Welcome to Issue 4, August 2020

Please subscribe to the new electronic version of Who's Counting using the link below. Updates and resources related to national level greenhouse gas emission inventories and related Nationally Determined Contributions (NDC's) are communicated via this Newsletter and we encourage readers to share widely.

National greenhouse gas inventories remain the main tool connecting policy with mitigation in the context of agricultural greenhouse gas emissions. However, increases in agricultural productivity and efficiency are often not captured in national inventories and most do not currently account for direct mitigation technologies. Many countries also face major challenges with either a lack of relevant data or non-existent data to develop their own inventory. Contributions and feedback are welcomed, please feel free to contact one of the Network leads below.

The Inventories and NDC Network promotes and strengthens the international and national research to policy interface and facilitates sharing technical agriculture inventory expertise to inform inventory developments and agriculture emission mitigation efforts.

The Inventories and NDC Network comprises members from over 60 countries and 7 research partners.

Read Issue 3, May 2020

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Spotlight

Fifteen Years of the Agriculture and Land Use National Greenhouse Gas Inventory Software (ALU) by Dr. Stephen Ogle, Colorado State University, USA.

The Agriculture and Land Use National Greenhouse Gas Inventory software, or ALU, was developed by Dr. Stephen Ogle and colleagues at Colorado State University starting in 2005 as part of a capacity building project in Central America.

ALU is designed to guide the inventory compiler through the process of compiling activity data about human actions influencing GHG emissions, assigning default or country-specific emission factors, which are the rates of emissions per unit of the activity, and applying the IPCC equations to calculate emissions. In addition, ALU emphasizes conducting a complete inventory for the AFOLU sector with consistent methods across the time series, quantifying uncertainty in emissions estimates, following quality control and quality assurance procedures, as well as documenting and archiving the inventory data. All of these steps are integral to IPCC good practice guidance for GHG inventories.

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Best Practices

Multi-year, multi-partner project (CaSSECS) underway to quantify carbon sequestration and greenhouse gas emissions in (agro) sylvopastoral ecosystems in the Sahelian West Africa

Over the next five years, concrete steps will be taken to strengthen the local capacity of West African countries to quantify greenhouse gas and ecosystem impacts of Sahelian agro-silvopastoral systems and to provide advice on livestock policies aimed at optimizing management practices adapted to the region.

The CaSSECS project will be implemented in Senegal, Burkina-Faso, Niger, Mali, Chad and Mauritania, led by the Senegalese Institute of Agricultural Research (ISRA) and supported by several other local and international partners.

In Sahelian countries, (agro) pastoral livestock farming systems are not considered a high priority by politicians. A solid scientific evidence basis is necessary to demonstrate the potential for increased production efficiency and consequent lower emissions per unit of product, to establish a political framework for implementing successful mitigation strategies in these systems.

A lack of understanding on the potential environmental gains to be made from effective policy strategies in these systems is explained in part by a segmented view of (agro) pastoral livestock systems, and by a lack of scientific and technical skills to analyse their GHG emissions and generate reliable data. In addition, CaSSECS will collect data on the carbon sequestration potential of the ecosystem which has to be considered in order to have a clear picture of (agro)

pastoral livestock systems' full carbon balance and inform decision making.

Database of Agriculture Sector Inventory Improvements: Seeking Interesting Case Studies

The Inventories and NDC Network is currently seeking interesting case studies for inclusion in the database. If you are aware of any recent and/or major changes to your country's agriculture inventory methodology and/or emission factors, please notify the GRA Secretariat at secretariat@globalresearchalliance.org.

The case studies are intended to support inventory compilers to identify improvements that can be made to their current methodology and/or to emission factors in use in their national agriculture inventories. The case study information will potentially:

- increase the reporting Tier related to that specific improvement and emission category(ies),
- enable research priorities to be more easily and quickly identified, lowering the costs of countries being able to provide a robust and internationally defensible scientific evidence base to justify any change to emission reporting (as part of international reporting requirements),
- guide and accelerate activity data collection processes specific to the inventory improvement in question,
- guide how improvements might be implemented in their country's agriculture inventory model, and
- help compilers estimate the potential impact on reported emissions.

