	EUROPEAN COMMISSION RESEARCH AND INNOVATION DG	Review Report

Project No: 284274

Project Acronym: InGOS

Project Full Name: Integrated non-CO2 Greenhouse gas Observation System

Review Report

Period covered: from 01/10/2011 **to** 02/12/2013

Start date of project: 01/10/2011

Duration: 48

Project coordinator name:
Mr. Alexander Vermeulen

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Project coordinator organisation name:
STICHTING ENERGIEONDERZOEK CENTRUM NEDERLAND

Review Report

General Information

Grant Agreement number:	284274
Project acronym:	InGOS
Project title:	Integrated non-CO2 Greenhouse gas Observation System
Funding Scheme:	FP7-CP-CSA-Infra
Project starting date:	01/10/2011
Project duration:	48
Name of the scientific representative of the project's coordinator and organisation:	Mr. Alexander Vermeulen STICHTING ENERGIEONDERZOEK CENTRUM NEDERLAND
Project web site:	
Type of technical review:	Periodic regular/foreseen technical review
Period covered - from:	01/10/2011
Period covered - to:	02/12/2013
Date of review meeting (if applicable):	02/12/2013
Type of review report:	Individual
Name of expert drafting the report:	Wilfried WINIWARTER
Name of the Project Officer:	Ms Anna Maria JOHANSSON

1. Overall Assessment

a. Executive summary: Comments, in particular highlighting the scientific/technical achievements of the project, its contribution to the State of the Art and its impact:

The InGOS project has demonstrated excellent progress in its first period. Structures for cooperation and intercomparison have been built, collaboration between different groups established, research infrastructure has been made available and is being used by external groups. Measuring non-CO2 greenhouse gases has been moved from individual scientists' achievement to a common activity. Additional efforts have been spent on achieving comparability of past monitoring data, and on intercomparisons of current and future measurement activities (by common protocols, intercomparison exercises and round-robin experiments) – preparing a baseline for improved linkage with satellite data and inverse modeling exercises. While much of the latter still has to be proven in the later project phases, current achievements are promising and push activities in the right direction.

Progress	Good progress (the project has achieved most of its objectives and technical goals for the period with relatively minor deviations)

b. Overall recommendations (e.g. on overall modifications, corrective actions at WP level, or re-tuning the objectives to optimise the impact or keep up with the State of the Art, or for other reasons, like best use of resources, re-focusing...).

As projects of this size need time to get established, the amount of measurable results (e.g., in terms of publications) during the first 18 months was low, but considerable momentum was acquired since, such that during the 6 months after publishing the first periodic report new results are coming in much faster, and the number of project-related scientific publications multiplied. During the further course of the project, it will be important to maintain this more recent momentum, in order to convert the project results into a more permanent achievement. This will require a more thorough use of project deliverables as a means of documenting and communicating project results, a consistent tracking of the relevant project results (inducing those of external users of the infrastructure, which also should be considered as project achievements) which all should be claimed as success for InGOS, and extending activities towards parts of Europe which are currently underrepresented. Moreover, preparation for a handover of the research infrastructure to a more permanent organizational platform is strongly recommended for safeguarding continuation of monitoring and observing compliance of international climate agreements without being bounded to the limited research project durations.

2. Objectives and Workplan

a. Progress towards project objectives: Have the objectives for the period been achieved? In particular, has the project as a whole been making satisfactory progress in relation to the Description of Work (Annex I to the grant agreement)?	Yes

Comments

InGOS is a complex project that involves a large number of individual partners. The success of the project depends on the interaction of the partners, and on organizing such interaction in a constructive manner that serves the interest of all participants. The InGOS team demonstrates having achieved such successful interaction, by an impressive array of individual collaborations, by reliable internal communication and by well-attended project meetings. The achievement of a collaborative structure per se is a prime objective in a first project phase, and for a large project it necessarily will take a while until a project is at a stage to provide output. For the project as a whole this phase has now been achieved. I see scientists collaborate within work packages as well as between work packages, exchanging and sharing data and information as needed. On the project level, activities are running smoothly and progress to a very large extent follows the projections outlined in the DoW.

