CoCO2

Prototype system for a Copernicus CO_2 service

Workshop report

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CoCO2: Prototype system for a Copernicus CO_2 service

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1 Introduction

Observation-based estimates of emissions are required by multiple stakeholders and at multiple scales to aid bottom-up emission estimates and identify gaps in existing reporting. These estimates are performed at different scales for a variety of applications: the continental scale for science purposes, country-scale for reporting to the UNFCCC, sub-national scale (including states, regions, cities and other types of intermediate local governments) for planning, and point sources for direct monitoring of for instance large power plants. This workshop focused on the reporting and verification needs at sub-national scale and the potential role the future Copernicus anthropogenic CO_2 emissions Monitoring and Verification Support (CO2MVS) capacity can play to support these needs.

The main purpose of this workshop was to engage sub-national entities and other local stakeholders in the process of product development of the new CO2MVS capacity. Many local and regional governments integrate and report their greenhouse gas (GHG) emission inventories to set reduction targets, design mitigation plans, and track progress during and post-implementation. The European Union's Horizon 2020 project, CoCO2, in partnership with ICLEI-Local Governments for Sustainability, is engaging with these groups.

The workshop aimed to identify gaps in existing reporting that are amenable to improvement through the Copernicus CO2MVS capacity. The outcome of the workshop will help defining a list of potential service products that the Copernicus service could provide to local governments. A second workshop later in the CoCO2 project will aim at a wider audience and improved and further definition of products.

2 Presentations

The first webinar took place online on October 6th at 13:30 CEST in a virtual format. The session began with a presentation from ECMWF on the relationship between Earth observations and estimation of anthropogenic emissions. The goals of the CoCO2 project to develop a new Copernicus CO2 monitoring service were presented as well as the objective of the webinar as part of the work package for user engagement of co-designed services.

A second presentation conducted by a representative from the City of Quezon described the city's 2016 GHG inventory including the stakeholders involved, the steps of the process, the sectors covered and an indication of the sectors where there are the most challenges related to data.

ICLEI presented the results of an analysis on the challenges reported by 60 cities on data availability and quality for the estimation of GHG inventories, including challenges at the sector and sub-sector level.

The next presentation was by Vrije Universiteit Amsterdam on hot spot detection, including activities and locations for both CO2 and CH4 emissions. Various case studies were presented to showcase applications of Earth observations, including accurate monitoring of CO2 megacity emissions, quantification of CO2 emissions at a large spatial extent, and detection of gas leakages in the oil and gas sector.

3 Feedback and outcomes

The audience provided direct feedback during and after the presentations. Some key issues discussed with interim conclusions:

- Rationale for focusing on the stationary energy, transport and waste sectors for the city's GHG inventory: cities focused on these sectors in response to the minimum requirements of the "BASIC" scheme of the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC) and as required by some international climate initiatives.
- Approaches taken to overcome the lack of data at the national, regional, and local levels: ICLEI has had experience in supporting the drafting of data exchange arrangements so that local governments can access data that is otherwise inaccessible to them for their GHG inventory (e.g., on fuel consumption from the industry). This is especially important for the energy sector where national governments usually have the mandate to generate and store data from all stakeholders.
- Examples of limitations in scaling-down of regional national GHG inventories, e.g. for the transport sector: although this approach is used very often because of the lack of data (although not necessarily in the transport sector), it might not always be the most appropriate, as often city-level indicators vary from national averages, for example when looking at the modal splits where specific cities may have a higher penetration of electric vehicles, use of the public transport, and lower ownership of private vehicles, compared to national averages.
- Data sources for CO_2 emissions estimates: the presentation provided a compendium of various data sources that were researched.

Key issues discussed that remained open:

- Need to have timely estimates from more recent years: at the global level some types of observations can be used as a proxy in the absence of reported annual data. Can emissions from observations be matched with GHG inventory emissions from a few years ago to support policy implementation? This could be tried and could support aggregated emissions. Are there anticipated risks emerging from using fast-track GHG inventories?
- What sort of tool will the CoCO2 project develop?
- Cities are looking to include the AFOLU sector in their GHG inventories, how can this be enabled if the CoCO2 "tool" is only looking at fossil/energy emissions?
- Use of the AFOLU sector as a sink: there is increasing interest in this, but there is limited potential in comparison to the energy sector because of existing forest areas within city boundaries. Could this then be more valuable to higher levels of governments that the city/municipality level, such as the state/province?
- Focus on Scope 1 emissions and implications for the consumption/demand of electricity by local governments which is where cities have more influence; compared to estimates of emissions of power plants where local governments have little policy control: the specific data analysis that was presented in the webinar with data issues, focused only on Scope 1 emissions, in line with the approach of earth observations which are limited by territorial boundaries. However, it is considered that the current schemes of GHG inventories where emissions are analyzed from the perspective of the three scopes should be taken into consideration as it is suited for the complexities of local and regional governments which often do not have control over emissions from the production perspective but rather from the consumption, such as with the exemplified case of Scope 2 emissions from electricity. A complementary approach to fill the gaps in Scope 1 emissions without leaving Scope 2 and Scope 3 emissions could be appropriate and highlights the importance of GHG inventory elaboration for climate policy.
- Uses of city GHG inventories: The reporting schemes of GHG inventories provide different insights in terms of sector coverage and of geographic "location" of emissions such as with the territorial or the city-induced approaches. Also, there is the reporting of the emissions for transparency purposes. What about the potential of inventories to

help understand the relationships between activities and emissions, and to model effective climate action planning?

- Elaboration of GHG inventories to monitor climate policy. GHG inventory estimates are often a requirement from international climate initiatives but ideally cities are developing GHG inventories to have a detailed overview of their most emitting sources and sectors from which to focus climate action commitments and plans. It could be worth assessing what are the challenges associated to tracking policy progress using GHG inventory inventories.
- What is the potential to use observations to engage the urban population by informing them about local climate action impacts: there have been examples on air pollution to engage the community in the observation process?

Document History

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