



# Water Supply

Medium Risk Sector



The purification and distribution of water.  
For sewage and wastewater treatment refer to related 'Recycling and Waste Treatment' sector.

Related Sectors:

- Food and Beverage
- Recycling and Waste Treatment
- Energy Supply



## Production Processes

Water supply facilities obtain water either from groundwater sources or from a variety of surface water sources, including lakes, rivers, wells and the sea. Water usually has to be purified and, if it is taken from the sea, desalinated. Processes to remove contaminants from drinking water: Filtration, sedimentation and disinfection. Ion exchange and adsorption may also be applied. In some cases, groundwater is of such good quality that no treatment at all is required. Most water utilities choose a combination of treatment processes, depending on the quality of the water.

- **Sedimentation:** Small particles are combined into larger particles, which are segregated from the water as sediment. Aluminum and iron salts may be used to support this process.
- **Filtration:** Suitable for removing particles including clays and silts, natural organic matter and precipitates from other treatment processes in the facility, iron and manganese and microorganisms. Filtration clarifies water and enhances the effectiveness of disinfection. If inorganic contaminants cannot be removed adequately by sedimentation or filtration, ion exchange may be applied.
- **Adsorption:** Helps to remove organic contaminants, undesired colors and tastes from drinking water.
- **Disinfection:** Ensures that microbes are eliminated. Common disinfectants are chlorine, chloramines and chlorine dioxide, as well as ozone and ultraviolet radiation. Water is then either stored in tanks or distributed via pipes directly to houses and businesses.

## Sustainability Issues

- L Energy
- H Water Use
- L Emissions to Water
- L Waste
- L Emissions to Air
- L Ecosystems
- M Workplace Health & Safety
- M Disaster Risk
- L Site Contamination

### Sector Rating

- H High risk issue
- M Medium risk issue
- L Low risk issue

## Risks & Opportunities

- **Extensive water use may lead to conflicts with other users of the water resources.**  
Fresh water of high quality is required in order to meet quality standards. A reliable supply of water is essential. The unsustainable use of water resources will cause problems for other users (e.g. falling water tables, increased pumping costs) or even lead to water shortages. Large amounts may be lost as a result of leakage. There may be potential for preventing shortages, increasing efficiency and for addressing conflicts with other users of the same water resources.
- **Heavy machinery may present a health and safety risk to workers.**  
Using heavy machinery or working near traffic entails a significant risk to the health and safety of water utility employees. Compared with other sectors, accident rates are high (e.g. related to back injuries, hazardous chemicals and excavation). This requires special precautions and equipment.
- **Accidents with chlorine gas entail severe risks for health and safety.**  
Chlorine is heavier than air and will settle in low-lying areas if accidentally released. Exposure to low concentrations of chlorine gas over short periods of time does not present a public risk in most cases. As chlorine reacts with (body) moisture to form acids, exposure to high concentrations can be harmful, e.g. to the skin, eyes, mouth or to the respiratory organs.