Air Quality

Rationale/Challenge:

The impact of transport on air quality, specifically concerning nitrogen oxides (NOx) and sulphur oxides (SOx), is well understood. Vehicles, particularly those using fossil fuels, emit significant quantities of NOx and SOx, contributing to various environmental and health concerns.

NOx emissions, predominantly from vehicles' combustion engines, react with other compounds in the atmosphere to form ground-level ozone and fine particulate matter (PM2.5). These pollutants have detrimental effects on respiratory health, exacerbating conditions such as asthma and bronchitis.

SOx emissions, largely originating from vehicles using diesel fuel containing sulphur, contribute to air pollution and are associated with respiratory illnesses. Moreover, sulphur dioxide (SO_2), a common SOx compound, can lead to the acidification of soil and water bodies, posing risks to aquatic life and vegetation.

Non-exhaust emissions originate largely from tyre, brake and road wear and represent an important source of particulate matter which will increase as a proportion with the move to electric vehicles.

The EC, national governments and certain cities have targets around clean air and have implemented clean air / low-emission vehicle zones. Whilst the transition to EVs will reduce tailpipe emissions, diesel-fuelled heavy goods vehicles and buses will continue to emit NOx and SOx, whilst all will produce non-exhaust emissions.

Scope Proposals should address one or more of the following:

The scope will include light and heavy vehicles, research and testing laboratories.

The following R&I activities are proposed:

CSA

1. Calculate NOx and SOx emissions based on a range of future vehicle fleet mix scenarios, based on uptake of electric cars and light vehicles to 2035 and a mix of uptake scenarios for electrified or hydrogen heavy goods vehicles. Advise on policy to optimise air quality.

RIA

Develop a system to capture and collect non-exhaust emissions, trial in a laboratory and real-world with research into business models for disposal or recycling of collected particles. Model the impact in city hotspots should the system be deployed widely.

Expected Impact

- Strategies to reduce air pollution.
- Prediction of future air pollution.
- Techniques to reduce tyre / road wear.

Relevant Clusters: Cluster 5

Project Type: CSA (€2 million) + RIA (€13 million)	**Budget:** €15 million

FEHRL