Letter of Cooperation between

eLTER RI and UNECE CLRTAP Working Group on Effects

Draft, June 2022

The partners of this cooperation are the Working Group of Effects (WGE) of the UNECE Convention on Long-Range Transboundary Air Pollution (CLRTAP) and the Integrated European Long-Term Ecosystem, Critical Zone & Socio-Ecological Research Infrastructure (eLTER RI). Both partners work in the same realm of environmental issues, address common societal grand challenges, and work towards an improvement of the state of environment with data-driven advice to policy makers. With this "Letter of Cooperation", we aim at initiating and defining ways of cooperation between the WGE and the eLTER RI in order to render benefits and synergies for both networks.

The WGE[1] was established under the CLRTAP in 1980 and provides information for policy development on the degree and geographic extent of the impacts of major air pollutants, such as sulphur and nitrogen oxides, ozone, volatile organic compounds, persistent organic pollutants, heavy metals, particulate matter, including black carbon, and ammonia on human health and the environment. Its six International Cooperative Programmes (ICPs) on Forests, Waters, Materials, Vegetation, Integrated Monitoring and Modelling and Mapping and the Task Force on Health identify the most endangered areas, ecosystems and other receptors by considering damage to human health, terrestrial and aquatic ecosystems and materials. An important part of this work is long-term monitoring. The work is underpinned by scientific research on dose-response, critical loads and levels and damage evaluation. The WGE meets annually to discuss the results of the international cooperative programmes and the current and future needs of the Convention. It considers its future work and that of the programmes and prepares a biannual workplan for consideration by the Executive Body of the Convention. Important results are brought to the attention of the Executive Body. Results are also published in the scientific literature and disseminated to the public through the publication of reports, UNECE press releases and other means. The Working Group also publishes substantive reports summarizing and assessing the most important results of the activities of the international programmes. The Working Group has an elected Bureau, which is responsible for the detailed planning, coordination and reporting of the activities in the workplan. The Bureau currently comprises a chair and five vice-chairs.

In 2018, the European Strategy Forum for Research Infrastructures (ESFRI) identified eLTER RI[2] as a new Research Infrastructure of pan-European priority[3]. When fully operational by the end of the ESFRI Roadmap project time, the eLTER RI will be a permanently funded distributed infrastructure of field sites covering European environmental zones. The core of the eLTER RI will be ca. 200 selected sites covering all biogeographical zones in Europe, where biological, biogeochemical, hydrological and socio-ecological data will be collected - according to common standards - and analysed. This network will be recruited from the existing 460 accredited LTER Europe[4] sites. Currently, 105 of these sites belong to the ICP's monitoring network of the WGE (Annex). The eLTER RI will provide a range of services to end users, including access to highly instrumented and expertly staffed sites and to their long-term environmental observation data. Additional services, such as data synthesis and

[1] http://www.unece-wge.org/

[2] htpps://elter-ri.eu/

[3] http://roadmap2018.esfri.eu/

[4] www.lter-europe.net/lter-europe

modelling, support for research and technological development, and training programmes, will be provided via Topic Centres. The RI will also provide a range of outputs supporting policy and science users, such as information on the status and trend of the European environment.

The WGE operates a dense monitoring network of sites within the UNECE region for more than 25 years with well-established methodologies for the measurement of air pollution effects in the environment, including manuals, inter-calibration efforts, protocols, and reporting. This knowledge is of very high value for the standardization of the environmental observations planned within the eLTER RI. On the other hand, the WGE can benefit from the methodological developments within eLTER to improve data quality because eLTER sites will be testbeds for novel environmental sensors, laboratory as well as data analyses. In order to leverage benefits for both partners we encourage information sharing, joint meetings and scientific co-operation.

