources of firewood etc.) will lead to reduced yields and incomes and environmental degradation. Bank staff need to evaluate the trade-offs between leaving fertile land near settlements for future use by settlers' children, the costs of leaving land now reasonably accessible in an undeveloped state, and the risk of spontaneous settlers moving into those lands in an uncontrolled manner.

#### Settler Selection

8. Settlers need to have an agricultural background, be married and be strong and healthy. Settlements dependant on unmarried schoolleaving males generally do not work, nor do those intended for vagrants and the homeless recruited (conscripted) from cities. Care must be taken with the proteges and relatives of influential personages as prospective settlers, as such people usually seek future windfall profits from sale of the land, and their wards will probably not make good farmers in the interim, although the presence of some may attract secondary investment and maintenance of infrastructure by the government.

#### Cropping Systems and Land Use

9. Cropping patterns should be designed according to land suitability. It makes little sense to expect settlers to continue to cultivate the crops they are used to in their areas of origin if the soil, slope or rainfall are different. During the stage of project preparation it pays to look at the type of agriculture practiced by the people already living in the surrounding areas, noting the mix of crops and the ways in which the land is protected by plant canopies. Although forested areas (South East Asia and South America) look lush and fertile, it must be remembered that the clearing of this land exposes it to the weather and forest soils rapidly lose their initial fertility (mainly from organic material), and suffer from leaching, laterization and the build-up of aluminum toxicity. Nowhere has it been proven that nonirrigated tropical soils can be used for continuous arable cultivation without lengthy fallow periods or application of fertilizers.

10. Settlers should be encouraged to plant fruit trees on their home gardens, and the cropping plan should ensure that only land with less than an eight degree slope is used for annual crops. Provision for fallow periods needs to be made, and to the extent possible perennial crops, especially trees should be grown. The conversion of forest land to pasture should not be supported by the Bank.

#### Family Planning

11. Newly arrived settlers tend to want large families, as the amount of work required to bring new lands into full production is usually greater than the labor needs of a mature farm. Thus settlers tend to have fewest family helpers when they are most needed in the early years of settlement, and too many mouths to feed after the period of peak labor needs is over. A family planning component to counsel and advise settlers from the beginning is advisable, otherwise overcrowding will lead to cropping with increasing intensity and overgrazing.

#### Spontaneous or Unplanned Agricultural Settlement

12. Spontaneous or unplanned agricultural settlement generally entails expansion into areas hitherto used or reserved for other purposes, and it often means expanding agricultural frontiers into areas which are potentially subject to severe land degradation (Southgate and Pierce, 1988). Such expansion may or may not be as a result of official encouragement by governments. There are a number of features of the this kind of agricultural expansion which can cause damage to the environment. These features are:

- . the area of land being cleared for agriculture is greater than the area recovering through adequate fallow periods;
- . there is a tendency to move into forest areas, catchment areas, wetlands and marginal areas of low rainfall;
- . both the mode of clearing (mechanized) and the crops grown (often annuals) may deplete soil fertility and erode topsoil; and
- . an absence of clear land tenure leads to the maximization of short-term gains to the detriment of the environment.

13. While Bank projects themselves are planned, the incentives and infrastructure they foster may be unplanned, and there may be land settlement as a secondary effect. (See section on "Induced Development," for further discussion). Such projects with limited control over the resultant settlement of land need to be viewed from the perspectives provided below.

#### Relationship to Bank Lending

14. Spontaneous agricultural settlement is relevant to many types of Bank-financed projects. Any project requiring new or improved access will enable, and likely attract, people into the area to cultivate newly accessible land and to sell to new markets created by the project itself. For example, mining, agricultural (including planned land settlement), hydroelectric, thermal electric power, and of course highway projects may all encourage spontaneous agricultural settlement. Bank staff need to consider very carefully the potential effects of each project, not only as direct cause and effect but as sets of effects which would not have occurred had the project not been constructed. Typically migrant laborers move to project sites in the hope of employment and clear land for farming, while others engage in trading and providing services to those that have jobs.

15. In addition to projects which provide access to land through road construction, there are others which convert untenable areas into habitable ones, mainly through the eradication of holo-endemic diseases such as onchocerciasis (river blindness) and trypanosomiasis (sleeping sickness). A classic example of the former is the UN/Bank supported program in West Africa, and plans of the Zambian authorities to eradicate

sleeping sickness. Scrupulous analysis of the trade-offs needs to be made when such programs are being considered: for example, the value of production to be expected from settlement of the area, with the strong possibility of environmental degradation, against the value of leaving the area uninhabitable for people, but with watersheds protected from erosion, with consequent benefits derived from the green cover and water management and quality.

