



## **Towards European organisation for integrated greenhouse gas observation system**

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Climate change is one of the most challenging problems that humanity will have to cope with in the coming decades. The perturbed global biogeochemical cycles of the greenhouse gases (carbon dioxide, methane and nitrous oxide) are a major driving force of current and future climate change.

Deeper understanding of the driving forces of climate change requires full quantification of the greenhouse gas emissions and sinks and their evolution. Regional greenhouse gas budgets, tipping-points, vulnerabilities and the controlling mechanisms can be assessed by long term, high precision observations in the atmosphere and at the ocean and land surface. ICOS RI is a distributed infrastructure for on-line, in-situ monitoring of greenhouse gases (GHG) necessary to understand their present-state and future sinks and sources. ICOS RI provides the long-term observations required to understand the present state and predict future behaviour of the global carbon cycle and greenhouse gas emissions. Linking research, education and innovation promotes technological development and demonstrations related to greenhouse gases.

The first objective of ICOS RI is to provide effective access to coherent and precise data and to provide assessments of GHG inventories with high temporal and spatial resolution. The second objective is to provide profound information for research and understanding of regional budgets of greenhouse gas sources and sinks, their human and natural drivers, and the controlling mechanisms.

ICOS is one of several ESFRI initiatives in the environmental science domain. There is significant potential for structural and synergetic interaction with several other ESFRI initiatives. ICOS RI is relevant for Joint Programming by providing the data access for the researchers and acting as a contact point for developing joint strategic research agendas among European member states.

The preparatory phase ends in March 2013 and there will be an interim period before the legal entity will be set up. International negotiations have been going on for two years during which the constitutional documents have been processed and adopted. The instrument for the ICOS legal entity is the ERIC (European Research Infrastructure Consortium) steered by the General Assembly of its Members. ICOS is a highly distributed research infrastructure where three operative levels (ICOS National Networks, ICOS Central Facilities and ICOS ERIC) interact on several fields of research and governance. The governance structure of ICOS RI needs to reflect this complexity while maintaining the common vision, strategy and principles.