

To my dear scientific colleagues
who want to suggest their city as pilot site
for the LC-GD-9-1-b call

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Helsinki, 16 October 2020.

Dear colleagues,

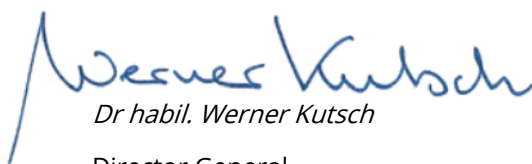
ICOS ERIC is coordinating a research proposal responding to the H2020 call '[European Research Infrastructures capacities and services to address European Green Deal challenges](#)', ID: LC-GD-9-1-2020, part (b) *Enhancing European research infrastructures for greenhouse gases observation in and around cities*. In the framework of this proposal, we are seeking a city for the pilot implementation in at least one representative urban site. The idea is to combine a broad range of measuring and modeling approaches in the pilot city to demonstrate the ability to integrate complementary measurement systems, data and methods for a detailed and reliable estimation of urban GHG fluxes.

We have decided to select this city (or these cities) during the process of the proposal writing. With this document, we want to introduce the process and its timeline to ensure a clear and transparent selection. We assume that the entire process of a city nomination will be triggered by you, the scientific community in the respective city. Thus, we suggest a screening based on very basic information on potential cities before taking next steps. At this stage, if you consider to propose a candidate city, we ask you to fill out the questionnaire on pages 2 and 3. This should be a rapid process that does not necessarily involve the city administration, and we ask you to answer within approximately one week (before October 25th).

After that, please inform me as the proposal coordinator and contact the city administration to find out whether the city administration is interested. If yes, please forward them the letter on page 4 and ask them to fill the questionnaire provided on page 5 and further. You may support them in explaining the questions and requirements. In parallel, please fill the questionnaire for the academic institution at the end of this document (page 8). The two documents should be sent to the ICOS ERIC Head Office via email by Friday, 27 November 2020. We will organise the evaluation of the candidate cities within two weeks thereafter. The decision will be made transparently and based of the criteria defined in the questionnaire. We will ask external experts to support us.

Please note, that the call asks for '*concepts, architecture and engineering plans for extending and upgrading existing European research infrastructures*' which means that we need a group of cities that are developing a readiness for a second step of the overall process when a network of city observatories might be integrated into ICOS. We are currently also organising a work package about this and will inform interested cities in a separate letter.

Best regards,



Dr habil. Werner Kutsch

Director General
Integrated Carbon Observation System (ICOS)
European Research Infrastructure Consortium (ERIC)

Screening questions for the academic partner (max. 2 pages)

City:

Author / Date:

Area and population:

Setting: coastal, inland

Primary source(s) of energy/heating: coal, gas, nuclear, renewable, ...

Existing infrastructure: port, airport...

Percentage of green areas/parks/forests:

Percentage of water surface area:

City climate action plan in place: yes/no

Existing GHG observations: tall tower(s), flux tower(s), ICOS, COCCON, TCCON, IAGOS...

Please also answer some more detailed questions.

1. Can you mobilize enough resources to support the pilot implementation of a city observatory?

Yes, there will be some financial support for you in the framework of the project. However, you cannot trust that a certain amount of money can buy the right support for the pilot. The whole project will rely on a modular but highly standardized approach where ICOS will take care of the data processing and a whole suite of models will be used to analyse the data. You will need a pre-existing observing infrastructure and a well-established bottom-up emission product, as well as a strong interdisciplinary team that covers the related disciplines of GHG sciences and beyond (i.e. multi-species incl. chemically active components). Social sciences and communication aspects need to be covered and you need a strong support from your university administration.

- Has the project relevance for the city's political strategy? Can you expect strong support from the city administration?
- What is already existing as modelling and measurement infrastructure? Are detailed emission inventories available, up-to-date and have sufficient spatial and temporal resolution? Can you expect significant local/national (co-)funding of the project? Can you give a rough sketch of what may be especially suited to be added in terms of methodology during, and beyond the project?