b. Progress in individual work packages: Has each work package (WP) been making satisfactory progress in relation to the Description of Work (Annex I of the grant agreement)?	Partially

Comments

Practical implementation of a research project necessarily experiences some deviations from the original plans, at least as long as targets set are ambitious. This is clearly the case here, problems quite typical of experimental research occurred in some of the work packages as a result of the high challenges. While there is still time to make up for the delays incurred, it is worthwhile to reflect on some of the issues. The airborne platforms (two airplanes, WP 9) have nearly not been operational yet for a number of independent reasons; a round robin for Halocarbon measurements did not work out (WP4: problems with transport clearance for probes) and a lab intercomparison on marine samples failed (WP6). In all cases, timing is not critical so that providing results at a later point in time is not an issue. Only it may have been useful to include sampling from airplanes in the intercomparison exercises held in summer 2012 and 2013 – this can not be made undone. It still will have to be decided by the coordination team, whether it will be more useful for the project to run all the airborne measurements now in the remaining time period, or if some of the infrastructure access provision should be moved to those platforms that have successfully proven to be fully operational (tower sites and other field sites). In at least one case, successful additional work on one item caused delay elsewhere. The important additional task taken up by WP2, recalibrating existing monitoring information on methane and including error margins to the datasets, will strongly increase the value of the dataset for future applications. Yet, for the time being the effort required prevented proper documentation to be published. Again this is not time-critical, but will have to be made up for at a later point in time.

c. Milestones and deliverables: Have planned milestones and deliverables been achieved for the reporting period?	Yes

Comments

Milestones have been achieved and deliverables have been provided, generally with a slight delay. The status of the respective deliverables is evaluated in the Annex. As each work package leader sees his/her work package independently (and he/she measures effects only towards other WPs) delays in one work package are typically not made up by time savings elsewhere, leading to a systematic delay overall. It will be the task of the coordinator to make sure to implement corrections in order to provide all adequate results by the end of the project. As of now this clearly can be achieved.

Deliverables

WP no.	Del. no.	Version	Deliverable name	Reviewed Yes/No	Status	Remarks
1	1	1.0	Organisation of the Kickoff me eting	Yes	Accepted	This deliverable basically covers a link to a web page within the InGOS web site, with access to all details of the meeting like agenda, abstract of presen tations, and participants list. The report is adequate and fits its purpose.
1	2	1.0	InGOS web portal	Yes	Accepted	The deliverable provides a short description of the web page and a screen s hot of the initial page at the time of report preparation. With the most im portant feature to describe a web page, the link, included, the report fulfills its purpose. The web portal itself is well structured, allows retrieving items as needed even if (in the publicly accessible area, at least) information is some what limited.
1	3	1.0	Detailed description of the InGOS infrastructures offering TNA	Yes	Accepted	The report describing in detail the infrastructure made available by InGOS is a well organized representation of the InGOS services. The description of monitoring sites and other infrastructures matches / is copied on the project web site – this is very useful as it aims to attract users of the infrastructure. Thus it would be helpful to offer this (public!) document also as a brochure d irectly from the web page (as in the MTR presentation, it could be named “s ite info booklet”). Some of the links contained in the document seem not to have been tested (link to Hungarian site is not active, i.e. site only accessible after removing the initial “www”).
1	4	0.0	Minutes of the first official proje ct meeting	No		
1	5	1.0	1st progress report to the Eur opean Commission	Yes	Accepted	
1	6	0.0	Minutes of the second official project meeting	No		
1	7	0.0	2nd progress report to the Eur opean Commission	No		
1	8	0.0	Minutes of the final project m eeting	No		
1	9	0.0	Final report to the Commission	No		
1	10	0.0	Greenhous gas measurement workshop	No		
1	11	0.0	N2O Skills workshop	No		
1	12	0.0	Summerschool	No		
2	1	1.0	Methodology for data correction established	Yes	Accepted	Organized as an overview of material submitted to a workshop held as an ele ment of WP2, the report indicates on the significant efforts spent on estab lishing a reliable and corrected data base on CH4 measurements. This improv

