RI-URBANS

Tasks description of WP5

T5.1. Implementing data management framework supporting RI-URBANS services.

This task will establish the data management framework after receiving measurement data (from WPs 1-4), measurements and products, provides data services to T5.3, knowledge basis on data curation, harmonization and access to T5.5. This will be done synergically and interoperably between AQMNs and ACTRIS-DC. It addresses the most suited organization of measurement data from RI-URBANS and ensures that the conditions for data compilation, archiving, curation and access are well documented. Task relies on ACTRIS-DC and IAGOS-DC following FAIR principles and will utilize the solutions and protocols from ENVRIFAIR, and the atmospheric sub-domain. T5.1 drafts the data management plan (DMP, D5.1 updated in D5.9 M18 and with a final version D10, M42) covering data outcomes from WPs 1-3, and the measurement data from pilots in WP4. Thus, a preliminary D5.1a will be delivered in M06, which will be updated in M18 (D51.b) and finished in M42 (D51f) to provide inputs for upscaling. ACTRIS DC will offer data curation for data complying contributing to harmonised data on urban and regional scale, while the DMP will provide data curation recommendations for all data and encourage links to existing data centres (such as ICOS, AirBase, EMEP). T5.1 also supports the integration of data on vertical profiles of pollution and its origin, by offering tools to support the interpretation of atmospheric conditions and their impact on the urban area (IAGOS DC). Such services will be tailored to provide thus new metrics and diagnostics for model “smart or process-oriented” evaluation. D5.2 will contain the description on how to Access Open Research Data (M24 and updated M42 D5.11). Finally, a service catalogue emphasizing IAGOS and ACTRIS services and tools for urban regions will be produced (D5.3, as input to T5.3). T5.1 also ensures pre-pilot training activities for adequate data transfer to DC by skilled personnel.

T5.2. Establishment of the measurement quality framework supporting RI-URBANS services.

This task will establish the measurement quality framework, by addressing quality assurance/quality control (QA/QC), traceability and standards of conducted measurements and ensuring knowledge transfer to relevant stakeholders (AQMNs in particular). This task supports implementation of QA/QC measures in the pilots (WP4) in close connection with pilot leaders and the ACTRIS TC. Technical framework for QA/QC related to new, highly valuable AQ variables and tools developed in WPs 1-3, not yet included as RI-variables (in ACTRIS nor IAGOS), such as Oxidative Potential or Atmospheric Boundary Layer (ABL) height will be addressed. In addition, T5.2 compiles technical guidelines for AQ monitoring and assessment tools (such as source apportionment), mobile measurements or low-cost sensors. T5.2 also addresses

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measurement-related knowledge transfer to AQMNs, through joint workshops with AQMNs and the AQUILA network. Through T5.2, RI-URBANS and AQUILA will develop shared expert judgement on applicability of non-standard measurement methods, knowledge transfer towards AQMNs (D5.4).

T5.3. Establishing the modelling framework supporting RI-URBANS services.

This task will transfer the developments of STs in WP3 to CAMS by: (i) evaluating of model vertical profiles in cities, and (ii) obtaining source apportionment of health relevant indicators (e.g. PM mass, nanoparticles, OP). These will be provided in a user-friendly environment that will enhance citizens' implication, and thus, contribute to citizen's science. A ST to validate regional AQ models over urban areas will be provided. The added value of RI-URBANS is both to extend this service to urban areas and include more diagnostics (from T1.3), such as urban atmospheric boundary and surface layers having strong influence on NO2, nanoparticles and PM. T5.3 will focus on the operational integration including making the model interface more generic to meet the needs of a larger modelling community. Source apportionment methodologies developed in T3.3 will also be upgraded to a service level in T5.3. Emission sectoral source apportionment, but also local, regional and long-range transport contributions will be included and applied to nanoparticles, PM and OP. This product will be upgraded to be as NRT as possible in close collaboration with T1.2 and T5.2 (D5.5).

T5.4. Demonstration of replicability and uptake pathways of urban AQMNs-RIs interoperable services.

This task will serve as a real word replication showcase to a city that is not part of the pilots to provide information on pathways to implement RI-URBANS STs taking into account specificities of the city, and to demonstrate the ways to trigger the decision-making for upgrading the AQMN for enhanced AQ observations. An evaluation of the current status and needs to implement RIURBANS solutions will be carried out. Guidelines on capacity building and development, human resources, purchase and maintenance costs, training needs, inventorying of SOPs, manuals and best practices will be supplied for a smooth replication. Results from the pilots will be used in an added-value approach in collaboration with WP7 the city authorities will be engaged. Effectiveness of STs will be demonstrated through cost-benefit analysis, estimating the return on investment (ROI) for the selected city (Warsaw, Poland, based on its strategic location in Europa, significant pollution levels, and low AQMN capacity and low awareness). The demonstration of the benefits for this city (D5.6) will be summarized. The associated Russian partners will be also involved here to replicate STs in two Russian cities with their national support.

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T5.5. Strategic guidance for European up-scaling RI-URBANS STs.

The up-scaling strategy based on the outcome of the whole RI-URBANS tasks will be provided. T5.5 develops a roadmap document targeting AQMNs and authorities involved in AQ (and health) management at national, regional and local scales, defining the most suited practices for up-scaling and replicating the RI-URBANS solutions. Different stakeholders will be engaged early-on providing specific challenges and needs ensuring synergies with existing data structures and services. Considering the lessons learnt from the demonstration of such a replication in a pilot city, as described in T5.4, an upscale of the cost-benefit analysis will be conducted. Solutions for sustainable and long-term RI-URBANS STs implementation will be offered, either as an upgrade of the RI service portfolio or through other service providers, such as CAMS (D5.7). Additional options for upscaling will be explored through GEO and global (through their European components) city networks i.e. iCLEI (Local Governments for Sustainability), the Global Resilience Cities Network (GRCN) etc. RI-URBANS services will also be added to ACTRIS and IAGOS portfolios together with modalities for Access (D5.8). Guidance addresses: (i) Best practices for knowledge transfer from RIs to AQMNs, and vice versa, to promote advanced AQ observations, improved use of resources and complement capabilities; (ii) Modalities for RI-URBANS STs upgrading; (iii) Modalities for cost-benefit analysis to support decision-making leading to the upgrade of AQMNs; (iv) Updating the RI-service portfolio in ACTRIS and IAGOS to include the urban STs.

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