No budget or detailed collaboration is needed at this point.

2. Is the terrain in and around your city suitable for a pilot implementation?

Complex terrain adds another layer of difficulties to the project. We are perfectly aware that most of the cities in the world have some complexities, e.g. in their structure through (high rise) buildings, as well as atypical and inhomogeneous energy fluxes. However, starting the pilot in an area where we mainly need to solve problems related to the terrain may not be a good strategy. The criteria that you might look for:

- Is the terrain flat or does it have hills, river valleys, lakes, mountains...? Do you have an idea of a possible measuring site? (please indicate coordinates)
- In case your city is a coastal city: do you have a clear understanding of the influence of diurnal patterns caused by sea breeze and transition between land and sea boundary layers? Are you sure this can be covered in models?

- Are there clear borders of the urban area or is the city part of a larger conglomerate without clear borders (within a 100 km radius)?
- Are there strong point sources within or in the immediate vicinity of the city area (causing large co-located atmospheric enhancements)? Are there emissions publicly available, at what time resolution?

3. For what type of urban areas is your city representative?

Every city is special, but some are more special than others. Thus, please think of other cities that might be like yours and might learn from the experiences made by a pilot in your city. (e.g. size, main sectors of emissions, growth, density, scope 1/2 distribution, emission trend). Also consider whether there are any specific aspects of your city that make it especially suited, unique, or representative for the project.

4. What is the size of your city and the estimated source strength of your city CO₂ and CH₄ emissions?

In case you need support during the screening because the self-evaluation form is not designed to allow a clear yes/no answer, you can ask for a feedback or support session with the coordinator.

Dr. habil. Werner Leo Kutsch
Director General
Integrated Carbon Observation
System (ICOS ERIC)
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Helsinki, 16 October 2020.

Pilot observatory for greenhouse gas emissions in urban areas

Dear city representative,

the Integrated Carbon Observation System (ICOS ERIC) is a European Research Infrastructure monitoring greenhouse gas (GHG) emissions in 12 countries. Its network of more than 130 stations observes GHG concentrations in the atmosphere and exchanges between land, ocean and atmosphere.

The European Commission has just issued, in the framework of its research program Horizon 2020, a call for proposals to enhance the capacities and services of Research Infrastructures to address the challenges of the European Green Deal. In its endeavor to build a low-carbon, climate resilient future, the Commission aims to upgrade existing Research Infrastructures for enhanced GHG observation in and around cities.

ICOS is leading the preparation of a proposal for a comprehensive, multi-technique city observatory that will have the capacity to measure natural and anthropogenic GHG emissions in the vicinity of cities and industrial areas. The aim is to provide the local authorities with evidence-based knowledge supporting their climate policies and especially the progress in reduction of greenhouse gas emissions. For this proposal, at least one urban site must be selected for a pilot implementation and the consortium of research organizations led by ICOS is now collecting expressions of interest from municipalities.

The strong commitment of the selected city or cities to the project is a crucial condition for success. It is namely essential that the high-quality measurements that will be performed can be integrated to the information collected by the authorities, such as inventories of emissions and activity data and will be connected to the climate policies implemented locally.

ICOS and your local partner in the academic community are at your disposal to provide more information on the project. We are looking forward to your expression of interest.

Due to the close deadline for the submission of the proposal next January, we would appreciate to receive your expression of interest by November 27th. We would also require some technical information that you will find attached.