#### Guidance for Environmental Assessments

16. In situations where there are incentives for the expansion of frontier agricultural colonization, estimates of the rate that this will occur as a result of the project should be made, and the effects on both the natural environment and the indigenous people. Changes in tax laws which encourage frontier agriculture may take time to be implemented, even if governments are willing to undertake such action. If the land is technically suitable for agriculture and there are no conflicting claims by local people, it may be possible to include a project component for planned settlement in the area.

17. Typical effects will include those which are deliberate, e.g., the construction of roads, villages, land clearing and cultivation, etc., and the unplanned but foreseeable impacts caused by people. These latter impacts would include the attraction of immigrants to the area who will construct dwellings, need water and drainage, and will either clear land for farming or will use some land for trade or other business. Agricultural effects can be considerable, especially cultivation, and can include leaching of the soil, sheet and gully erosion, and undesirable effects from run-off and seepage containing dissolved chemicals such as fertilizers, pesticides and herbicides. The foreseeable direct and indirect effects of the likely consequences for the natural environment, the indigenous people and the new colonists should be analyzed.

#### INDUCED DEVELOPMENT

1. There are a number of important but indirect social impacts of development, which may be overlooked in project design and monitoring. Often these are impacts which result from secondary or induced growth. Some of these impacts can be predicted, fairly reliably, based on past experience, while others are unexpected and can only be identified and addressed if an adequate system of impact monitoring is put into place during project implementation. This section examines some of the negative social impacts which can result from induced development and outlines some mitigating actions that can be undertaken. It does not address the social impacts which are the direct result of development projects. These are addressed elsewhere in this section on social issues.

#### Relationship to Bank Investments

2. A variety of development projects can result in significant secondary changes in the project area. These include large dam projects, mining projects, large industrial projects, planned agricultural colonization projects, integrated rural development projects which generate new markets and infrastructure, and roads projects which open up remote areas. A common shortcoming in the design and environmental assessment of such projects is the failure to plan for the influx of a secondary population of voluntary migrants who take advantage of the new economic opportunities created. For example, large dam or mining projects usually make provisions for housing, food, schools, and other essential services for the construction workers or miners that will move into the area around the project site. What may not be taken into account is the influx of an equally large population of people who seek employment or who come to provide other services that are not available to the new population, and who may also place a burden on the surrounding environment given their needs for food, fuelwood and living space. It is important to take account of such impacts in environmental assessments.

#### Impacts from Increased Population Size

3. The entrepreneurs who come to project sites provide alternative sources of commodities to the construction crews or mining population. These include the sale of construction materials, tools, and goods

such as cigarettes or cooking oil; cheaper varieties of the goods provided in company stores, such as plastic shoes or lower-quality clothing, tools, and household goods; or pre-cooked street foods from vendor stalls or small restaurants. It also includes service industries, like repairing of leather, tools, clothing, or household items; bars, prostitution and gambling concerns; or transport services to the nearby towns. Voluntary migrants also include the families of entrepreneurs if the time-period is relatively long.

4. The influx of an unexpected number of outsiders has predictable social impacts on the local population, including the following:

(a) Pressure on existing resources and infrastructure: competition for fuelwood, housing materials, electricity, water supplies, waste disposal, fisheries, and land areas diverted for shops or squatter housing.

(b) Pressure on existing institutions: small town or village institutions are unable to handle the increased incidence of violence, crime, and disputes over land and other resources in scarce supply; or to take over more sophisticated planning functions.

(c) Increased pressures on health and sanitary facilities, due to an increased incidence of contagious diseases or pest outbreaks.

(d) Breakdown of traditional methods of social control and discipline and social disorientation of the local population, resulting from the rise in social problems, changes in the values of children and adolescents, and the possible rise in the cost of living due to inflation.

(e) Increased marginalization of the minority groups in the local population and a widening of the poverty gap, since the more vulnerable groups in the population, including the aged and women, must compete both with the local population and with outsiders who may have more political and physical clout.<sup>1/</sup>

#### Special Cases of Induced Migration

##### Boom Towns

5. There is comprehensive literature on a specific sub-set of induced development, the "boom town". Boom towns arise in situations of temporary population increase, e.g., the construction of large projects or road networks, or the mining of temporarily productive sites. Boom towns have a particularly dramatic effect on nearby environments since prices rise and the normal mechanisms for natural resource management break down, leading both newcomers and long-term residents to exploit their environments for short-term gain.

