Proposals for NORMAN Joint Programme of Activities 2026

Title	**A roadmap and guidelines for the introduction of Microplastics Database into the NORMAN Database System**
Type of activity	Developing guidelines and a roadmap for harmonised NORMAN microplastic database.
Leader	Ralf Kaegi (Eawag), Bert van Bavel (NIVA), Vilde Kloster Snekkevik (NIVA), Jaroslav Slobodnik (EI), Ike van der Veen (VU)
Topic / activities	***Background / Justification for the proposed activity:*** Accurate particle-based and mass-based quantification of microplastics (MP) in complex matrices (e.g., seawater, freshwater, wastewater, soils, sediments, sewage sludge) depends on harmonised sampling protocols and, in case of particle-based investigations, reliable matching of experimental spectra with high-quality reference spectra. However, no central, standardised database currently exists. Available reference spectra are fragmented across instrument manufacturers and software platforms, often incompatible due to differences in spectral resolution, data formats, and material coverage. This lack of harmonization results in misclassification of MP. Existing databases are often limited in scope, contain spectra of variable quality, rarely include aged or environmentally degraded polymers and often lack relevant metadata - factors that further challenge the interpretation of MP data. Manual spectral comparison is possible for a limited number of spectra, but recent instrumental developments (focal plane array detectors, quantum cascade laser-based systems) require automated processing algorithms. However, the reliability of any automated classification tools remains constrained by the quality and completeness of the underlying reference libraries. Additional complexity is introduced by variances between the TED- and Py-GC-MS mass spectral data. Further uncertainties in MP assessments arise from non-standardised measurement and processing protocols across laboratories. Regular updates of harmonized databases are needed to capture emerging or less common frequently used polymers. These issues became evident during the NORMAN 2024 interlaboratory comparison (ILC) and were reinforced by two workshops held in 2025. The first workshop (μFT-IR databases and software tools) concluded that harmonised processing pipelines, classifiers, or reference databases for microplastics are currently lacking. The second workshop (storage and use of environmental MP data) revealed the challenges associated with the inclusion of microplastic data into existing environmental databases, which are not designed for microplastics, lack spectral data, are biased toward marine environments, and face major QA/QC challenges with hyperspectral datasets. ***Description of the proposed activity and expected outcomes for 2026:*** The online workshops held in 2025, demonstrated the need for establishing a harmonised database for microplastics and it was agreed that NORMAN should play an important role in this topic. As a next step, two physical workshops will be organised with the experts in the field to identify and formulate guidelines for including microplastics into the NORMAN Database System. A roadmap, guidelines and a prototype of the on-line Microplastic Database will be created in the first half of 2026, to accommodate selected sets of already available results from major national/international microplastics screening surveys using Raman, FTIR and TED/Py-GC-MS data. The WG-4 Workshop in November 2025 clearly identified that there are numerous NORMAN members willing to share the data on microplastics monitoring. The database will reveal potential for intercomparison of available data. It will also serve as a basis for future harmonisation of sampling and analysis protocols Europe-wide. The Microplastics Database will have to include complex spectral datasets, such as particle based as well as hyperspectral data. This will allow for inclusion of microplastic data obtained from instruments using different measurement approaches and guarantee data comparability on a long term. ***Added value / Link with other NORMAN activities and / or other projects*** NORMAN is well-known for its core activities creating databases to ensure method harmonisation, exchange of information and collection of data on emerging environmental pollutants. Micro- and nano-plastics fall into this category. The JPA will strengthen the quality of monitoring of micro- and nano-plastics for the marine environment (WG-8) but also of important for the indoor environment (WG-6) and terrestrial environment (WG-7). Additionally, the JPA will supplement existing JPAs for 2026 and draw on the experience from JPAs such as the JPA 2025 proposal “Plastic associated chemicals” led by Andrea Brunner (TNO).
Participants	NIVA, Eawag, Environmental Institute, VU-University
Proposed in-kind contribution	EI, microplastics data from EMBLAS and JDS4/JDS5 projects. NIVA, Norwegian Environment Agency MP monitoring program (2020-2025) MikroNor
Contribution needed from NORMAN Association[1]	Two physical workshops at locations Oslo, NIVA (3500€) and VU, Amsterdam (3000€) Beta version of the Microplastics Database, programming, curation and upload of data (EI) (4500€).

[1] Please, provide here a transparent justification of the requested resources and of the in-kind contribution, thereby distinguishing between the costs associated with “person-months” for the organisation, the “travelling costs” for invited speakers and the costs for the logistics (e.g. meals, room rental etc.)