Work package 2 Assessing the vulnerability of European surface and ground water bodies to road runoff during the building and operating of roads

Objective

The central aim of this Work Package (WP) is to compile, review and critique existing data sets and tools to define surface and groundwater body vulnerability in relation to the polluting impacts of road construction and operation activities (both rainfall generated and more episodic accidental spills/incidents). Integration and interrogation of water quality and land cover data sets (e.g. land use, traffic density, water body status) will support the development of new knowledge on the relationship between road-related pollutant emissions and of receiving water body status both vulnerability and risk assessment perspectives. Through working iteratively with the project international advisory board (IAB), this new knowledge will be made accessible to stakeholders (e.g. road operators, environmental protection agencies and road operators). This will involve the development of a user-friendly decision support tool to assess surface and groundwater vulnerability to and impact of road pollution thus supporting the sustainable development of the road network and directly contributing to addressing societal expectations that the environmental impacts from roads will be mitigated.

Description of work

Current international best practice with regard to protecting and enhancing surface water and groundwater bodies is to develop and implement an integrated water resources management strategy at a river basin scale. This approach is central to the delivery of the EU Water Framework Directive (EU WFD, 2000) which, amongst other measures, requires Member States (MS) to identify pressures (e.g. chemicals, nutrients, fine sediment and physical modifications) affecting the water environment, and the establishment of 'Programmes of Measures' to ensure that all surface water and groundwater bodies achieve good status by 2027. An initial step in implementing the EU WFD was the characterisation of current state of water bodies in relation to their biology, hydromorphology and chemical quality (surface waters) and quantitative and chemical quality (groundwaters). With the 4th EU WFD implementation report published in 2015, there is now a substantial body of biological and physico-chemical data available for both surface water and groundwater bodies throughout the EU (e.g. River Basin management Plans). Together with rapid advances in the mapping of land cover (e.g. CORINE, UK land cover, LIDAR data sets) and increasing knowledge of subsurface geology, increased data availability provides exciting new opportunities to integrate multiple sets of water body, geological and land cover data and derive new understandings of water body vulnerabilities and how this may vary both seasonally and in relation to catchment-scale dynamics. Aligned with this new knowledge, is the opportunity to develop a user-friendly water body vulnerability assessment to enable stakeholders (e.g. road operators, environmental protection agencies and community groups) to access and navigate their way through these expanding data sets, supporting the development of evidence-based management strategies and resource allocation.