

C-AGG Meeting Summary

Monday-Tuesday, November 9-10, 2015

Embassy Row Hotel

Washington, DC – USA

Meeting Summary Table of Contents

Executive Summary	1
Action Items/ Key Takeaways	3
Day 1 - Monday November 9, 2015	
Welcome and Introductions: C-AGG Overview and Background, Meeting Objectives	4
Enhancing COMET-Farm for User Utility, Effectiveness, and Market Purposes	5
Agriculture, Land Use, and Land Use Change: Tying GHG Metrics on the Ground to the US National Inventory	8
Innovative Conservation Finance – A Panel Discussion	10
Delivering and Scaling Sustainable Agriculture and Climate Change Commitments from the Agriculture and Food Sectors.....	13
Day 2 - Tuesday November 10, 2015	
USDA 2011 GHG Conservation Innovation Grants: A High Level Overview of Successes and Challenges	15
USDA 2015 GHG Conservation Innovation Grants: Building on Success: A Roundtable Discussion.....	17
US Priorities for Agriculture and Land Use, Land Use Change at the UNFCCC COP21 in Paris.....	21

Executive Summary

Debbie Reed, C-AGG’s Executive Director, opened the meeting with an introduction to C-AGG, a review of meeting objectives, and a brief overview of how the meeting builds off the themes of C-AGG’s summer meeting in Chicago. A recurring theme at C-AGG meetings in the past, and at this meeting, is the discussion and debate over what sustainable agriculture at scale looks like across the United States (US), and how we can help stakeholders get there.

The meeting topics and sessions focus on the current tools, methods, and financing models available to companies, project developers, and other stakeholders in the sustainable supply chain that can further enable scaling of sustainable agriculture. The first day’s discussions

focused on emerging opportunities for the agriculture sector, and day 2 focused on tangible sustainable agriculture projects that have been and/or will be implemented through Conservation Innovation Grants (CIG) awarded by the U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS). Many of these are dedicated to the development of ecosystem and greenhouse (GHG) gas markets and other innovative financing opportunities. Additionally, given the meeting's proximity to the upcoming UN Framework Convention on Climate Change (UNFCCC) negotiations in Paris as part of the 21st Conference of Parties (COP21), representatives from the government and non-profit sectors provided an overview of how the agriculture, land use, and forestry sectors will factor into these negotiations.

Mark Easter, Colorado State University (CSU), and Adam Chambers, NRCS, kicked off the meeting with a discussion of the COMET-Farm tool, which USDA and CSU have been creating to more accurately and economically calculate the greenhouse gas (GHG) emissions and changes in emissions associated with US agriculture systems and practices. The team highlighted the updates that have been made to the tool over the past year, which include full alignment with the USDA GHG quantification methods document, socialization of the tool through numerous trainings, and an expansion that included modules for processing tomatoes, cover crops, and bioenergy crops. Additionally, CSU developed example demonstration projects with all modules, uploaded webinars to YouTube, streamlined the data entry process for rice production, updated the agroforestry models to extend projections out to 50 years, and added graphical report output options. Dr. Easter then provided an overview of the proposed changes for 2016. The updates in 2016 will include the addition of specialty crops from CA; inclusion of a rapid data entry feature; addition of an API service that will allow users to access the USDA GHG quantification methods through a side door; integration of the livestock grazing models; inclusion of more ag-forestry links to the US GHG inventory; expansion of the current outreach efforts; and a release of both tools to the open source environment.

After the presentation of quantification tools and methods used to capture GHG fluxes at the farm level, Tom Wirth, EPA, and Marci Baranski, USDA Climate Change Program Office, provided a high level view of how the government captures GHG emission sources and sinks from the agriculture sector for inclusion in the national inventory report. Tom provided an overview of how the national inventory is compiled, while Marci discussed updates to the USDA inventory, which include the development of methods for capturing the GHG changes that will result from the recently established Climate Smart Agriculture (CSA) Building Blocks, and how this work will roll up into the national inventory, which the US uses to demonstrate progress on GHG emissions and emissions reductions to the international UNFCCC community.

