

CHECKLIST #10 CROP PRODUCTION

Extensive and intensive crop production or optimization projects, which involve either an increase in cultivated areas or increased use of inputs (labour, fertilizers, pesticides, mechanization, genetically selected varieties, and so on) on areas already under cultivation.

A. Questions relating to the crop production project site

1. What are the land uses, activities and existing infrastructures on the proposed site of the project? What are the land use master Plan and land tenure? What are the characteristics of the population? What is the population density in relation to available arable lands and to the land to be rehabilitated? Are the project objectives consistent with the population's needs, wishes, subsistence activities, and traditional and socio-economic activities? What are the government policies regarding agriculture, crop production and land tenure? Could the project lead to:
 - changes in ways of life and cultural characteristics (if means of subsistence are disrupted by the introduction of "modern" production techniques, requiring additional inputs and/or cash crops; if existing positive aspects of environmental management, such as use of agricultural residues, are not enhanced, and so on);
 - displacements of the population and/or the loss of territory (migrations, expropriations, eviction of tenants or squatters, effects on aboriginal populations, and so on);
 - accentuation of social inequalities (if specific groups of the population, such as women, farmers, livestock producers, and so on have not been consulted; if the number of beneficiaries of the project is limited; if there is an increase in the workload of women; if women are limited in their choice of arable land or are restricted to subsistence activities or low-income processing activities, and so on);
 - incompatible uses of land and resources, social conflicts, value conflicts and conflicts with respect to property rights (between industrial and agricultural areas, between common ownership of public or ancestral lands and private ownership of agricultural products, between producers and breeders, stemming from problems associated with supply of water, resources and various services, and so on);
 - a decrease or an improvement in the quality of life;
 - improvement in food security and/or increased income depending on the terms of trade, accessibility to diversified markets and the development of socio-economic activities;
 - greater awareness of the importance of a healthy environment through training and community involvement in planning, management, economic decisions (fees for water use, land use), project follow-up and environmental conservation and restoration measures (study of pests, erosion control, tree planting, water conservation, perennial crops along contour lines, green fertilizers, intercropping, windbreaks, and so on);
 - optimization of land use through its enhancement for multiple purposes by means of agro-sylvo-pastoral systems or agroforestry projects, such as planting live fences, combining fruit trees, nitrogen-fixing plants or medicinal plants and vegetable crops, and so on?

2. What types of environment and landscape are present in the area? What is their specific importance? Are there bodies of water, waterways, slopes, wooded areas, wetlands, desert areas or other vulnerable sites nearby? What are the characteristics of native and exotic plant life in this region? What type of wildlife inhabits this region? What are the available sources of water? What are their characteristics in terms of quality, quantity and renewal? What are the characteristics of soils (stability, composition, texture, drainage, acidity, salinity, fertility, and so on) and topography? What are the characteristics of the area's climate (temperature, abundance and variation of rainfall, droughts, floods, natural disasters, and so on)? Could the project have an effect on:
 - environments or sites of economic, ecological, cultural, archaeological or historical importance and the natural resources (water, soil, vegetation, wildlife, and so on) they contain;
 - rare or vulnerable species and/or species of economic, cultural or ecological importance (biodiversity)?

B. Questions relating to the crop production project

1. What plant species have been selected and what are their characteristics (water and nutrient requirements, growth rate, space requirements, range and depth of the root system, symbiotic species, vulnerability to climate and insects, accumulation and reaction to toxins, maintenance requirements, origin, and so on)? What are the provenance and quality of seeds? Have they been chemically treated, genetically manipulated or selected and tested for resistance? Could the project lead to:
 - changes in, encroachments on and/or destruction of indigenous environments and/or existing crops by introducing exotic species and/or monocultures resulting in a loss of biological diversity and stability, changes in plant, wildlife and insect composition, competition with natural vegetation for nutrients, water, light, and so on;
 - social and value conflicts (for instance, if the population's preferences in terms of the species to be planted are ignored, and so on)?