6. Because of the temporary nature of the population influx, there is a distinct cycle to boom towns which needs to be understood when planning measures for mitigating negative impacts. In general, boom towns pass through a cycle of rapid growth before and during construction; high population densities during construction; declining population after construction; and a demographic and economic "bust" after construction. Social impacts from boom towns follow the cycle as well. Social disorientation changes in dimension from one stage of the cycle to another. The local population may be quite euphoric in the initial stages of the boom, due to increased economic opportunities, then sour as social problems surface and life slows down to a pre-boom pace, with the induced problems of resource overuse and degradation remaining behind.

##### Planned Colonization

7. In planned agricultural colonization or planned urban settlement, a large population is often brought into a relatively undeveloped geographic area. Projects of this type plan for a fixed number of immigrants, but the creation of new infrastructure, economic opportunities, and services also draw a number of spontaneous migrants to the site. Unlike the boom town situation, the influx of new colonists results in a permanent population increase and there is no cycle of boom and bust. Otherwise the types of pressures resulting from

an unplanned number of immigrants are similar to those for a boom town or temporary construction situation.

8. One negative impact on the local population that occurs in planned colonization is that, even in the absence of spontaneous immigration, local people can be marginalized in the development process if colonists are provided special educational, financial, technical, and service resources, while local people are left with the normal level of development services. This has been a problem for tribal populations in India, for example, when refugees from the Sind and Bangladesh were settled in the fifties and early seventies on forest lands cleared for agriculture nearby and provided agricultural development services, including irrigation, that raised the migrant population's standard of living and resulted in the eventual exploitation of the tribal population by the migrants. In such cases, there are often both adverse social and environmental impacts.

#### Assessment and Mitigation of Adverse Impacts

##### Duration of Assessment

9. An assessment of the social impacts on the environment should include a comprehensive demographic survey of the project population (surveying all sites, not a limited sample of sites), as well as a survey of the local resources and seasonal resource management strategies. The objective of the EA should be to assess the magnitude of the expected impacts of induced development, so that mitigating actions are planned on an adequate scale. To do this, observations must be made over different seasons, different times of the day, and take into account the overlapping use of resources by sedentary farmers, pastoralists, fisherfolk, and migratory wage workers. What looks like an empty hillside or field in March may be filled with grazing animals in August. There should also be adequate analysis of the nature of the local and regional institutions which may have responsibility for planning and administrative decisions.

##### Mitigating Actions

10. Mitigating measures, such as the following, address the problems related to spontaneous immigration and minimize the need for masses of temporary workers from outside.

(a) Train local people beforehand, especially for less skilled jobs, making special efforts to provide training for local minority peoples; and improve transport facilities to and from the site to enable local people to work at those sites.

(b) When budgeting for new infrastructure and services, plan adequately for the voluntary immigrants as well as the known numbers of construction workers, miners, or colonists.

(c) Promote investment in local resources (e.g., fish ponds, animal raising, local water supplies, literacy and job training) to improve the local resource base and capacity to produce food or services for sale to the migrants; to reduce the pressures during a boom period; and to buffer the population against the economic bust which follows.

(d) Locally, strengthen existing institutions or develop new ones to undertake long-term development and regional planning that addresses changes, to handle an increased number of disputes and social problems, and to accommodate a much more diversified population.

(e) Plan adequate health, drinking water and sanitary facilities to deal with the unexpected rise in the incidence of disease and pest problems.

(f) Provide the necessary social, psychological and counseling services to old and new residents to enable them to cope with socioeconomic changes, particularly for vulnerable groups and the aged.

## Monitoring

11. In addition to the above measures, an evaluation system should assess periodically the impacts of development intervention/induced development that are not predictable or anticipated at the outset. Such impacts include the proliferation of unexpected diseases or the informal establishment of environmentally harmful or population drawing industries or enterprises as a result of the general economic growth in the area.

12. For example, individuals living near major construction sites who develop skills during the period of construction may subsequently start informal businesses that draw upon their acquired skills. When a large number of such individuals start new enterprises, this leads to an unexpected proliferation of new industries, with potential problems of noise, air, or water pollution or inadequate waste disposal. Such enterprises can include smelting enterprises near a mine, electricity-based enterprises in an area of new power distribution or agricultural processing industries which use large quantities of fuelwood.

## Footnote

1/ Although the opposite may occur if the newcomers are the ethnic and cultural minorities, and the local population begin to exploit them instead.

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