Both partner's main aim is to provide high-quality scientific evidence for the development of environmental policies. Continued improvement in the scientific work is thus indispensable. The partners will therefore encourage scientific co-operation in common data analyses, workshops and conferences as well as joint research projects.

eLTER takes advantage of the existing LTER-Europe network with its well established hierarchy of site categories, in that selected sites will be upgraded to eLTER RI standards as part of the establishment of the Pan-European distributed RI. eLTER aims towards a cost efficient European environmental RI landscape through co-location and interoperability of eLTER sites with sister-RIs (e.g. ACTRIS, DANUBIUS, ICOS, and e-infrastructures such as LifeWatch) as well as with the monitoring sites of the ICPs. In total, 110 WGE monitoring sites are already part of LTER-Europe. eLTER will provide best practice examples from countries successfully applying co-location to the WGE. Moreover, the WGE is interested in broadening its monitoring network to more ecosystems, and to countries or regions not yet covered but which will likely be part of the eLTER RI. eLTER will help in establishing the necessary information channels between the representatives of the UNECE parties and the National eLTER Coordinators.

In the spirit of this letter the WGE and eLTER will keep each other informed concerning programmes of work and search for concrete collaboration opportunities regarding the following areas of cooperation.

- Standardization and harmonization
    - Measurement protocols and standards
    - Data and metadata standards
- Methodological development for both cost efficiency and data accuracy
- Scientific co-operation in data evaluation and analyses
- Network development for wider spatial coverage of harmonised and standardised environmental monitoring and assessment
    - Exchange about the site networks and findings concerning coverage and options for expansion
    - Encouragement of national level collaborations to secure cost-efficiency, sustainability and network alignment
- Service Portfolio
    - identification of services of joint interest
    - invitation to collaborate as potential user in service specification

Information provided by either party will not be distributed or disseminated, or in any way made available to third parties without a prior written consent. Data sharing between the parties of this cooperation is subject to the respective data policies of the ICPs and eLTER.

This letter will continue to have effect unless terminated by either party given three months' notice in writing. It will be revised once eLTER becomes an ERIC and changes its legal status

No expenses in connection with this letter will be incurred unless authorized by the governing bodies of the partners of this cooperation. Each Party is responsible for its own costs related to any activities under this agreement.

Signatories

WGE chair, Isaura Rabago

eLTER: Director of UFZ for hosting institution and lead country, Germany; Michael Mirtl as eLTER ESFRI process coordinator

Annex: LTER Europe sites belonging to the WGE Monitoring networks (according to the information given by the monitoring site managers at https://deims.org)