The final panels of the day addressed two of the biggest challenges C-AGG has been working to address since inception: how to finance conservation projects effectively and how to scale these efforts through voluntary incentives. The conservation finance panel addressed the first question by first defining the term conservation finance for the group and then discussing some

emerging financing models, such as upfront financing of carbon credit projects and the use of environmental impact bonds. While the panelists lamented that the current size of funding for conservation projects is inadequate, they explained that there is currently money available for projects in the short term that is not being accessed largely due to barriers to deploying this capital. Barriers identified include a lack of projects that meet minimum investment criteria and a lack of understanding amongst investors as to how to properly evaluate conservation projects. In addition to capital deficiency, panelists agreed that the lack of consistent metrics, appropriate producer incentives, and agreement on the most effective mitigation activities and technologies for the agriculture sector are the top barriers to scaling sustainable agriculture.

Day 2 focused on current and past pilot projects that have worked to address the barriers to scaling identified during day one. The 2011 class of Conservation Innovation Grant (CIG) awardees presented the biggest successes and challenges their projects faced when trying to bring carbon credits to market within the 3-year project cycle. The majority of the projects agreed that the economics of project implementation, the data requirements to run models for quantification, and a lack of producer engagement needed to achieve economies of scale made the generation of carbon credits a challenge. Despite these challenges, two of the projects did successfully sell credits on the voluntary market. The new class of 2015 CIG awardees, which includes 9 projects focused on improving nutrient management, avoided conversion of grasslands, forest management, and reducing methane emissions from rice production, provided short overviews of their projects that will be implemented over the next 3 years to further develop the carbon market space.

Finally, C-AGG welcomed Bill Hohenstein, Director of the USDA Climate Change Program Office, and Pipa Elias from The Nature Conservancy to discuss two perspectives on the US's priorities for the agriculture and land use sector at the upcoming UNFCCC COP21 in Paris, and the current status of the negotiations. Bill and Pipa agreed that there will likely be a successful agreement reached during the upcoming negotiations and that the negotiated document would include a comprehensive approach to emissions reductions, meaning all sectors and countries will have responsibilities for emission reductions. For the agriculture and land use sectors in the US, these reductions will largely be achieved through the CSA Building Blocks put forth by USDA earlier in the year.

Action Items/ Key Takeaways

- Colorado State University, USDA-NRCS, and C-AGG will be hosting workshops to solicit input on how to improve the COMET-Farm suite of tools with a goal to make them applicable for quantifying GHG reductions from the agriculture sector for use in ecosystem service and carbon markets. The first workshop will be held in conjunction with the March C-AGG meeting in Sacramento. Additional details will be made available in the future.
- USDA recently awarded another round of CIGs with a focus on GHG, water quality market development, and innovative conservation finance. C-AGG will again serve as a convener for the GHG CIGs; the Conservation Finance Network will act as a convener for innovative

finance CIGs; and The Freshwater Trust will convene water quality CIGs. C-AGG will work to schedule annual check points with both groups of CIGs to promote cross pollination of ideas among all three groups.

- C-AGG's GHG CIG website portal (<http://c-agg.org/cig/>) now includes summaries of the 2015 GHG Projects, as developed for the November C-AGG meeting.
- Bill Hohenstein of USDA's Climate Change Program Office sees opportunities to work with C-AGG on establishing metrics and baselines for the Climate Smart Agriculture Building Blocks, and invited meetings (post-Paris/COP21) to discuss this potential collaboration and to provide more details on the implementation plans for each building block.
- Key reports referenced during the meeting:
 - *USDA GHG Quantification Methods Report* – http://www.usda.gov/oce/climate_change/Quantifying_GHG/USDATB1939_07072014.pdf
 - *Liquid Assets: Investing in the Colorado River Basin* - <http://encouragecapital.com/wp-content/uploads/2015/09/Liquid-Assets-Full-Report-Web1.pdf>
 - *Conservation Finance: Moving beyond donor funding toward an investor-driven approach* - <https://www.credit-suisse.com/media/cc/docs/responsibility/conservation-finance-en.pdf>

