

## Proposals for NORMAN Joint Programme of Activities 2023

<b>Title</b>	NORMAN WG-5 Water reuse risk assessment and policy support
<b>Type of activity</b>	Working Group activities
<b>Leader</b>	LTU, DERAC and EI
<b>Topic / activities</b>	<p><b>Background / Justification for the proposed activity:</b></p> <p>In response to the escalating problem of water scarcity and waste management, treated wastewater, sewage sludge and other solid matrices are increasingly identified as reliable alternative sources for a range of applications. Although the reuse practice is accompanied by a number of benefits, a number of questions are still open regarding the release of contaminants of emerging concern. Current open challenges include the spread of chemicals and biological contaminants (e.g. viral genetic material including SARS-CoV-2, antibiotic resistance genes and bacteria), the effects that these contaminants may induce on receiving ecosystems and humans exposed via the environment, the identification of technologies that are able to remove such contaminants and means and solutions to overcome these problems and promote safe reuse practices further.</p> <p><b>Description of the proposed activity and expected outcomes for 2023:</b></p> <p>A growing interest for data on CECs linked to reuse practices (i.e., the reuse of environmental matrices for different purposes like agriculture, aquifer recharge, urban and recreational activities, construction, land restoration) has emerged with the new Circular Economy Action Plan, the recent adoption of the new EU regulation on water reuse for agricultural irrigation and revision of the EU Directive regulating the reuse of sewage sludge in agricultural fertilisation. In line with the proposed activities built on the revised WG5 mandate (adopted in 2020), three projects, all related to databases, have been further developed in 2022 with further activities planned to continue in 2023.</p> <p><b>Task 1: The Antibiotic Resistance Bacteria and Genes Database</b></p> <p>The database has been created in 2020. It is officially part of the NORMAN Database System since 2021. In total, 1859 data points (25 datasets) have been introduced in the database. The data cover eight countries and five different matrices. A publication describing the database and its population with the initial dataset is in preparation. During 2023, the following actions are expected:</p> <ul style="list-style-type: none"> <li>• A self-contribution system to allow researchers to upload their data without external support</li> <li>• Data exploration tools will be deployed in the database</li> <li>• DCT completion to enrich the database with a critical amount of data points by aggregating the data of relevant publications</li> <li>• Publication of a peer-reviewed study</li> </ul> <p><b>Task 2: the NORMAN SCORE SARS-CoV-2 in sewage (SC2S) Database</b></p> <p>Following its launch in 2020, the SARS-CoV-2 in sewage database is continuing to develop e.g. the data collection form has been simplified and a pilot study to collect data from 2-3 wastewater treatment plants per country on a monthly basis completed). As of the end of 2022, 1148 datasets from 22 partners in 11 countries are available in the database. A common challenge identified by contributors is that – whilst they are willing to share data – they have little time to complete DCTs. To facilitate upload of data we request funds to enable a researcher to:</p> <ul style="list-style-type: none"> <li>• liaise with partners who wish share data</li> <li>• complete DCTs and facilitate upload to the database</li> <li>• explore potential to expand database to include further pathogens</li> </ul> <p>Further population of the database will support the analysis of relationships between parameters and the exploration of how they vary spatially, temporally and in relation to catchment characteristics.</p> <p><b>Task 3: “Water reuse quality database”</b></p> <p>The upgrade of the NORMAN existing databases, EMPODAT (occurrence data) and Ecotoxicology (quality targets/ hazards data), has been identified as the most relevant approach to collect data related to chemical contaminants in reused matrices and to characterise their risk according to the WG1 prioritisation framework. In 2021, a survey was launched to identified the reused matrices and practices. In 2022, EMPODAT DCTs (i.e. WWTP, surface water, groundwater, sediment, soil, biota) were updated with new matrices/use categories and tested via a pilot study to confirm their practicality for regular submission. Regulatory quality targets for water reused in agriculture and for soil (in order to convert them in quality targets for sewage sludge reused in soil fertilisation) were also collected and a preliminary risk characterisation with existing EMPODAT datasets was performed.</p> <p><b>Activities planned for 2023:</b></p> <ul style="list-style-type: none"> <li>• Make the new EMPODAT DCTs available on NORMAN website and DCTs completion to enrich the database with occurrence data on reused matrices.</li> <li>• Continue the collection of regulatory quality targets for reused matrices and DCT completion to enrich the Ecotoxicology database.</li> <li>• Continue the risk characterisation and support the prioritisation of chemicals in environmental matrices reused for various practices.</li> <li>• Publication of a peer-review study.</li> </ul>

	<p><b>Added value / Link with other NORMAN activities and / or other projects</b></p> <ul style="list-style-type: none"> <li>• Support the WG1 Prioritisation activities: identification of priority contaminants in environmental matrices (i.e. water, sewage sludge, pond/dredged sediment and excavated soil) intended for reuse in different practices and processes.</li> <li>• Identification of the contribution of WWTPs to the environmental spreading of biological hazards i.e. Antibiotic resistance and Covid.</li> <li>• Links with other networks: SCORE (SARS-CoV-2 in sewage database) and Water Europe association (Water reuse quality database).</li> <li>• Support the implementation of the EU Regulation on minimum requirements for water reuse (2020/741), Sewage sludge Directive (86/278EEC) and Circular Economy Action Plan.</li> <li>• Contribute to the PARC partnership, the European Green Deal's Zero Pollution Action Plan and the Chemicals Strategy for Sustainability.</li> </ul>
<b>Participants</b>	WG5 members and partners from SCORE and Water Europe networks
<b>Proposed in-kind contribution</b>	<p>LTU: Co-leading WG5, further development of the SC2S database and lead on the analysis of submitted datasets.</p> <p>DERAC: Activity transferred to WG-1 on Prioritisation. Contribution to Task 6 for the application and upgrading of the NORMAN prioritisation workflow to the specificities of the reused matrices..</p> <p>LTU&amp;DERAC: Manuscript preparation for the risk characterisation of chemical contaminants in stormwater reused for surface water recharge and stormwater pond sediment reused for soil fertilisation (Database for chemical in reused matrices).</p> <p>EI: Manuscript preparation for the ARB&amp;ARGs database, database improvement and technical support</p>
<b>Contribution needed from NORMAN Association<sup>1</sup></b>	<p>DERAC (4,500 €) Co-leading of WG5</p> <p>DERAC (2,500 €) Activity/cost transferred to WG1 on Prioritisation. Data collection and DCTs compilation for risk characterisation and prioritisation.</p> <p>LTU (2,500€) Support in collating and uploading wastewater and clinical data to the SARS-CoV-2 database and exploration of opportunities to include further pathogens.</p> <p>EI (2,500€) Person time for filling in DCTs for the ARB&amp;ARGs database</p>

<sup>1</sup> 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.)