Deliverables

WP no.	Del. no.	Version	Deliverable name	Reviewed Yes/No	Status	Remarks
						ed data base is a major achievement of the project and provides an important foundation for any further use of the material. Thus it is essential that the methodology and algorithms used to arrive at the corrected data set be docu mented in detail. While the present deliverable indicates on the work being done, no such detailed documentation is offered. Instead, internal papers providing that information have been made available by the principle invest igator (PI), which due to (in my opinion too rigid) interpretation of the requir ements of a deliverable did not make it into a deliverable.
2	2	1.0	Consolidated harmonised histor ical records of CH4 and H2 from up to 22 stations	Yes	Accepted	The report links to a web page where this information is stored (link seems not to have been tested – the hyphen "-" is interpreted wrongly, needs to be retyped in the web browser to get access), which is an appropriate way to all ow access to data. Moreover, it is understandable that some access restrict ions apply, and that data is visible only for registered users. But the combinat ion of a report of dissemination type "public", and basically all information inaccessible does not seem appropriate. The report either should be declared "restricted" (in which case it evades evaluation), or some more general inf ormation (graphical displays of consolidated data and – more interesting in this case – information on the repeatability of measurements) should be pr ovided. E.g., meta-information and sample data could be provided for potent ial users.
2	3	0.0	Consolidated harmonised histor ical records of N2O from up to 22 stations	No		
2	4	0.0	Comparison results of 222Radon daughter measurements from up to 5 stations	No		
3	1	1.0	Method for quality control for all stations implemented	Yes	Accepted	A detailed description of terminology, followed by guidance on measure ments and standardization procedures is exactly what is needed here to prep are for round-robins and other activities to safeguard data quality of current a nd future measurements.
3	2	1.0	Near-real time data of the first 10 stations available at the webpage	Yes	Accepted	The documentation presented in this deliverable provides a comprehensive overview on all issues of near-real-time data. Accessibility, a web link and screenshots from the web site allow both off-line study and on-line access of data. The importance of NRT data, as also indicated in the report, includes p roviding information to site operators – at the time of writing this report this can be demonstrated for the site CBW, where some equipment malfunctio ning seems to take place.
3	3	0.0	First ICP report on comparability of CH4, N2O, SF6 and H2 m easurements within InGOS netwo	No		

Deliverables

WP no.	Del. no.	Version	Deliverable name	Reviewed Yes/No	Status	Remarks
			rk			
3	4	0.0	Near-real time data available at th e webpage for all stations.	No		
3	5	0.0	Report on the feasibility of a trav elling instrument for quality contr ol of in situ measurements	No		
3	6	0.0	Second ICP report on comparabi lity of CH4, N2O, SF6 and H2 measurements within InGOS network	No		
3	7	0.0	Assistance to St Petersburg and Cyprus	No		
3	8	1.0	Add QC data to the database	Yes	Accepted	This report (together with the documentation on the InGOS web page it links to) provides information on the file name, file structure and parameter na ming convention used for data files. In contrast to its title, little information is provided on QC. Clearly, this documentation is valuable and needed, and might even deserve some extension regarding quality control procedures.
3	9	0.0	Add QC data to the database	No		
4	1	1.0	Stainless steel canisters as tertiary calibration standards for haloca rbons	Yes	Accepted	The deliverable describes briefly the calibration exercises being performed to safeguard comparability of halocarbon measurements. While the principles are outlined, little information is provided on the extent of such exercises. Presumably, these details will be published together with the results in one of the future deliverables.
4	2	1.0	Calibrated set of stainless steel c anisters as tertiary calibration st andards for halocarbons	Yes	Accepted	Deliverable combined into D.4.1 - joint evaluation
4	3	1.0	Stainless steel canisters as round- robin calibration set for halocarbo ns	Yes	Accepted	Again, a short description provides information on the general layout (incl uding some of the logistic difficulties encountered). More information, inc luding the results, is expected to become available in a later deliverable.
4	4	0.0	Round-robin intercomparison wi th an ensemble of 4 standards with different concentrations	No		
4	5	1.0	Recommendations for good pract ice of atmospheric halocarbon measurements	Yes	Accepted	This report provides recommendations for high-quality measurements of halocarbons. With some links to internet resources, it provides very practical “hands-on” advice of how measurement protocols can be developed. This s hould not be seen as fixed set of rules, rather general thoughts that may guide