Case studies from this project will be published on the www.agMRV.org website, which is run by the GRA and CCAFS.

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Success Stories

Australia's New Agriculture Inventory Inclusion Allocates Methane from Farm Dams, Richard Eckard, University of Melbourne

Methane emissions from reservoirs and other constructed Freshwater ponds (e.g. farm dams) have now been included in the Australian national greenhouse gas inventory, including an estimate for certain Ponded pastures. For all dams and reservoirs methane emissions are reported under the Wetlands Remaining Wetlands (see Page 116, Section 6.10) classification. Freshwater ponds include stock dams as well as crop dams and farm

tanks, which are small to large, shallow impoundments used for crop irrigation.

Freshwater ponds: The methane emissions in the inventory from dams is based on the paper by Grinham et al., 2018, supported by the work of Ollivier et al 2018, resulting in an average emission around 140 kg CH4/ha/yr for all dams. This compares with the IPCC default factor of 183 kg CH4/ha/yr. This research concluded that farm dams in grazing areas have higher methane emissions than farm dams in cropland.

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SEACRIFOG Project - Designing Long-Term Greenhouse Gas Observation in Africa

More than half of Africa's greenhouse gas (GHG) emissions are estimated to appear from Agriculture and the LULUCF sector. This rather high share and the total emissions rate of Africa is quite uncertain, since there is a lack of basic, qualitative and open accessible measurements and inventories in large parts of the continent and its biomes. The H2020 funded SEACRIFOG Project has started in early 2017 to develop a roadmap on how to overcome these gaps and build a comprehensive GHG observation system in Africa. The

interdisciplinary African-European working team comprises experts in atmospheric, terrestrial (agricultural) and ocean observation.

The database is publicly available and can be up-dated if new information arises. Scientists and policy makers can easily see which data are available in a specific country and how to access them.
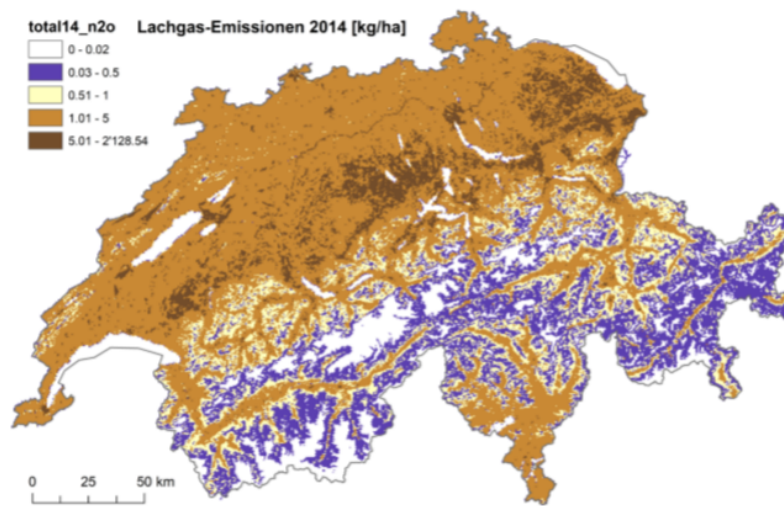
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New steps towards a model-based estimation of N2O emissions from agricultural soils in Switzerland

The agriculture sector is responsible for almost 13 per cent of all emissions in the Swiss GHG-inventory, with a significant contribution of N2O-emissions from agricultural soils.

Because of the complexity and the need of detailed databases covering the whole territory of a country, including reliable weather and farming data, so far only a few countries have been able to use modelling for their N2O-inventories of the agricultural sector (e.g. China, Japan and the USA).

At Agroscope, the Swiss centre of excellence for agricultural research, a project started in 2020 to evaluate process-oriented models for estimating soil-based N2O emissions under cropland and permanent grassland in Switzerland. The performance of the model DayCent, which has been successfully applied for national greenhouse gas reporting in the USA, is being tested for Swiss conditions.