Monday, November 9, 2015

Welcome and Introductions: C-AGG Overview and Background, Meeting Objectives

Debbie Reed, C-AGG's Executive Director, opened the meeting with an introduction to C-AGG. C-AGG's work spans the spectrum of voluntary incentives for reducing agricultural GHG emissions and increasing resiliency and brings all stakeholders to the table to "raise the barn." C-AGG operates through an open collaboration policy and provides a forum for participants working in the voluntary incentive space to meet three times a year to receive an update on the state of the science, policy, and tool development. Additionally, between meetings C-AGG hosts intermittent workshops focused on targeted issues that require a deeper dive than what can be provided during the annual meetings. C-AGG's main objectives and activities include collaboration with the entire agriculture value chain to advance low carbon/climate smart agriculture, building new partnerships within the sector to advance voluntary incentives, and sharing learnings to enhance tool and technology development.

Debbie reviewed the themes from the July meeting, where C-AGG discussed the emerging climate change programs in Canada, including developments in Ontario; assessed the need for analysis of the true GHG mitigation potential of the United States agriculture sector, which is a needed piece to better inform decision making, policy development, and program investment; discussed with California's Air Resources Board (CA ARB) the contents of their Short-Lived Climate Pollutants (SLCP) Strategy currently under development; and spent a day diving into the challenges and opportunities facing the dairy sector and the role The Innovation Center for

US Dairy is playing to improve the sustainability of the industry. Since the July meeting, C-AGG has submitted comments to CA ARB in response to their draft SLCP Strategy, specifically comments asking for further clarification regarding the role regulation will play at dairies; launched a strategic evaluation and planning project with an external consultant; and added three new Steering Committee members (Thomas Driscoll (NFU), Chad Frahm (Innovation Center for US Dairy, and Sheldon Zakreski (The Climate Trust)).

Moving forward into the next year, C-AGG will continue to focus on tool development, farmer engagement, SLCP strategy implementation in CA, the developments of a national agriculture mitigation potential assessment, and opportunities to support emerging climate smart and sustainable agriculture programs. C-AGG will also convene the new class of USDA GHG Conservation Innovation Grants (CIG) awardees and continue dialogue with the ecosystem services and innovative conservation finance CIG projects and conveners.

Debbie concluded her opening remarks by highlighting the objectives for the Washington meeting:

- Showcase C-AGG's collaborative engagement with our federal partners, including highlights of USDA collaboration: lessons learned from 2011 GHG CIGS, and kick off 2015 CIGS;
- Provide timely updates on public and private activities to enable agriculture sector GHG mitigation and ecosystem service participation, including development of tools and programs;
- Provide timely updates on US and international climate change activities and negotiations under the UNFCCC, including updates to US inventories of GHG emissions and sinks; and
- Continue the dialogue on how to scale sustainable agriculture activities.

Enhancing COMET-Farm for User Utility, Effectiveness, and Market Purposes

Mark Easter, from Colorado State University (CSU), and Adam Chambers, with USDA's NRCS teamed up to discuss the improvements underway for the COMET-Farm and COMET-Planner tools. Dr. Chambers provided some background on the emissions profile of the US agriculture sector, which while only 8% of the national US footprint is still very large (~528 MMT CO_{2e} per year). Given the size of the footprint, it is important to ensure that farm level quantification of GHG emissions is consistent with the national inventory so farm level improvements are captured at the national scale. The 600 page GHG quantification methodology document released by USDA last year will serve as the harmonizing methodology that forms the basis for the COMET-Farm tool and the national inventory. Both the methods document and the COMET-Farm tool are dynamic and will be continually updated as the state of the science improves.