Deliverables

WP no.	Del. no.	Version	Deliverable name	Reviewed Yes/No	Status	Remarks
						less experienced experimenters.
4	6	0.0	Set of stainless steel canisters as tertiary calibration standards for halocarbons	No		
4	7	0.0	Round-robin intercomparison wi th ensemble of 4 standards with different concentrations	No		
4	8	0.0	Internally consistent data set of h alocarbon measurements	No		
4	9	0.0	Set of stainless steel canisters as tertiary calibration standards for halocarbons	No		
4	10	0.0	Round-robin intercomparison wi th ensemble of 4 standards with different concentrations	No		
4	11	0.0	Internally consistent data set of h alocarbon measurements	No		
4	12	0.0	Internally consistent data set of h alocarbon measurements	No		
5	1	1.0	Results from the CH4 eddy-cova riance inter-comparison campaign in database	Yes	Accepted	The intercomparison of ten instruments (8 of which are able to measure meth ane) to detect greenhouse gas fluxes is described in this deliverable. The report is comprehensive and detailed, carefully explains project setup, results and conclusions and links to the original data (even if these are not public). A s the authors lay out from start, this paper forms the backbone of a future publication (according to the PI's information, it is on the point of being sub mitted) – clearly one of the more advanced results of the project.
5	2	1.0	Summer school openly advertised	Yes	Accepted	The deliverable provides the outline and detailed information on a summer s chool held in Poznan, Poland, in June 2013 (in collaboration with two COST actions). As the deliverable dates from before the summer school actually h appened, it covers only the proposed activities without details on the stud ent’s success and feedback.
5	3	0.0	Report from 1st expert workshop on CH4/N2O flux measurements	No		
5	4	0.0	Results from the N2O chamber c alibration submitted to database	No		
5	5	0.0	Results from the N2O eddy-cova	No		

Deliverables

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			riance inter-comparison campaign in database			
5	6	0.0	Published recommendations on non-CO2 CH4/N2O flux measurement and gap filling	No		
5	7	0.0	Flux processing routines for non-CO2 flux database	No		
5	8	0.0	Report from 2nd expert workshop on CH4/N2O flux measurements	No		
6	1	1.0	Report on test of OA-ICOS/equilibrator system	Yes	Accepted	A brief report is presented on the deployment of an improved system to measure N2O/CO/CO2 in gas phase and in the liquid phase of ocean water. While it is shown that the system is operative and provides results, at this time conclusions drawn from these tests are rather sparse. Very generally, a reference to the paper (to be published in Ocean Science) would have been helpful – which understandably was not yet at that stage of publication when the deliverable was produced.
6	2	1.0	Report on inter comparison exercise	No		
6	3	0.0	Report on time series data	No		
6	4	0.0	Report on VOS line data	No		
6	5	0.0	Report on hydrographic section data	No		
6	6	0.0	MEMENTO data report	No		
13	1	0.0	Report on field trials of CH4 DIAL system at tall tower Angus	No		
13	3	0.0	Dataset on vertical concentration profiles at tall tower Angus	No		
13	4	0.0	Comparison of low cost GC with other GHG instrumentation at Weybourne or similar TNA station	No		
13	5	0.0	Dataset of flux observations using the gradient/REA systems	No		
13	6	0.0	Report on the performance of c	No		