Name of site	DEIMS-SDR web link	Country	ICP Forests	ICP Integrated Monitoring	ICP Waters	ICP Vegetation
ICP_Forests_Austria, Jochberg (ICP_FO_AU17)	https://deims.org/0da4be08-87f8-41e2-a564-2cd2ccdb3da2	Austria	x			
ICP_Forests_Austria, Klausen-Leopoldsdorf (ICP_FO_AU09)	https://deims.org/bb472a51-f85f-4de0-8358-f21ecbe2a102	Austria	x			
ICP_Forests_Austria, Mondsee (ICP_FO_AU11)	https://deims.org/8a313716-ceed-4f41-8b0b-a8197bfc304a	Austria	x			
ICP_Forests_Austria, Murau (ICP_FO_AU16)	https://deims.org/580e2d1a-e45e-4b65-9962-1bdcc3d76ad3	Austria	x			
ICP_Forests_Austria, Mürzzuschlag (ICP_FO_AU15)	https://deims.org/f2dd51af-ad46-4710-bd5b-cac4b674b675	Austria	x			
ICP_Forests_Austria, Unterpullendorf (ICP_FO_AU2)	https://deims.org/2e80048a-3b38-4a25-9764-bd7c3d2c6a7d	Austria	x			
LTER Zöbelboden	https://deims.org/8eda49e9-1f4e-4f3e-b58e-e0bb25dc32a6	Austria		x		
Baelen	https://deims.org/5322912e-bd69-4cda-91b7-e7a9e45c782a	Belgium	x			
Bosland	https://deims.org/a76adcb2-88ec-448e-94a4-bbf43b47c9b0	Belgium	x			
Brasschaat - De Inslag	https://deims.org/68e6a8e5-d6d2-4c8c-91c4-10e7f87ac556	Belgium	x			
Chimay	https://deims.org/3405b268-4c07-42d1-af5d-f10df316cbd8	Belgium	x			
Dijleland	https://deims.org/7629b584-b8dd-4da5-a4ba-4175bb985673	Belgium	x			
Dochamps	https://deims.org/528b643b-c189-4947-9e3f-f474a9159d68	Belgium	x			
Forest of Meerdaal	https://deims.org/7050331b-5700-4398-9e5f-805e224202df	Belgium	x			
Gontrode - Aelmoeseneie Forest	https://deims.org/4a469a86-868b-4160-b72e-10a1b4e09356	Belgium	x			
Ichtegem - Wijnendale Forest	https://deims.org/5cdc558b-a0bc-4150-b8d1-8dd55870c7e8	Belgium	x			
Louvain-la-Neuve	https://deims.org/42ae4e04-c4de-4727-a96d-264bafc729d7	Belgium	x			
Mellier	https://deims.org/c9cf7c25-b4fa-4756-b731-da85a9f00e28	Belgium	x			
Ravels Forest	https://deims.org/e74fdeaf-08ed-4306-9473-58e3f9a05e73	Belgium	x			
Ruette	https://deims.org/06e97a1e-2eb7-4ab1-8cc9-321aebf125d2	Belgium	x			
Sonian Forest	https://deims.org/0fa0d44f-5314-405f-a647-a7dda423031f	Belgium	x			
Tellin	https://deims.org/b2c68241-ba08-48df-809a-c6aa15af85b1	Belgium	x			
Willerzie	https://deims.org/de287b65-5e6c-46ce-87da-ce0c14651fe1	Belgium	x			
Glacial lakes	https://deims.org/48642756-661e-4819-b9d7-38c3c040b65e	Czechia			x	
LTSER Silva Gabreta	https://deims.org/bc72e137-dbc6-49ce-8116-e5af0ea2f924	Czechia			x	
Lysina & Pluhuv Bor catchments	https://deims.org/a7cf7d23-ffa1-45f0-bb3b-82ee8fdf725a	Czechia		x	x	
Uhlirska catchment	https://deims.org/58923a61-9633-4d06-b147-65d45d2919d3	Czechia			x	
HOBE - the Danish hydrological observatory	https://deims.org/ce71c6e9-6fcf-401a-9128-db4ac5a355b9	Denmark	x	x		
Vestskoven	https://deims.org/c9736cb4-7276-48db-86e4-23cf8dcba6bf	Denmark	x	x		
Bothnian Bay LTSER Platform	https://deims.org/5a34d4da-f278-4c4c-8cc9-ec5854df54e0	Finland	x			
Kolari Field Site	https://deims.org/98a3b631-fcb0-4482-8572-6fee28691a39	Finland	x	x		
Lammi LTER	https://deims.org/a43d31c8-6219-4ab8-ac41-6088cb56b12b	Finland	x	x		
Northern LTSER Platform	https://deims.org/9efa71db-d3e8-4018-930f-c1fa9a1aaf99	Finland	x		x	
Oulanka Research Station (Oulanka LTER)	https://deims.org/f81f30bb-6e2b-4a11-9b65-266fee2ae330	Finland	x	x		
Pallas-Sodankylä LTER observatory	https://deims.org/b0edd1d7-4fe7-4945-a366-4e9ff21e9dd3	Finland	x			