Yours Sincerely,


Dr habil. Werner Kutsch

Director General
Integrated Carbon Observation System (ICOS)
European Research Infrastructure Consortium (ERIC)

Questionnaire for city officials

City/Municipality	
Official representative	
Contact person	
Statement	<p>Please provide an Expression of Interest that would include a statement similar to the following.</p> <p>In my role as of the city/municipality of , I herewith confirm our interest to cooperate within the Horizon 2020 proposal to enhance the European capacity in greenhouse gas observations coordinated by ICOS ERIC and suggest our city/municipality as suitable area for the implementation of a pilot urban observatory.</p> <p>Name, Date, Signature</p>
Climate Action	<p>Please describe the climate action plan of your city (especially for the next 5 to 10 years), the strategy to reduce greenhouse gas emissions, the main focus areas for reduction... If necessary, refer to respective documents.</p>
Already available data	<p>Does your city have a detailed inventory of greenhouse gas emission sources? Does this inventory distinguish between natural and human-induced emissions? Which organization has developed it and is responsible for it? Where are the data hosted? Will the data be openly and freely available for scientific analyses? How fast will they be made available? Will the data be accessible to the public? If public documentation exists, please provide a link.</p> <p>Is your city using the emission data for modelling purposes? Please describe how.</p> <p>Is your city also using data from satellite observation? Please describe how?</p>
Information needs	<p>Please, describe the information your city administration would need to design and implement efficient climate reduction actions. Have you identified missing data or information that you think could be provided by an urban observatory for greenhouse gases?</p>
Air quality network	<p>Does your city have an air quality network? Please describe it and indicate the technologies used, the parameters measured, the density of the network... Which organization is responsible for the operation of the network? Where are the data hosted? Will the data be openly and freely available for scientific analyses? How fast will they be made available? Will the data be accessible to the public? If public documentation exists, please provide a link.</p>
Observational capacity already in place	<p>Is your city already equipped to monitor greenhouse gases? Please describe how and indicate the technologies used, the parameters measured, the density of the network... Which organization is responsible for the operation of the network? Where are the data hosted? Will the data be openly and freely available for scientific analyses? How fast will they be made available? Will the data be accessible to the public? If public documentation exists, please provide a link.</p>
Local academic community	<p>Does your city collaborate on a regular basis with a local academic institution on issues related to climate action? Which institution? Would this institution be</p>

	ready to contribute and support the implementation of the observatory? Please indicate a contact person in this institution.
Local and national co-funding	Is your city able to mobilize local and/or national resources to contribute to the implementation of the city observatory? Please describe possible funding streams. If concrete expressions of interest can be provided by respective organizations, please add them as appendix.
Long-term sustainability	Please describe your strategy to sustain the operation of the city observatory on the long term, beyond the end of the project (2025).
Previous experience	Has your city already participated in similar research projects related to climate action, smart cities...?
City	Please provide information or links regarding the major attributes of your city (population, area, density, growth rate, economic activity...).
Environment	Do you think your city is of specific interest for the study of anthropogenic GHG emissions? Are there industrial sites or other major economic activities in the vicinity of your city? Do they monitor their own GHG emissions? Are these data openly and freely available for scientific analyses?
Citizen engagement	Does your city have specific activities to engage with its residents on issues related to climate change, reduction of emissions... or other environmental issues?

Questionnaire for local scientific community

University/RPO	
Contact person	
Climate Action	Please reflect on or complement the information provided by the city regarding the climate actions carried out in the city. If necessary, refer to respective documents.
Provided information	Please reflect on the information provided by the city regarding the existence of inventory data, air quality network, GHG monitoring capacity...
Feasibility assessment	Please assess the scientific and technical feasibility of establishing a city observatory in this city.
Local and national co-funding	Are you aware of possible local and national funding streams that could contribute to the implementation of the city observatory?
Long-term sustainability	What would be, according to you, a possible strategy to ensure the long-term operation of the observatory after the end of the project?
Previous experience	Have you already participated in similar research projects related to climate action, smart cities... with the city?
City	According to you, what is the specific interest of this city for the development of GHG monitoring in urban landscapes?
Environment	Please describe the factors in the environment of the city that are of importance for the project.
Citizen engagement	Do you have experience of citizen engagement activities in collaboration with the city?