Deliverables

WP no.	Del. no.	Version	Deliverable name	Reviewed Yes/No	Status	Remarks
			oncentration measurements by i s-FTIR			
13	7	0.0	Report on the performance of i s-FTIR flux systems	No		
13	8	0.0	Final report of the performance of the low cost GC system	No		
13	9	0.0	Report on the performance of new optical system for concentration and flux measurements	No		
14	1	1.0	Protocol on a standardized ret rieval method for XCH4 and tro pospheric XCH4	Yes	Accepted	The report provides detailed information on different approaches to separate tropospheric and stratospheric CH4 concentration from a total column signal (ground-based). The description is comprehensive and provides the docume ntation required to reproduce and build on the approaches presented.
14	2	1.0	Report on the impact of different parameters on the GOSAT	Yes	Accepted	Here satellite data (GOSAT – Japanese product) is used to assess total colu mn CH4 and CO2 concentrations. The report describes in detail efforts taken to compare with ground-based column measurements (see also D.14.1). A wealth of detailed figures is made available which provides plenty of back ground material needed to support any claims made. Even while results are n ot fully conclusive yet, the presented material provides a valuable link be tween ground based and satellite operated measurements.
14	3	0.0	Report on instrumental compara bility across TCCON-Europe	No		
14	4	0.0	Provision of a corrected, calibrate d GOSAT CH4 product	No		
14	5	0.0	Report about the comparison of GOSAT and ACE-FTS satellite r etrievals with TCCON-Europe re trievals	No		
14	6	0.0	Report on the comparison of mo delled 3D CH4 fields with remote sensing data	No		
14	7	0.0	Final TCCON-Europe dataset of XCH4 and tropospheric XCH4	No		
14	8	0.0	Evaluation report including re commendation for ICOS imp lementation of TCCON-CH4 data	No		

Deliverables

WP no.	Del. no.	Version	Deliverable name	Reviewed Yes/No	Status	Remarks
15	1	1.0	Improved bottom up inventories for European CH4 emissions	Yes	Accepted	The deliverable links to a detailed description of the work performed and to the database as such. Thus full documentation on all aspects needed is made available, and the deliverable fulfills its purpose.
15	2	0.0	Improved bottom up inventories for European N2O emissions	No		
15	3	1.0	222Rn emission inventory (para meterized by soil type, porosity, moisture and water table depth	Yes	Accepted	The deliverable provides a brief description of and a link to a 222Rn datab ase newly established. No full documentation is available, and the ftp data base referred to is password-protected, such that a more detailed evaluation is not possible.
15	4	0.0	Comparison of 222Rn simulation s based on new 222Rn inventory (D15.3) with observations	No		
15	5	0.0	Comparison of simulated and ob served boundary layer height	No		
15	6	0.0	Provision of 3D CH4 fields from CH4 inversions for comparison with FTIR and satellite data	No		
15	7	0.0	Model assessment of the potential to use #13CH4	No		
15	8	0.0	Analysis of sensitivity of the InGOS network to European emi ssions	No		
15	9	0.0	European CH4 inversions using improved CH4 measurements from INGOS WP 2 and 3 (NA2 and NA3)	No		
15	10	0.0	N2O inversions using improved N2O measurements from INGOS WP 2 and 3 (NA2 and NA3)	No		
15	11	0.0	European halocarbon inversions using improved halocarbon mea surements at InGOS stations	No		
15	12	0.0	Detailed model intercomparisons and analysis of European CH4 emissions	No		
15	13	0.0	Model intercomparisons and ana	No		

