Improving our knowledge on transport pollution and health

TRANSPHORM FACTSHEET

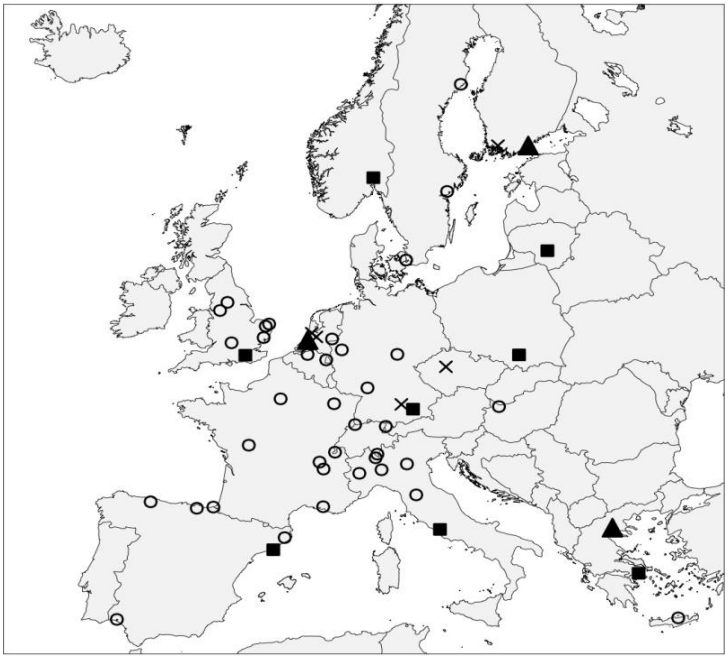
Project title:
Transport related Air Pollution and Health Impacts- Integrated Methodologies for Assessing Particulate Matter (TRANSPHORM)

Web address:
www.transphorm.eu

Overview:
TRANSPHORM brings together international scientists in the fields of air quality and health to improve our knowledge of transport related airborne particulate matter (PM). Through new measurements and advanced modelling, it will quantify the health impact of PM resulting from transport emissions on city and European scales.

Aim:
To develop and implement an integrated methodology to assess the health impacts of particulate matter (PM) resulting from transport related air pollution covering the whole chain from emissions to disease burden.

PM measurements in European cities



▲ TRANSPHORM campaign cities

■ ESCAPE cities

x Additional application cities

○ Other ESCAPE measurement cities

Key TRANSPHORM cities:

Rotterdam, London Oslo, Helsinki, Athens

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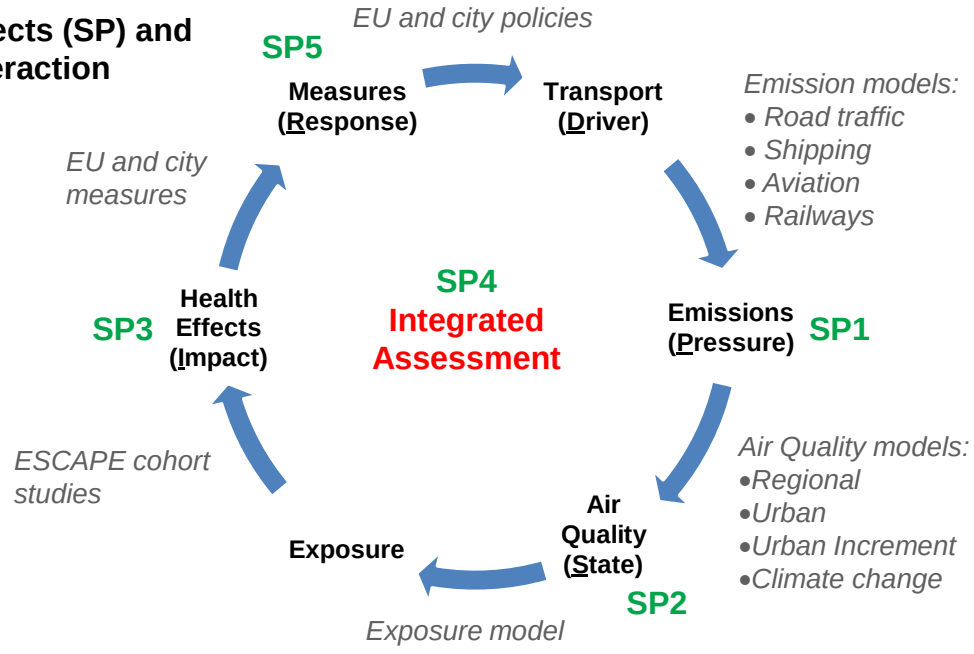
Project Objectives

TRANSPHORM will develop and implement integrated methodologies to assess the health impacts of transport related PM. The key objectives of TRANSPHORM are:

- To improve our understanding of transport sources of size-resolved and speciated (primary and secondary) particulate matter air pollution including non-exhaust, shipping and aviation.
- To determine improved emission factors of ultrafine particle number (PN0.1) and mass fractions of PM2.5 and PM10 through new and existing data for key transport sources.
- To conduct targeted measurement campaigns in Rotterdam, Helsinki and Thessaloniki for source apportionment, exposure assessment and model evaluation.
- To quantify pollutant-specific human exposure to airborne particulate matter in urban environments resulting from road, shipping, rail and aviation.
- To develop, improve and integrate air quality dispersion and exposure models for urban and regional scales including long-range transport.
- To develop new concentration-response (CRF) linking long and short-term ambient residential exposure to size-resolved and speciated PM with key health endpoints.
- To develop and implement an integrated assessment tool to investigate and analyse the whole chain of processes for selected cities and Europe.
- To incorporate micro-environmental concentrations, time-activity patterns and estimates of internal dose into the health impact assessment (HIA) process.
- To conduct integrated health assessment for a number of selected European cities.
- To design and test the effectiveness of mitigation and adaptation strategies for European and international policy refinement and development.
- To exploit the results of TRANSPHORM through global dissemination and interactions with European and international stakeholders.

