

## The impact of cogeneration power and desalting plants (CPDP) on the environment in Kuwait

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### ABSTRACT

Fossil fuels (petroleum oil, natural gas) are the only type of fuel used for electric power generation to desalt seawater in Kuwait, Gulf Cooperation Countries (GCC), and all Arab countries. The main constituents of fossil fuel are carbon (C) and hydrogen (H<sub>2</sub>) besides small portions of impurities such as sulphur (S), nitrogen (N<sub>2</sub>), oxygen (O<sub>2</sub>), water moisture and particulate matters (ashes). When the fossil fuel is combusted (i.e. reacted with the oxygen in the air to generate heat), the produced gases include mainly carbon dioxide (CO<sub>2</sub>), water vapour, carbon monoxide (CO), sulphur dioxide (SO<sub>2</sub>) and nitrogen oxide (NO). The CO, SO<sub>2</sub> and NO gases pollute the air and are harmful to human health and the environment. CO<sub>2</sub> is the main component of the greenhouse gases (GHG) which cause global warming. The emission of CO<sub>2</sub>, CO and NO gases from power plants to the environment creates great international concern. The basics of the environmental issues related to fossil fuel combustion and its released gases are outlined in this paper. The emitted gases due to fuel combustion to produce electric power and distilled water in Kuwait and some Arab and other countries are calculated. The mitigation of GHG is also discussed.

*Keywords:* Air polluted gases; Carbon dioxides; Cogeneration power desalting plants; Fossil fuel; Fuel consumption; Global warming; Greenhouse gases; Nitrogen oxides; Sulphurous oxides

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