Deliverables

WP no.	Del. no.	Version	Deliverable name	Reviewed Yes/No	Status	Remarks
			lysis of European N2O emissions based on results from D15.10			
15	14	0.0	Model intercomparison and anal ysis of European emissions of important halocarbons with large GWPs	No		
16	1	0.0	Dual QC laser setup with a pre cision of 0.1 ‰ (d13C-CH4) and 1 ‰ (dD-CH4) at 2ppm CH4	No		
16	2	0.0	Laser system for #13C-CH4 purc hased and ready for field depl oyment	No		
16	3	0.0	IRMS with a precision of 0.1 ‰ (d13C-CH4) and 1 ‰ (dD-CH4) at 2ppm CH4 ready for field dep loyment	No		
16	4	0.0	Field measurements with lasers spectroscopy and IRMS perform ed at two sites	No		
16	5	0.0	Field data evaluated, isotopic sign atures determined and results published	No		
16	6	0.0	Isotope scale for CH4 linked to international reference materials	No		
17	1	1.0	Report on the identification of new HFCs with potential for large -scale industrial usage	Yes	Accepted	The concise report reviews activities on quantifying emissions of HFC so far not investigated from atmospheric measurements. With its reference to pub lished or to-be-published papers, the documentation seems appropriate for t his deliverable.
17	2	1.0	Report evaluating the potential developments and highest impact for upgrading GCMS-based t echnology	Yes	Accepted	An improved analytical system is described, which not only aims in measurin g new compounds (NF3) but also, by way of storing MS detector signals, allow for a future evaluation (ex-post) of compounds not yet captured or c onsidered as atmospheric trace constituents, acting as an electronic "library" f or these compounds. While not serving as full documentation, the report exp lains the concepts in sufficient details to link into other tasks of the project.
17	3	0.0	Guideance using ToF-MS for mea surement of halocarbons at Eur opean atmospheric measurement	No		

Deliverables

WP no.	Del. no.	Version	Deliverable name	Reviewed Yes/No	Status	Remarks
			stations			
17	4	0.0	Implementation of continuous measurements of relevant HFCs	No		
17	5	0.0	Report on developments for upgrading GCMS technology for long-term measurements of halocarbons	No		
18	1	1.0	Footprint estimates and climatology for all sites in WP	Yes	Accepted	The deliverable shortly outlines the concept and explains it with an example. While the detailed concepts are not shown (and subject to be developed in the later course of the project, according to the work package leader), the results of the footprint analysis – including all data details – are accessible via a web link presented. Thus the project consortium can make use of the results of this analysis.
18	2	0.0	Annual datasets from tall tower fluxes	No		
18	3	0.0	Annual datasets from concentration and gradient-based fluxes	No		
18	4	0.0	Datasets from EC flux systems in short towers	No		
18	5	0.0	Dataset from chambers	No		
18	6	0.0	Annual datasets from tall tower fluxes	No		
18	7	0.0	Annual datasets from concentration and gradient-based fluxes	No		
18	8	0.0	Complete regional scale estimates of CH4 and N2O balances	No		
18	9	0.0	Complete assessment of ecosystem-active periods for CH4 and N2O	No		

d. Relevance of the objectives in the coming periods: Are the objectives for the coming period(s) i) still relevant and ii) still achievable within the time and resources available to the project?	
d.i) still relevant?	Yes
d.ii) still achievable?	Yes

Comments

As in general the project is on target, there is no reason to deviate from the future objectives. The considerable motivation of project participants and the momentum attained in the current project phase may suffice to make up for the time lost so far, if carefully coordinated. The objectives in the coming periods thus are both relevant and achievable.

