

Solid Waste Management at Sudair Industrial City

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Abstract

Sudair Industrial City is the largest proposed industrial cities in Saudi Arabia. The total area of the City is to cover approximately 258km² of land located approximately 130km north-west of Riyadh. The site is to have a maximum dimension of approximately 35km by 10km. There is a shortage of relevant baseline information with respect to waste management on and around the proposed site. However, at present it is considered that there is now waste infrastructure on the site. Additionally, the development is not known to be close to any major city which provides any significant existing waste infrastructure that will be able to accept wastes from Sudair Industrial City's current construction.

Methodology

- Solid waste should be segregated into the following categories:
 - Organics or non-organics;
 - Recyclable / re-usable wastes (plastics and concrete)
 - Hazardous waste;
 - Remaining non-recyclable waste.
- Off-site disposal of wastes should be at appropriately licensed waste facilities;
- The design team and contractors are required to investigate opportunities to minimize waste and maximize recycling;
- To reuse potential of construction materials

Objective

The main objectives are:

- An ultimate purpose of the Sudair Industrial City Development is that as much waste as possible should be re-used or recycled.
- The Environmental Design Criteria sets targets of at least 50% of total non-hazardous waste arising to be recycled.
- In order to achieve sustainable waste management the following waste hierarchy should be adopted.
- The measures at the top of the hierarchy are always preferable to those at the bottom and therefore should be implemented in preference to measures lower in the hierarchy.
- The waste hierarchy should be adopted at both the construction and operational phases of any development to support environmental good practice and appropriate waste management.



Effect of Waste on Sudair Environment

Construction impacts

There is no waste infrastructure established for any pending increase in construction waste. There will be a minimum increase of 220,779 tones till 2025. This is will have a major adverse impact on not the only the waste infrastructure, but also the local environment. This is a result of both these receptors being highly sensitive and there being a major magnitude of change.

Operational impacts

No operational waste is being produced at present as the proposed development is still in largely at the planning stage. However, there is no waste infrastructure established at this point to accommodate the pending operational period. Waste generation rate there will be 1,375,000 tones till 2025. This is will, like construction waste, have a major adverse impact on the waste infrastructure and local environment.



Example of a construction and demolition plant

Significance to the Kingdom

The waste infrastructure should be established to accept wastes from Sudair Industrial City's current construction and / or the surrounding community.

Establishing a waste infrastructure will leads to:

- Managing and disposal of waste materials, especially hazardous materials;
- Keep waste out of groundwater resources;
- Get rid of the risk of fire from poor waste storage;
- Efficient use of resources resulting in excessive waste generation.
- Neighbouring cities could cooperate with Sudair Industrial City management and utilize of the waste infrastructure

Conclusions

- This project outlines the impacts of waste generation during the construction and operation of the Sudair Industrial City development.
- As the site is currently void of any waste management infrastructure the short term projections for subsequent environmental impact are considered to be major adverse, due to a high magnitude of change and high receptor sensitivity.
- However, once suggested waste management mitigation measures are incorporated the remaining impacts of the construction and operation will be minimized.