At C-AGG's 2013 meeting in Detroit, NRCS presented multiple greenhouse gas (GHG) quantification tools (e.g. Q tool, COMET) that were under development. At the time

participants expressed concern around the development of multiple tools for a similar purpose, so based on this feedback and additional discussions in the years following the meeting, USDA decided to develop one tool that will become the standard moving forward. NRCS decided that COMET-Farm can be that tool and hopefully become the industry standard. Adam hopes the COMET-Farm tool will be useful in the development of voluntary incentives to mitigate GHG emissions as the sector capitalizes on existing market opportunities and incentives that can be enabled with this tool.

NRCS has been the primary funder of the suite of COMET tools since their inception, but this year NRCS received \$100,000 in funding from Dean of CSU's Agricultural Sciences School to support some improvements to the COMET-Farm tool. The funds will be used to improve the utility of the tool with supply chain initiatives and carbon markets. In the past, CSU and NRCS focused solely on developing a rigorous tool for the national inventory, but have come to realize the tool can serve other purposes such as metrics quantification for supply chain initiatives and accounting for carbon markets. NRCS is committed to further developing the COMET-Farm tool for use in voluntary and compliance carbon markets.

Additionally, NRCS participation in the healthy soils initiative has shown there is a need to develop quantification tools to capture GHG emissions from specialty crop production. As a result, CSU will add a CA-specific specialty crop module to COMET-Farm, which will help CA more accurately quantify emissions and changes in emissions for this sector. Proposed updates to the tool will kick-off in March at a joint workshop with C-AGG, which will be designed to gather additional input from stakeholders on what improvements COMET-Farm needs in order to meet the needs of these additional initiatives (i.e. sustainable supply chains and voluntary carbon markets).

Dr. Easter followed with a deeper dive into COMET tool updates completed in 2015 and an overview of the changes planned for 2016. There has been more than a decade of collaboration between NRCS and CSU on the two COMET tools: COMET-Farm and COMET-Planner, which are tools designed around conservation practice scenarios. COMET-Farm allows land owners to understand the GHG balance on a specific piece of land based on current practices and the change in that balance if other management practices are employed. The tool is entity level, user specific, uses dynamic and empirical models, addresses synergisms of multiple practices, and has reduced uncertainty compared to COMET-Planner. COMET-Planner takes a 30,000 foot view of landscape planning making it a quicker "3-click" tool that landowners can use to understand changes in practices, but has greater uncertainty given its basis in empirical models that use more generic emission factors.

In 2015, CSU fully aligned the COMET-Farm tool with the USDA GHG quantification methods document, socialized the tool through numerous trainings, and expanded the tool to include modules for processing tomatoes, cover crops, and bioenergy crops. Additionally, CSU developed sample demonstration projects with all modules, uploaded YouTube webinars on how to use the tool, streamlined the data entry process for rice production, updated the agroforestry models to extend projections out to 50 years, and added graphical report output

options. COMET-Planner has also been updated to include nitrogen management. All updates to the tools have been driven by user feedback, so CSU encourages C-AGG participants to continue submitting update requests.

Updates to COMET-Farm in 2016 will include the addition of CA specialty crops; inclusion of a rapid data entry feature; addition of an API service that will allow users to access the USDA GHG quantification methods through a side door; integration of livestock grazing models; inclusion of more ag-forestry links to the US GHG inventory; expansion of current outreach efforts; and a release of both tools to the open source environment.

COMET-Planner will be updated with a link to COMET-Farm via meta-analysis, an expanded spatial resolution to the state level or possibly more granular, and additional updates based on lessons learned through the specialty crop trial. CSU is trying to improve tool functionality for CA by adding crop methodologies for agriculture production in the state. CSU has been working closely with the CA Department of Food and Agriculture (CDFA), the Climate Hubs, USDA Climate Change Program Office, and UC Davis to fill in as many gaps as possible for the state, which has one of the most diverse agriculture sectors.