3. Resources

a. Assessment of the use of resources: To the best of your estimate, have resources used, i.e. personnel resources and other major cost items, been (i) utilised for achieving the progress, (ii) in a manner consistent with the principle of economy, efficiency and effectiveness. Note that both aspects (i) and (ii) have to be covered in the answer.	
a.i) utilised for achieving progress	Yes
a.ii) in a manner consistent with the principle of economy, efficiency and effectiveness	Yes

Comments

As expected from a research project that coordinates activities on large infrastructures, the major share of costs are in personnel and in travels. With most of the objectives achieved, overall costs of about one third of the total within the first 18 months (of 48) seem very adequate. It is, however, striking that WP1 “management” already used more than half of its resources. Specifically the coordinator, ECN, charged about half of their activities to management. With respect to the original planning, efforts needed for management of the initial project phase seems to have been underestimated. As indicated above, just that phase is decisive for getting the project in a good shape and thus the added focus seems appropriate. The very positive progress in InGOS, which now starts to materialize, confirms the direction and decisions taken. Thus the resources were properly used to achieve progress, and the principles of economy, efficiency and effectiveness were observed as far as can be judged. A challenge still to be met in the further course of the project will be to refocus to science while maintaining the additional tasks outlined for management.

b. Deviations: If applicable, please comment on large deviations with respect to the planned resources.

4. Implementation of the Project

a. Management: Has the project management been performed as required?	Yes

Comments

Clearly, the management of the project was a critical element in the early project phase. Management has been performed in an extraordinarily successful manner in order to get the project started and gain the momentum it now has acquired. Central organization is in place, visible both externally and inside the project, and also the communication to the commission seems well organized. Management moreover extends to contacts with related programmes (COST actions, ESF project TTORCH, infrastructure project ICOS and other) and drawing from previous activities (NitroEurope IP, CarboEurope IP, CHIOTTO, GHG-Europe etc.).

b. Collaboration between beneficiaries: Has	Yes

the collaboration between the beneficiaries been effective?	

Comments

Collaboration between partners is operative both within work packages and across work packages. Participants join meetings and share results on a basis of work needs, and doing so they proceed independently of project management, even while management may support. This collaboration, as based in the interest of the respective participants, is effective – its main intent, making results available in form of peer reviewed publication, is shared by all partners, and the advantages of cooperation has become evident to everyone during the course of the project.

c. Beneficiaries' roles: Do you identify evidence of underperforming beneficiaries, lack of commitment or change of interest of any beneficiaries?	No

Comments

There are differences in general involvement and in success between individual partners, but the interest in working together and the striving to a common goal seems shared by the partners. The existing documentation (work package report, periodic report, and personal interaction at mid-term review) may not sufficiently cover all project participants that may only have a minor role, but the above conclusion clearly is applicable at least to all key contributors and work package leaders to the project, and no indication exists of a deviant case.

5. Use and Dissemination of Foreground

a. Impact: Is there evidence that the project has/will produce significant scientific, technical, commercial, social, or environmental impacts?	Yes

Comments

All activities in the InGOS project, including the scientific achievements, basically serve the purpose to establish an improved understanding of human impacts on the radiative properties of the atmosphere. Emissions of greenhouse gases are being assessed in national inventories. Any supporting independent information to these inventories will improve trust and reliability in those procedures. Common international activities to combat climate change need to be based on very robust information. InGOS will help to provide such information.

a.1. Is there an impact on participating Small and Medium Entreprises (SMEs)?	Not Applicable

Comments

a.2. Is there an exploitation potential for the participating SMEs?	Not Applicable

Comments

b. Use of results: Is the plan for the use of foreground, including any update, appropriate? Namely, please comment on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiary or groups of beneficiaries and its progress to date.	Partially

