



# Oil and Gas

High Risk Sector



The extraction, storage, transportation, trading and retailing of oil and gas products. The refining, transportation, storage, trading and retailing of petroleum products.

Related Sectors:

- Garages and Petrol Stations
- Mining and Quarrying
- Chemicals, Plastic and Paints
- Energy Supply
- Transport



## Production Processes

The key processes in the oil and gas sector are: Exploration, well development, petroleum refining and transport.

The **exploration** process starts with the search for rock formations indicating oil deposits. Geophysical research is undertaken and explorative drilling is conducted where necessary. Once potentially profitable fields have been identified, a well is drilled into the underground reservoir. Often many wells will be drilled into the same reservoir, to ensure that the extraction rate is economically viable. Some wells may be used to pump water, steam or other gas and liquid mixtures into the reservoir to increase the reservoir pressure, and so maintain an economic extraction rate. Where the underground pressure in the oil reservoir is sufficient, the oil will be forced to the surface by this pressure. After the oil has been brought to the surface, liquid and gas components are separated, and impurities such as sand, silt and water are removed. Once crude oil has been cleansed from impurities, it is ready for transportation to the refinery for further processing.

Most crude oil is **transported** in pipelines, while a smaller proportion is freighted on vessels, trains and trucks.

**Petroleum refining** is the process of extracting different kinds of hydrocarbons. An oil refinery is an industrial plant where crude oil is processed and refined into useful petroleum products, such as petroleum, kerosene, diesel and industrial fuel oil. Hydrocarbons are molecules of varying length and complexity made of hydrogen and carbon. Hydrocarbons are separated and purified in the oil refining process. Hydrocarbons have different structures and boiling points, which makes their separation by distillation possible.

## Sustainability Issues

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

### Sector Rating

- High risk issue
- Medium risk issue
- Low risk issue

## Risks & Opportunities

### • Wastewater containing chemicals can cause harm if released into the environment.

In oil production, many chemicals such as biocides, corrosion inhibitors, scale inhibitors and gas treatments are used. Water can be polluted by drilling, stocking, refueling and cleaning activities, as well as from oil spills. Wastewater containing residual oil and chemical additives should not be released untreated into the environment.

### • Oil and gas products are inflammable and explosive. Oil spills can occur.

Gas or vapors from oil products are highly explosive when mixed with air. They are also inflammable and must be kept away from naked flames, including cigarettes, as well as potential sources of electrostatic discharge. Oil spills can pollute rivers, bays, the ocean and land areas. Oil spills are caused by accidents involving tankers, barges, pipelines, refineries and storage facilities.

### • Oil and petrochemical products can pollute the air.

Vapors from petrochemical products such as diesel and petrol can pollute the air. Gas flaring and oil refineries may emit various chemicals into the atmosphere and generate bad odors. Refrigerants used in gas cooling equipment entail risks to health and safety.

### • Empty oil containers and waste from production processes can contain oil residues.

The removal, cleaning and disposal of oil containers should be done in such a way that water resources are not polluted. Sludges and residues from the processing and storage of petrochemical products must be treated as hazardous waste.