For the 2016 updates, CSU will focus on the following major points:

- **CA specialty crop updates** - fill in practice gaps for strawberries, lettuce, broccoli, cauliflower, tree nuts, grapes, citrus, and stone fruit. Assess the gap between management practices included in the tool and those used for each crop and import the missing management options into the tool;
- **Rapid-data entry** - add drop-down list for common cropping practices and allow users to create their own crop rotations through a drag-and-drop menu. Users will then be allowed to fine tune certain default aspects, such as nutrient management regimes;
- **API addition** – the update will allow outside users to send a message to the CSU system and will have quantification methods returned to them so the data does not have to go directly through the tool;
- **Agroforestry addition** – working to understand how changes in woody systems impact carbon stocks and the models used in the US GHG inventory. Testing a potential national inventory method in Iowa that could be extended to other regions. Agroforestry is an important carbon sink not currently represented in the national inventory, so CSU would like to better understand the potential for these sinks;
- **Integrate livestock grazing** - users will be able to identify cash crops, cover crops or pasture/rangeland systems, and grazing offtake will be added to the crop and planting date panel in current and future management sections to capture resulting changes in emissions;
- **Expand outreach** – in 2015 CSU focused on outreach in CA, so 2016 focus will be on the rest of the lower 48;
- **Release COMET tools in open source environment** - to allow for maximum transparency and to improve collaboration opportunities.

During the discussion period, participants requested additional information on the audience for the tool, which CSU explained includes agency personnel, producers, NGOs, carbon registries, scientific community, and sustainable supply chain participants. Participants recommend cutting the historical data requirements necessary for COMET-Farm from 14 to 4 years. The group cautioned also that the data needs for different end users and initiatives can be quite different, so it will be important to have all of necessary stakeholders in the room as changes to the tool are contemplated.

Agriculture, Land Use, and Land Use Change: Tying GHG Metrics on the Ground to the US National Inventory

Every year the US Environmental Protection Agency (EPA) produces a national level inventory quantifying US net GHG emissions for submission to the United Nations Framework Convention on Climate Change (UNFCCC). Tom Wirth from the EPA presented the methods behind the national inventory followed by a presentation from Marci Baranski of the USDA Climate Change Program Office who provided an update on improvements USDA is making to their inventory, which feeds into the national inventory. Adam Chambers discussed how NRCS is trying to capture farm level reductions for inclusion in both the USDA and the US inventories. Tom coordinates the annual quantification efforts of the agriculture, land use and land use change (AFOLU) portion of the national inventory. The inventory accounts for all anthropogenic GHG emissions and removals from 1990 until present. It is a national level estimate that captures the 7 primary GHGs (CO₂, CH₄, N₂O, HFCs, PFCs, SF₆, NF₃) with some specificity within the 5 sector (each broken out by chapter). Updates to the inventory begin every June with a final submission due to UNFCCC by April 15th the following year.

Each of the 5 sectoral chapters is led by a different individual and group of agencies with access to the necessary data. Tom oversees the AFOLU which is broken into two chapters: agriculture and land use, land use change and forestry (LULUCF). The LULUCF chapter captures carbon stock changes between land types whereas the agriculture chapter quantifies the emissions resulting from production. The inventory captures 36 different land use categories and the conversions between these. While the data behind the conversions is pretty accurate, the carbon stock changes resulting from these conversions is open for debate and the team is actively working on developing better methods to quantify the changes in emissions. The US will be using the 2006 guidelines developed by the Intergovernmental Panel on Climate Change (IPCC) to create the 2015 inventory and following the good practice guidance provided, which requires that the inventory include all major emission components, be transparent, consistent, complete, comparable (US with other countries) and accurate (low uncertainty). Additionally, the IPCC requires any methodology changes to be applied to all previous years so the time series is consistent, and requires countries to work on continuous improvements to the quality of their inventory methodology year over year.