Total N2O-Emissions in Switzerland according to the Swiss GHG-Inventory submitted in 2016 using Tier 1 emission factor for N2O-Emissions from agricultural soils (Source: Meteotest; Bern, Switzerland).

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Enhancing capacity and boosting transparency in the Agriculture and Land Use sectors.

Agriculture and land use sector play an essential role in climate change mitigation and adaptation, but there are technical, institutional and capacity barriers that make them more difficult to quantify, evaluate, monitor and report on, with respect to other sectors.

As countries are preparing to raise their ambition in the new round of Nationally Determined Contributions (NDCs), it is of utmost importance that they can rely on tools and capacity development to capture their efforts in the AFOLU sector.

Under the Capacity Building Initiative for Transparency (CBIT) funded by the Global Environment Facility (GEF), FAO launched the CBIT-AFOLU programme to support countries in meeting the Enhanced Transparency Framework (ETF) requirements. The programme consists of both a global and 10 national CBIT-AFOLU projects. The national projects – namely Mongolia,

Cambodia, Papua New Guinea, Afghanistan, Bangladesh, Sri Lanka, Benin, Equatorial Guinea, Cuba and Nicaragua – aim at addressing the capacity gaps and needs in terms of transparency. The global project focuses on producing ETF-enhanced global products, such as tools, guidance, training packages and e-learnings, to support the national CBIT-AFOLU projects and 13 pilot countries, along three main pillars: Institutional Arrangements, Measuring, Reporting and Verification (MRV) and Monitoring and Evaluation (M&E).

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Winning Candidates for CLIFF-GRADS Round 4 Announced

In July, we announced 57 winning PhD candidates from 20 developing countries will receive scholarships in Round 4 of the Climate, Food and Farming – Global Research Alliance on Agricultural Greenhouse Gases Development Scholarships programme (CLIFF-GRADS).

Internationally, the CLIFF-GRADS Programme is increasing in visibility and is held in high regard by member countries and partners to the GRA. This round of scholarship saw the number of awards double after hundreds of applications were received.

Previous Alumni say CLIFF-GRADS is more than just a scholarship. The short term research stay Programme fosters invaluable research connections and exposure to expertise that they would not otherwise have at their home institute. This experience is monumental for each of these early career scientists as they move into positions of academic and political leadership.

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Events and Resources

Progressing Partnerships Webinar Series 2020: Setting the Scene for Impact

On the 5 August 2020, the Global Research Alliance on Agricultural Greenhouse Gases (GRA) successfully hosted the first webinar of ***Progressing Partnerships*** – a three-part capacity building webinar series to provide advice, technical assistance and training to existing and new member countries of the GRA, particularly from Africa.

The third webinar of the series will be held on 23 Sep 2020. Please register using the link below.

The first webinar focussed on the importance of international collaborations in addressing the challenges of agricultural emissions reductions in the context of food security, poverty reduction and sustainable development, and in particular the role of the GRA.

Read More & Register

Science Collaboration Series: Special Session on the Science-Policy Interface with Sir Peter Gluckman

Eighty CLIFF-GRADS Alumni and Hosts from 33 countries attended this session with Sir Peter Gluckman on The Science-Policy Interface. Sir Peter shared with us his views on challenges that governments face with policy making and the often misalignment of communicating a 'science problem' in the context of a 'policy problem'.

The 12 part series was developed to build technical capability, transfer knowledge and facilitate

international collaboration for CLIFF-GRADS Alumni, given current international travel restrictions.

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Global Alliance for Climate-Smart Agriculture Webinar: Agriculture and NDC's, Opportunities to Bridge Science and Policy

Agriculture's incorporation into national-level climate policies can be difficult due to myriad challenges, such as a lack of effective stakeholder engagement, limited capacity and funding, and highly complex and varying contexts in which the policies are being developed.

The NDCs, which influence subsequent policy development, offer an opportunity to strengthen agriculture's presence in national climate agendas—in this webinar, we explore some of the approaches and programs that could be of use to policy-makers working at the nexus of climate change and agriculture.