Augustendorf intensive forest monitoring site	https://deims.org/bb3f045e-33fe-48ca-9142-1d6b94fb8f9a	Germany	x			
Bornhoeved Lake District	https://deims.org/2aedc444-7007-4d07-877c-0abf528b0ecd	Germany	x			
Ehrhorn intensive monitoring site	https://deims.org/8849988d-762f-475b-98d6-ab08b29645ab	Germany	x			
Göttinger Wald intensive forest monitoring site	https://deims.org/a4294831-1a8e-4f0a-9d3b-e0305ec6fe42	Germany	x			
Krofdorf	https://deims.org/f73a0f95-8fb0-4755-92fc-f4b0207f5fe4	Germany	x			
Lange Bramke	https://deims.org/8e24d4f8-d6f6-4463-83e9-73cac2fd3f38	Germany	x		x	
Luess intensive monitoring site	https://deims.org/050e88fa-06e7-43e5-8dcc-6b75a549cb09	Germany	x			
Nationalpark Kellerwald-Edersee	https://deims.org/5c11903f-9b21-47ee-a72b-13d5ef4b7db7	Germany	x			
Solling	https://deims.org/2d55b484-2a89-4023-be00-49829ab327f9	Germany	x			
TERENO - Bode catchment	https://deims.org/5400ea90-5cb5-4b30-a98d-c8025ae61154	Germany	x			
Collelongo-Selva Piana ABR1	https://deims.org/9b1d144a-dc37-4b0e-8cda-1dda1d7667da	Italy	x	x		
Colognole TOS1	https://deims.org/fdd9b462-d2a9-441a-80a1-f4e8947f5577	Italy	x			
IT03-Forest of the Apennines	https://deims.org/a2e325b8-9aa2-4c1b-b74c-a2ce59149252	Italy	x			
IT09-Mountain Lakes	https://deims.org/3f0267f2-e67e-443f-b89d-d2c5dcfce1c9	Italy			x	
Lago Paione Inferiore	https://deims.org/c128d2f9-beb0-45ba-89bb-df9e12f95b0f	Italy			x	
Lago Paione Superiore	https://deims.org/7e5837a9-ee27-4e27-822a-f50e5217c313	Italy			x	
Tarvisio FRI2	https://deims.org/5907d0b6-7b4d-4260-a669-4bc0f61d1696	Italy	x			
Val Masino LOM1	https://deims.org/68a5673c-9172-48cc-88e5-b9408b203309	Italy	x			
Beidweiler	https://deims.org/a2f7cbab-8f25-4029-b0da-7e3d400696ce	Luxembourg				x
Birkenes	https://deims.org/68af6e55-e241-4afe-a3a6-32e79eef12fb	Norway	x		x	
Kaarvatn	https://deims.org/cac466c8-ee2a-4133-afd2-4497539e25a1	Norway	x		x	
Fundata-beech	https://deims.org/934255b2-82d5-4f52-81c2-9297208d3fbf	Romania	x			
Predeal-spruce	https://deims.org/ba4963e3-0164-4448-a53c-6951c10e9cd0	Romania	x			
Stefanesti-oak	https://deims.org/5311dc45-04db-4358-b5fa-9ba59c044e61	Romania	x	x		
Fruska gora	https://deims.org/f1c571d2-11e3-4072-ac66-073600ce152c	Serbia	x			
Polana Biosphere Reserve (Hukavsky grun)	https://deims.org/e4548296-426c-4e08-a517-d177d8ad5239	Slovakia	x			
Aiguestortes / Lleida (ES-SNE)	https://deims.org/cf8247a0-e3d7-499f-84a9-3b2d1215fe06	Spain			x	
Spanish ICP-Forests Level II Plots Network (Plot code 05 Ps)	https://deims.org/6b5ea4b7-c31d-4418-9dd5-233188df1114	Spain	x			
Spanish ICP-Forests Level II Plots Network (Plot code 06 Qi)	https://deims.org/8f6ff47e-046b-468b-b4b9-472f5fd025d4	Spain	x			
Spanish ICP-Forests Level II Plots Network (Plot code 07Qi)	https://deims.org/f1f781c4-0745-4086-86ee-0bb122f59637	Spain	x			
Spanish ICP-Forests Level II Plots Network (Plot code 10 Ppa)	https://deims.org/52cc849a-2fd1-491d-a298-9bf3db884b88	Spain	x			
Spanish ICP-Forests Level II Plots Network (Plot code 102 Ppr)	https://deims.org/50374ba1-d524-4396-bd2f-a6270e7d9af8	Spain	x			
Spanish ICP-Forests Level II Plots Network (Plot code 11 Qs)	https://deims.org/82a80c17-91b2-4e0d-8250-af97bcc20261	Spain	x			
Spanish ICP-Forests Level II Plots Network (Plot code 115 Fs)	https://deims.org/15184d11-901b-4f0d-8e9d-e3350109c4d5	Spain	x			
Spanish ICP-Forests Level II Plots Network (Plot code 22 Pn)	https://deims.org/ce3205f5-c3ed-4828-a279-ca0cccac5182	Spain	x			
Spanish ICP-Forests Level II Plots Network (Plot code 25 Ph)	https://deims.org/846d8978-bd67-43db-843e-c3568c40b088	Spain	x			
Spanish ICP-Forests Level II Plots Network (Plot code 26 Qi)	https://deims.org/101534e3-569e-43db-867c-6dd3689f6975	Spain	x			
Spanish ICP-Forests Level II Plots Network (Plot code 30 Ps)	https://deims.org/0534178f-c40e-4247-9e34-fd174c6709f8	Spain	x			
Spanish ICP-Forests Level II Plots Network (Plot code 33 Qpe)	https://deims.org/bce69205-cc4d-4428-be30-c47274eee024	Spain	x			
Spanish ICP-Forests Level II Plots Network (Plot code 37 Ppr)	https://deims.org/edc104bd-a710-42dc-902e-2f8401004d95	Spain	x			
Spanish ICP-Forests Level II Plots Network (Plot code 54 Ph)	https://deims.org/0584f4b7-7f16-4cb7-be15-6c906ea4a6d9	Spain	x			