For all emissions sources and sinks, each country must provide a brief description of the source, what the main drivers are and the trend in the emissions category. This qualitative

description is accompanied by a table from 1990-present of the emissions for the gas, a detailed explanation of the estimation methodology and activity data required for the emissions calculation, uncertainty estimates for each source, time series consistency to bring all years together, the QA/QC measures undertaken, the verification performed, and a recalculation discussion for the current year if applicable.

Once the inventory is complete, it undergoes an annual domestic review (includes an expert and public review period) and an annual UNFCCC review. The UNFCCC review can take two forms: an annual centralized desk review completed in Bonn by an expert committee that provides a statement back to the country on how well the good practice guidelines were followed; or an in-country review where reviewers come to the US and sit down with those who led the inventory to walk through every detail. The more detailed review typically occurs every 4 years.

The foundation for the AFOLU is a managed land inventory of the US land base according to 6 IPCC land use categories. The managed land inventory is based on three reports: the National Resources Inventory (NRI), the Forest Inventory and Analysis (FIA), and the National Land Cover Database (NLCD). The land categories are then broken down into managed versus unmanaged land where managed land is a proxy for anthropogenic emissions. The managed lands are grouped by land use conversion type and remain in this category for 20 years. For all 36 land use/land use changes categories, carbon-stocks are estimated for each over the time series. This will be the first year that the inventory includes land conversion for all 50 states, but only the coastal forest stocks for Alaska.

The 2013 AFOLU emissions totaled 566.2 MMT CO₂e, which were dominated by soil nitrous oxide (N₂O) emissions (47%), enteric emissions (29%), and manure (14%). The 2013 AFOLU removals totaled 910.2 MMT CO₂e with 77% of this sink attributed to forest land remaining forest land. EPA and partner agencies working on the AFOLU will update the inventory in 2016 with a new forest carbon accounting framework, the inclusion of federal grasslands, DayCent model estimates of rice methane emissions based on 2010 NRI data, and the inclusion of preliminary estimates for coastal wetlands. Beyond 2016, EPA will work to reconcile the FIA, NFI, and NLCD land representation analyses; utilize the Conservation Effects Assessment Project (CEAP) data for cropland/grassland updates; add NFI updates to the inventory on a biannual basis; account for fires on all grasslands; integrate emissions from residue burning in DayCent; include carbon stock changes from interior Alaska forest lands and grasslands; incorporate additional guidance from the IPCC wetlands supplement; and improve integration of enteric and manure management emissions by combining models.

Marci Baranski, from USDA's Climate Change Program Office (CCPO) provided an overview of the USDA inventory and how it relates to the national inventory. The USDA GHG inventory is published every 4-5 years using the same data set that goes into the national inventory, but at a further disaggregated level into emissions by state and practice. The inventory also includes on-farm energy use, which is captured in a different chapter at the national inventory level. The next USDA inventory will be released at the beginning of 2016. USDA is currently working on

updating activity data for cropland using the CEAP data, which will also feed into the national inventory. CEAP data will also be incorporated into the DayCent model to estimate GHG fluxes for soil C and N₂O from fertilizer.

USDA released 10 Building Blocks for Climate Smart Agriculture in April 2015 with the goal to remove 120 MMT CO₂e per year from the agriculture sector¹. Marci and her team are currently working on a means to assess progress against these building blocks moving forward. The CCPO is in the process of reviewing all agency data sources that could be combined and utilized to track progress against each building block. Ultimately, progress will need to be tracked using the annual national inventory, so activity data for the national inventory will need to be improved in a way that can capture the building block activity in order to show progress to the UNFCCC and to the Secretary of Agriculture.