Comments

Inverse modeling based on the InGOS results is needed in climate policy, which then will be the prime user. Considering the still high uncertainty in some important biogenic processes (notably soil processes to release N2O) a constraint based on atmospheric data will be extremely useful. That information, in a climate policy context, will be needed not only for the current situation, but within a monitoring program to assess future changes. Climate change is an issue to be tackled on a long term perspective, requiring long term monitoring. Such monitoring needs to be done by appropriate agencies, not by scientists. While scientists may support future developments and improvements, and may also help in quality maintenance, the InGOS consortium is well advised to look for continuation of monitoring less in the current scientific community (and related funding) but rather seek for partners in the climate policy arena who ideally should adopt the routine aspects of the work. Reliable instrumentation has been identified, among other as part of InGOS, that could help to carry out such a task, and further provide monitoring data to interested parties including the scientific community.

c. Dissemination: Have the beneficiaries disseminated project results and information adequately (publications, conferences...)?	Yes

Comments

Judging from the material availale (publication list, meeting reports), the consortium has been very active in sharing their results in scientific projects. Publications were somewhat slow in the early project phase but seem to be soaring now with first project results being available.

d. Please identify potential information that should be disseminated to

Policy makers:

Methods are available to independently assess emission inventories. This will eventually lead to reduced uncertainty and increased reliability of emission estimates especially for sources that currently are not well constrained (e.g., N2O from soils).

The scientific community:

The scientific community is being well served by the consortium already

The general public:

Long-term monitoring of environmental parameters generally, and of greenhouse gases specifically, is needed to watch over emissions and emission reduction methodologies. This is the only way to safguard trust on any post-Kyoto mechanism. Europe can play a decisive role here to demonstrate verification of emission data (in the IPCC terminology) is technically feasible. Specifically this is important as some of the US funding in the area seems subsiding.

A specific group of end users:

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e. Involvement of potential users and stakeholders: Are potential users and other stakeholders (outside the consortium) suitably involved (if applicable)?	Partially

Comments

At the current point in time, involvement of climate policy (EU-wide or national) and of potential monitoring agencies to InGOS seems rather limited. The consortium may anyway have considered to organize a “stakeholder meeting”, possibly again coupling activities with COST and ESF, to share more of InGOS’ most relevant results and make sure to capture the attention of monitoring agencies.

f. Links with other projects and/or	Yes

programmes: Is the consortium interacting in a satisfactory manner with other related Framework Programme projects or other Research and Development national/international programmes, standardisation bodies?	

Comments

The consortium is well integrated in the relevant science activities on a European scale.

6. Other Issues

a. Have policy-related and/or regulatory issues been properly handled (if applicable)?	Yes

Comments

Proper handling of policy related/regulatory issues, as far as routine project operation is concerned, is evident. As described above, there is a window of opportunity here to team-up more closely with with climate policy. Improving such interaction would benefit both policy and the ultimate value of this project.

b. Have ethical issues been appropriately handled (if applicable)?	Not Applicable

Comments

c. Have safety issues been properly handled (if applicable)?	Not Applicable

Comments

d. Has progress on Gender Equality Actions been satisfactory (if applicable for this reporting period)?	Yes

Comments

7. Flag the Project - Not related to the 'certified as correct'

Flag(s) for the project	Yes
Highlight as a success/case story	No
High visibility/media attractive project	No
Substantial R&D breakthrough character	No
Project linked to R&D national/international programmes	No
Project with an impact on EU policies	Yes
Project with an impact on pushing Joint Programming (especially for ERA-NET)	No
Outstanding Use/Exploitation of results	No
Significant R&D participation from outside EU	No

Involvement of non-RTD actors in the field (economic, policy makers, civil society, end-users, standardisation bodies…)	No
Good innovation potential	Yes
Other	No

Comments

Results of this project may have a considerable impact on European climate policy. Verification of emission information will allow to improve inventories and to facilitate monitoring of the efficiency of mitigation measures on a highly improved level. InGOS will directly contribute to such improvments and may even lay the foundations to independent checks of emission data from foreign countries, thus allowing for true global intercomparisons - again a precondition to global policies on climate change.

Attachments	
Name	
Date	

This declaration was visaed electronically by Wilfried WINIWARTER (ECAS user name nwiniwil) on 20/12/2013