2. What are the different site preparation activities? Will there be demolition of existing buildings, erection of fences, earthmoving, levelling, soil amendment, clearing, slash and burn techniques or wetland reclamation? Will the construction of wells, irrigation systems, roads, and so on be required (see appropriate checklists)? What maintenance and follow-up activities will be carried out? What techniques and materials will be used (mechanized or manual maintenance, plastic materials, mulch, thinning, watering techniques, monitoring and follow-up, and so on)? Are they adapted to the environment? Is there enough water to meet the various requirements of the community and neighbouring communities? Does the project involve processing activities (agro-industries, see other relevant documents)? Could the project lead to:
 - changes in, encroachments on and/or the destruction of environments or sites of economic, ecological, cultural, archaeological or historical importance and the natural resources they contain, caused by deforestation, desertification and associated climatic changes, slash-and-burn agriculture on vast areas, and so on;
 - soil degradation (erosion, compaction, changes in drainage, fertility, water-holding capacity, and so on), particularly on steep slopes, fine or weak soils, in the case of heavy precipitation or soils having complex drainage and fertility cycles, and increased sedimentation of waters caused by: overly frequent soil tillage, inadequate burns, improper use of heavy machinery, improper clearing techniques, inappropriate selection of the quantity and spacing of species, runoff and leaching of soils following improper extraction and transport, removal of agricultural residues from the ground, elimination or damage of planted cover (wet and dry seasons), reduction of fallow duration and number of fallow lands, planting of annual field crops, such as corn, manioc and millet, on vast areas which exposes soils to risks of erosion, inappropriate timing of harvesting in extreme seasons, lack of crop rotation and loss of associated benefits in maintaining soil fertility, adoption of monoculture systems rather than companion planting, and so on;
 - soil salinization due to groundwater use that exceeds its recharge rate and to improper irrigation practices;
 - soil acidification, for instance, by converting mangrove forests to rice paddies in brackish environments;
 - an increase in harmful species (for example, undesirable plants in agriculture, invasive plants, and so on) and/or disease vectors associated with humid areas (depending on the use, supply and proximity of water sources; if agricultural practices are carried out in wetlands; if monocultures occupy extensive areas; if broad-spectrum pesticides are used, that is, nonselective pesticides, and so on);
 - changes in the quality and quantity of groundwater and surface waters (depending on availability and source of water supplies, groundwater recharge rate, other uses by the community, and so on);
 - nuisances (noise, odours, airborne dust), health risks, risks of accidents and/or problems of surface water, groundwater, soil and air pollution in preparing and maintaining plots, and in resource harvesting and processing;
 - socio-economic problems (loss of subsistence resources for aboriginal populations; control of resources by large operators; rivalries between users, owners and authorities; spontaneous,

- unplanned agricultural settlements following an increase in population due to migration, and so on) associated with abusive resource harvesting practices;
 - added or reduced pressures on water, soil, arable lands, energy sources, flora, fauna, infrastructures and local services; an increase or a decrease in the local prices of agricultural products and inputs and an effect on local and regional economies (financial resource management system, credit system, access to markets, start-up of businesses, and so on);
 - equitable reallocation of profits and/or positive spin-offs in the community and its specific groups;
 - assumption of responsibility by the community for its needs and the project, clear responsibilities, reinvestment of knowledge in the community and reduction of rural outmigration;
 - sustainable economic development, sustainability of the agricultural system, fair and equitable forms of partnership and ease of access to subsistence resources and resources of good market value?
3. More precisely, if the project involves the use of pesticides and fertilizers, is there compliance with legislation? Have physical (such as traps, bait, weeding, crop rotation, companion planting, and so on), biological (such as using natural enemies, attractants or repellents, and so on) and chemical alternatives been studied? Is there knowledge of harmful species and their abundance, habitats and life cycle? What is the soil fertility? How do soil structure and climate affect soil fertility? What are the details of user training? What is the management and follow-up Plan for this component of the project? Are efforts directed at managing pests rather than eliminating them? Is there a possibility of:
- eutrophication of water bodies (associated with excessive loadings of nitrates and phosphates contained in fertilizers), subsequent imbalances in aquatic ecosystems and their food chains and problems with the availability of quality water supplies;
 - soil acidification, particularly in tropical regions, due to excessive, long-term application of nitrogen fertilizers;
 - development in pest populations of resistance to pesticides due to excessive, repeated application of broad-spectrum pesticides and other pesticides;
 - elimination of beneficial non-target organisms (such as bees and other pollinating insects, nearby indigenous vegetation, and so on);
 - an imbalance in natural pest control mechanisms (for example, if the application of broad-spectrum pesticides results in elimination of their natural enemies, the pests may be able to recover more quickly and reappear);
 - air pollution (undirected aerial spraying, application on windy days, and so on), soil pollution, groundwater and surface water pollution (by seepage and/or runoff) caused by improper management of pesticides (herbicides, insecticides, fungicides, and so on) and/or organic and chemical fertilizers;
 - bioaccumulation of toxic products in the food chain (concentration in fats and in carnivores);
 - nuisances (foul odours), health risks (poisonings associated with pesticide use or ingestion of foods containing pesticide residues or faecal coliforms; neurological disorders; respiratory, skin and gastrointestinal problems; allergies; congenital defects, and so on) and risks of accidents (such as spills) resulting from improper use of pesticides (excessive concentrations, poor understanding of phytosanitary labels, application on steep slopes, near water bodies and waterways, and so on), lack of proper protective equipment (overalls, gloves, glasses, masks, and so on), poor management of pesticides and/or organic and chemical fertilizers (equipment maintenance and cleaning, storage, transportation, disposal)?