Summary

The strong growth of air transport and airports has had its effect on the environment. At the airport many transport systems are in operation, from busses to air craft tractors. The effect on the environment are local (HC, NO_x, CO, PM-10) and global (CO_2).

In this report the environmental issues, related to the landside transport systems at airports, have been studied. The four most important pollutants influencing the local air quality at airports are hydrocarbon (HC), nitrogen oxides (NO_x), carbon monoxide (CO) and particulate matter (PM-10). CO_2, which is emitted from burning fossil fuels during operation of landside transport systems at airports, is the most important pollutant influencing the global climate change.

At airports many transport systems are in operation. In general these transport systems can be divided in two types; Ground Service Equipment (GSE) and Ground Access Vehicles (GAV). GSE exists of vehicles and equipment designed for the service of aircrafts during ground operation. GAV's are commercial vehicles like buses, shuttles and taxi's that serve the airport.

Gasoline and diesel are the most common used engine types for landside transport systems at airports. Although most landside transport systems at airports are diesel or gasoline powered, there are several improvements and alternatives possible to counter the effect on the environment of landside transport systems at airports. The possible technical improvements consist of product improvement and re-design and includes the use of; retrofit devices, LPG/CNG power, electric power, hybrid power, biodiesel and ethanol. Another type of innovation, besides technical innovation and re-design, is system innovation. The usage of fuel cell cars as landside transport at airports is an example of system innovation. However, hydrogen has been called the least efficient and most expensive possible replacement for gasoline in terms of reducing greenhouse gases. For this reason the option of fuel cell cars as landside transport system at airports is currently not realistic.

In order to reduce the effect on the environment by landside transport systems at airports, organizational improvements can be applied. Using electrical transport systems at airports can be organizational improved by making use of green electricity. Green electricity is electricity generated from sources which do not produce pollutants or produce low amounts of pollution.

Besides technical and organizational improvements, also functional alternatives for the current landside transport systems can be applied. Examples of functional alternatives for the current landside transport systems at airports are gate electrification and combining human and electric power with the aerorider.

There are several costs and effects related to the different improvements and alternatives. In general, all improvements, less or more, contribute to lower emissions of pollutants. However, some

improvements are more cost efficient than one other and some improvements have more effect than one other.