Aneboda, IM-site SE14	https://deims.org/9dd45aa6-ed7a-49d2-bea4-7750351c55d0	Sweden	x	x		
Gammtratten, IM-site SE16	https://deims.org/27415652-8de8-40e7-92c1-f82526116a2d	Sweden		x		
Gårdsjön, IM-site SE04	https://deims.org/c7f490fb-76a4-4d6c-ba3e-2fd2f33822ec	Sweden	x	x		
Kindla, IM-site SE15	https://deims.org/9aa88bb6-b4a9-4569-8520-3d26643e6de9	Sweden	x	x		
Alptal	https://deims.org/9e1c8ec8-a407-426a-8410-05180b96e75a	Switzerland	x			
Beatenberg	https://deims.org/f6a6b3e0-9a39-4fe3-8ae5-24d833b8ad26	Switzerland	x			
Bettlachstock	https://deims.org/c30ed2e5-41b0-4f2b-992c-2bd96b3cdba1	Switzerland	x			
Celerina	https://deims.org/8cb52b19-4720-4212-90f0-599375219c5b	Switzerland	x			
Chironico	https://deims.org/b8c789be-5fa5-42cc-b280-6e1a2b73639b	Switzerland	x			
Davos Seehornwald	https://deims.org/a547dab2-859a-414c-b148-0e7df8de5773	Switzerland	x			
Isone	https://deims.org/06af0bf1-7ddf-40c8-b4b8-d3602c1f9599	Switzerland	x			
Jussy	https://deims.org/fa36576a-6409-41d4-96ae-67f2a3d7e085	Switzerland	x			
Laegeren	https://deims.org/7b4d8b76-1c6d-410c-998c-f9c56b2f7347	Switzerland	x			
Lantsch	https://deims.org/56188252-b48f-47a2-97d9-83283a2b4975	Switzerland	x			
Lausanne	https://deims.org/e60f9991-daf7-448c-9b78-44b00be86f6d	Switzerland	x			
Lens	https://deims.org/dda5ccfa-3fd3-447c-bf61-08a02a3d8374	Switzerland	x			
Nationalpark	https://deims.org/02ebdc77-d35c-4e19-ad7b-31a65885e7df	Switzerland	x			
Neunkirch	https://deims.org/e7c82a90-eee2-4e42-b90d-c0531a59e306	Switzerland	x			
Novaggio	https://deims.org/27988972-7e28-4fc2-a5e0-8d30d0f5dabd	Switzerland	x			
Othmarsingen	https://deims.org/9d082cc6-3282-4469-8d7b-05fa3e13489a	Switzerland	x			
Schaenis	https://deims.org/049de4d9-d7db-4b2c-ace5-de8873f5d277	Switzerland	x			
Visp	https://deims.org/f5f1ceef-2fda-40a0-8e00-4ed9ea002f0f	Switzerland	x			
Vordemwald	https://deims.org/064c3ef6-5aa5-4c91-bfb5-e3e07fa17059	Switzerland	x			
Afon Hafren	https://deims.org/2f115521-9450-4c11-ad7c-b6f10367d232	United Kingdom		x		
Alice Holt	https://deims.org/d47ec839-5d20-4315-9f88-1e9edbab22e8	United Kingdom	x			x
Blue Lough	https://deims.org/f354fb61-e42f-457c-b4c7-1c2513dfa7dd	United Kingdom			x	
Llyn Llagi	https://deims.org/744bfb9e-298d-445e-8ea8-0c392be327d2	United Kingdom			x	
Lochnagar	https://deims.org/9d80adab-698e-4d8a-a1ab-a37cb54d7fba	United Kingdom			x	