Subprojects (SP) and their interaction



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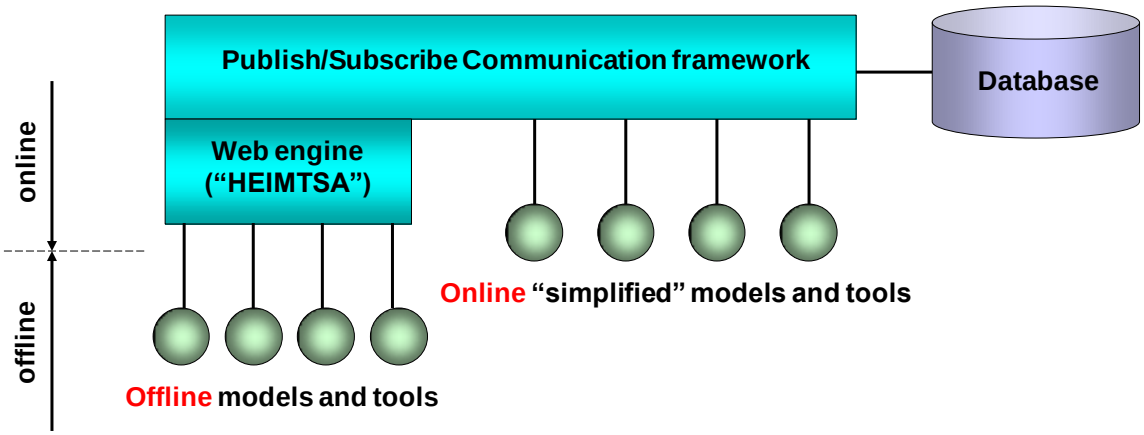
Improving state of the art by providing:

- Improved and new emissions factors of size fractionated PM and PN0.1 resulting from transport sources (SP1).
- New measurements of size fractionated PM from major European cities with different pollution profiles (SP2).
- Improved source apportionment of PM through the use of measurements and dispersion and exposure models (SP2).
- Improved modelling approaches for city and regional scales including the use of ensemble techniques (SP2).
- Development of methodologies based on integrated state-of-the-art models for advanced health impact analysis along with simpler approaches for operational applications (SP2).
- An improved understanding of exposure and health impacts linking long-term exposure to size-fractionated and speciated PM (SP2, 3).
- Development of new PM concentration response functions (CRF) for key health outcomes (SP3).
- Development and application of an integrated assessment tool to quantify health impact of PM resulting from transport sources (SP4, 5).
- Development of mitigation and adaptation measures with recommendations for policy formulation and response (SP5).

Concept of Integrated Assessment Tool (IAT)

1. Online – Empirical models for quick response (annual means)
2. Offline – City and regional models (detailed analysis), e.g. URBIS, OSCAR, WRF-CMAQ, EMEP, SILAM, ENVIRO-HIRLAM, LOTUS-EURO



Users of the IAT will include those within TRANSPHORM and external stakeholders, e.g. city and regional authorities.

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Project Facts

- FP7 theme: Environment and climate
- Number of partners: 21
- Project start date: 1st January 2010
- Project duration: 48 months
- Requested budget: € 6,915,554
- Project coordinator: University of Hertfordshire, UK

TRANSPHORM partners with external expert, S.T. Rao at a meeting in Rotterdam, 2011

Project Partners

University of Hertfordshire (UK)	Aristotle University of Thessaloniki (GR)	Institute of Environmental Medicine, Karolinska Institutet (SE)
Netherlands Organisation for Applied Scientific Research, TNO (NE)	Joint Research Centre (INT)	Danish Meteorological Institute (DK)
Utrecht University (NE)	Institute of Occupational Medicine (UK)	Imperial College of Science, Technology and Medicine (UK)
Norwegian Institute for Air Research (NO)	Swedish Environmental Research Institute, IVL (SE)	Institute of Social and Preventive Medicine at Swiss Tropical Institute (CH)
Finnish Meteorological Institute (FI)	National Institute for Health and Welfare, THL (FI)	Center for Physical Sciences and Technology (LT)
German Aerospace Centre, DLR (DE)	Norwegian Meteorological Institute, Met. No. (NO)	Stuttgart University (DE)
Transport & Mobility Leuven (BE)	HMGU German Research Centre for Environmental Health (DE)	City Development Authority, URM (CZ)

For more information about TRANSPHORM, please visit www.transphorm.eu, or email the Project Coordinator, Prof. Ranjeet Sokhi at r.s.sokhi@herts.ac.uk

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