Presenters:

1. Elizabeth Freed, Wageningen University & Research and CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS)

2. Prof. Rogier Schulte, Chair Farming Systems Ecology Group, Wageningen University & Research
3. Imelda (Dada) Bacudo, Expert on Climate Policy and Finance, Land Use and Climate Smart Agriculture, International Development Agencies Worldwide

Info Note: Evaluating ambition for soil organic carbon sequestration and protection in NDC's

Liesl D. Wiese-Rozanova, Viridiana Alcantara-Shivapatham, Eva A. Wollenberg, Sadie Shelton

"Increased international attention on agricultural soil organic carbon (SOC) has raised expectations of its potential contribution to both climate change mitigation and adaptation. Yet, debate on what is achievable and how to monitor or verify improvement in SOC has challenged progress. Since SOC is the primary terrestrial carbon pool, specification of SOC targets, policies and measures in agriculture may be pivotal to achieving global climate change targets, and thus appropriate to include in the nationally determined contributions (NDCs) to the 2015 Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC)."

Working paper to be published soon.

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IAMZ-CIHEAM Online Advanced Course on Livestock and Climate Change

Livestock and climate change: Assessment of emissions, mitigation options and adaptation strategies
19–30 October 2020

The Global Research Alliance on Agricultural Greenhouse Gases together with the International Center for Advanced Mediterranean Agronomic Studies (CIHEAM), the Food and Agriculture Organization of the United Nations (FAO), the International Center for Agricultural Research in Dry

Areas (ICARDA), the Red Remedia, and the 4 per 1000 Initiative invite applications for an online advanced course on livestock and climate change: "Livestock and climate change: Assessment of emissions, mitigation options and adaptation strategies" from 19-30 October 2020.

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People in Action

Using a Tier II Model (CQESTR) to Predict SOC Storage and CO2 Emissions by Adnan Zahid, 2019 CLIFF-GRADS Recipient

Adnan Zahid from Pakistan completed his CLIFF-GRADS research visit at the USDA-ARS Soil and Water Conservation Unit, supervised by Dr. Hero Gollany. He is in the final stages of his PhD at the University of the Punjab in Pakistan.

The basic objective of my training was to learn the CQESTR model and apply it to my PhD research data for its calibration and validation. My supervisor, Dr. Hero Gollany and Robert Wayne Polumsky, Physical Science Technician, guided me in a friendly and learning environment. After successful completion of my training, I can now use the Tier-II CQESTR model along with the DSSAT-Century model I had already been using in my PhD.

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Accounting for errors in SOC estimates introduced by proximal sensing methods by Bertin Takoutsing, 2019 CLIFF-GRADS Recipient

Bertin Takoutsing from Cameroon completed his CLIFF-GRADS research visit at ISRIC - World Soil Information, supervised by Dr. Gerard Heuvelink. He is in the final stages of his PhD at Wageningen University in The Netherlands.

Quantification of the uncertainty in DSM products is very important for policy decision makers and land users, as decisions based on inaccurate soil information can ultimately have extensive and profound impacts, and impair end-users' decisions.

As a CLIFF-GRADS recipient and during my PhD stay at ISRIC - World Soil Information, Wageningen, The Netherlands, I was involved in the research project that focused on incorporating measurement errors in soil observations in the state-of-the-art DSM approaches used to map carbon potentials and soil organic carbon (SOC) stocks.

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Impacts of COVID-19 on Greenhouse Gas Research, Ngonidzashe Chirinda, Mohammed VI Polytechnic University, Morocco

The COVID-19 pandemic and the global recovery are still evolving. Daily, we are gaining insights on the impacts the pandemic is having on greenhouse gas emission research. In a strange way, virtual working, that has become more prevalent during the pandemic, has enabled researchers a unique opportunity to finalise manuscripts and reports they were previously unable to complete due to busy schedules.

For researchers conducting conceptual or desktop based studies, which depend on existing datasets, models and literature can continue to advance these research projects. Indeed, desktop based research is set to benefit due to several publication agencies and research groups advancing open access publication of research manuscripts and datasets.

However, the situation is different for field and measurement-based studies or those that require new data collection through face-to-face meetings or interviews (especially in remote areas).

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www.globalresearchalliance.org

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