

Air Quality Modelling Methodology

This document outlines a brief methodology or approach for the air quality modelling study to be conducted in the scope of the revision of the existing Environmental and Social Impact Assessment (ESIA) Report of the MAG Hight Standards Train Project.

1. Model selection

Only construction phase emissions will occur, and sources will be distributed along the proposed route of the railway. In addition, due to nature of railway construction, sources can be classified as discontinuous. Emissions from the existing quarries which are considered as the only source for material supply by REC are covered with the measurements provided in the existing ESIA's baseline surveys. These measurement points will be considered as the assessment points during this new modeling study.

As air pollutant sources and receptors are considered, AERMOD model can represent dispersion simulation for the project.

2. Meteorological data

There are 9 meteorological station through project route. These stations are:

- Mersin,
- Tarsus,
- Adana,
- Ceyhan,
- Osmaniye,
- Düziçi,
- Bahçe,
- Nurdağı,
- Gaziantep.

As Düziçi, Bahçe and Nurdağı stations are close to each other, only Nurdağı station is determined as representative to this area.

As a result, for modelling study, Mersin, Tarsus, Adana, Ceyhan, Osmaniye, Nurdağı and Gaziantep meteorological stations will be used.

3. Receptor Grids

Because of the linear structure of the emission sources, a linear receptor system is determined. This system covers a 5 km distance from south and 5 km distance from north.

4. Assessments

Assessment will conduct for three different receptor categories in accordance with Turkish legislation and the pertinent international standards.

- I. Air quality sampling results
- II. Sensitive receptors
- III. Overall receptor system (5 km either side of the line)

Main pollutants for construction phase are PM10, PM2.5 and dust deposition. Standards are, Turkish national standards, EU standards and WHO standards.

2U1K has km-based filling and excavation volumes but this is difficult to estimate progress for each volume. Therefore, an area based emission factor was obtained from 2019-2.A.5.b-Construction and Demolition document. Project route is divided into 7 meteorological areas and each area emissions are calculated according to these emission factors.

Modelling study has been carried out for all sections including other contractors. Instead of using number of vehicles, total fuel consumption will be used to calculate diesel emissions.

Air quality sampling results show the background concentrations and will be used to calculate cumulative values. (Model results+sampling results)

Regarding classification and identification of sensitive receptors, a stakeholders document, which includes 102 settlements, was used.