

## CHECKLIST #5 WATER SUPPLY

Constructing water supply systems designed to supply drinking water to the population.

### **A. Questions relating to the location of the water supply system**

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1. What are the uses, activities and existing infrastructures on the proposed site of project implementation? What is the town planning scheme? How large is the affected population? Have the people's needs, expectations, patterns of consumption and sanitary conditions been considered? Could the project lead to:
  - displacements of the population, losses of territory, changes in ways of life and/or accentuation of social inequalities (migration towards water supply points, settling of nomads, resettlement, induced urbanization, and so on);
  - incompatible uses and/or social and value conflicts between various users in the same region or between users upstream and downstream from the water supply system (industrial uses and domestic uses, traditional activities and "modern" activities, effect on indigenous peoples, and so on);
  - a change in the visual quality of the landscape;
  - water quality problems, additional pressures on other resources and services;
  - a decrease or an improvement in the quality of life;
  - better awareness of the importance of a healthy environment and sanitary conditions;
  - improved access to good quality water (potability, odour, taste, women's workload, and so on);
  - sustainable management of water resources, for example, through the creation of a supply system management committee?
  
2. What types of environment, landscape, flora and fauna are present? What is their specific importance? Are there nearby water sources, wooded areas, slopes and other vulnerable sites? Is the area prone to landslides, flooding and drought? In what type of soil (texture, composition, drainage, and so on) and on what topography will the system be set up? Will the system use surface water and/or groundwater? What are the characteristics of these water sources in terms of quantity, quality and supply? Could the project have an effect on:
  - the quantity and quality of surface waters and/or groundwater; environments or sites of economic, ecological, cultural, archaeological or historical importance and the natural resources (water, flora, fauna, and so on) they contain;
  - rare or vulnerable species and/or species of economic, ecological or cultural importance?

### **B. Questions relating to the construction of the water supply system**

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1. What are the various site preparation activities? What are the components of the water supply system (reservoirs, pipes, boreholes, tanks, treatment facilities, facilities for workers, and so on) and how large an area will they cover? Will there be blasting, excavation, levelling, clearing or backfilling? What materials and equipment will be involved? Are they appropriate to the region? 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;
  - soil instability and risks of the collapse of underground pipes;
  - erosion of soils that are fragile, thin, on sloping land or near bodies of water, if vegetation is cleared;
  - soil compaction or changes in drainage and/or soil permeability;
  - nuisances (foul odours, noise, vibrations, airborne dust, traffic), risks of accidents and health risks to workers and the local population and/or problems of water, soil and air pollution;
  - fair and equitable participation of the local work force and a positive effect on the economy?

### **C. Questions relating to the operational phase of the water supply system**

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1. What are the proposed uses (domestic, industrial, and so on)? Will the population increase as a result of migration? Will the project lead to spontaneous, unplanned human, agricultural or livestock-raising settlements? Will the additional water promote new forms of production requiring high water consumption? Will there be a greater demand for natural resources and a reduction in their quality? Could the project lead to:
  - additional pressures which the natural resources (water, soil, flora, and so on), infrastructures and local services (housing, schools, and so on) cannot sustain;
  - changes to the level, recharge rate, flow and quality of the groundwater table;
  - drying up of the groundwater table if the recharge rate has been ignored, if annual precipitation is very low, if evaporation is very high, if groundwater is limited or difficult to access, if there is overutilization, and so on (in coastal or island areas, this drying up could lead to the infiltration of salt water into the groundwater table);
  - changes in surface waters (due to a reduction in the flow and quantity of water downstream, changes in direction, sedimentation, pollutant dilution capacity, erosion, and so on), in aquatic and riverine habitats and their associated food chains;
  - nuisances, risks of accidents, health risks to the population (water contamination, disease vectors such as malaria and schistosomiasis associated with puddles of stagnant water);
  - social conflicts, conflicts over ownership rights, land use and resources (for example, if usage fees and conditions have not been subject to an agreement);
  - participation of the population, as a result of training in monitoring and maintaining the system;
  - an improvement in the quality of life, health conditions and socio-economic development, resulting from better access to good quality water, in accordance with the legal context and with pre-established agreements and responsibilities regarding priority uses, methods of use and disposal;
  - an improvement in environmental conservation through appropriate methods of water distribution conservation by means of control valves and reducer pipes, sand reservoirs rather than open reservoirs in arid regions, rationing during the dry season, water taxes or user fees, clear agreements and responsibilities with respect to water management, and so on), a hygiene education program, the restoration of degraded sites and environmentally sound production practices?
2. Could pollutants (liquids, solids, gases) or undesirable substances seep into the system and its water sources? Will the distributed water require treatment? Is there a possibility of:
  - algal growth in water storage reservoirs if they are not covered;
  - pollution from industrial, domestic (faecal coliform, soaps from nearby sanitary facilities and latrines, and so on), agricultural (fertilizers, pesticides) or animal (faecal coliform and turbidity) sources?
3. Is there a risk of water and soil pollution as a result of the discharge of wastewaters? What is the source of these wastewaters (homes, industries, and so on)? Is the discharged water to be recovered and treated? Are the wastewaters and residual sludges to be reclaimed? Could the project lead to:
  - nuisances (odours, noise, and so on), risks of accidents and health risks associated with the type of treatment (sedimentation, filtration, chlorination, and so on) and its characteristics (ventilation pipes, hydraulic seals, covers, and so on);
  - eutrophication (significant input of organic matter) of waterways resulting from the discharge of residual sludges and other problems of water and soil pollution associated with residual sludges;
  - changes in aquatic and riverine habitats and their associated food chains;
  - interference of wastewaters with other systems (drinking water pipes);
  - seepage of contaminated waters into soils, surface water and groundwater as a result of leaks from the wastewater recovery and treatment system, particularly if soils are permeable or the groundwater table is high;

- overflow and/or backup of wastewaters caused by pumping and drainage stations inappropriate to the flow and quantity of wastewaters and to the characteristics of soils and topography;
- health risks (hepatitis, gastrointestinal problems, cholera, typhoid, and so on) to the population as a result of direct contact with wastewaters or residual sludges, or as a result of contamination of water or of food products watered with contaminated water?