Adam agreed that trying to get all of the agencies to walk forward together on the inventory has been a big challenge and reinforced the need for these efforts to be successful given the magnitude of the agriculture sector and the potential for the sector to increase from its current position status of 7% of the total US emissions as other sectors work on improving their efficiencies. While the agriculture sector is only 7% of national emissions that still equates to 528.7 MMT CO₂e which puts US agriculture on par with the 13-20th largest country emissions. If the agriculture sector does not begin to invest in mitigation opportunities now the investment will be much larger in the future as the problem becomes more difficult to address. Unfortunately, the sector faces many challenges including access to financing and user friendly quantification tools to monitor success. The key to overcoming these barriers will be continued public/private partnerships and leveraging markets. Agriculture has as significant role to play in improving data collection, reducing emissions and increasing carbon sequestration, but decision support systems and additional voluntary incentives such as payment for ecosystem services are needed to scale the opportunities.

C-AGG participants voiced concerns that programs or policies based on the national or USDA inventories are using data that is so outdated it is not actionable. While this is the case for some sources and land use change conditions, data will be significantly improved with the inclusion of the extrapolated CEAP data. Additionally, participants asked how the 120 MMT CO₂e reduction target was established for USDA's building block target. Marlen Eve, former CCPO staff, explained that the building block targets were based on current budgets and reallocation of existing funds to the greatest potential sources of emissions reductions.

Innovative Conservation Finance – A Panel Discussion

Leigh Whelpton, Program Director of the Conservation Finance Network, set the stage for the panel by defining conservation finance and laying out the emerging trends in the space.

¹ Fact sheet on USDA Climate Smart Agriculture Building Blocks
(<http://www.usda.gov/documents/climate-smart-fact-sheet.pdf>)

Conservation finance encompasses four types of financing: (1) payment for success (securities); (2) payment for avoided costs; (3) payment from credits/markets; and (4) layering of different values and income streams on landscapes. Increased scarcity of resources and the anticipated cost of these resources in the future will continue to drive investment in conservation. Also, the next generation of investors are starting to demand more socially and environmentally conscious investment vehicles funds, and shifts in investment strategy from resource intensive investment options to those that encourage conservation and social well-being.

A report² released by Credit Suisse, WWF and McKinsey assessed the global need for conservation financing at \$300-\$400B, which is currently only met by \$52B of available capital annually, with 80% deployed in the US. Unless foundation funding for NGOs grows exponentially in the coming years, the conservation sector needs to develop new financing models for conservation projects to fill this gap. Additional market barriers identified that have historically limited capital deployment include a shortage of investment deals with acceptable risk return profiles, limited expertise in executing and implementing such deals, difficult exit strategies for management funds, a lack of appropriate scale, and a lack of successful case studies in this space. Financing is not the main gap; the ability to understanding whether a project is a good investment is.

The space is changing on a monthly basis and has seen many exciting developments over the past 6 months including clearance by the Department of Labor for retirement plans to invest in social impact funds, large financial institutions participating in conservation investment conversations and even acquiring small conservation asset management firms, and research on environment, social, and governance indicators for the financial sector emerging from firms that have never paid attention to this space in the past.

Tom Melton of Encourage Capital, explained the firm's investment strategy and provided a case study of one of many financing models they are pursuing. Encourage Capital is an impact investing firm that takes into consideration potential return on investment (ROI) and the environmental and social impact return when making investment decisions. The firm will only invest in projects that meet both criteria. When looking across the spectrum of financing models, Encourage Capital sits between the blended returns³ and impact-first⁴ investing strategies. Multiple trends in the industry are beneficial to the future of conservation projects, including the wealth millennials will be inheriting (over \$30T), the desire for foundations to invest in funds that support the program side of their business, and endowments and pensions moving into the impact space.

² <https://www.credit-suisse.com/media/cc/docs/responsibility/conservation-finance-en.pdf>

³ Investments with portfolios that are made up of a mix of value and growth options

⁴ In an investment strategy with emphasis on the optimization of social or environmental needs which may result in financial trade off

To further the understanding of opportunities and financing models in the impact investing space, the Walton Foundation provided Encourage with a grant to develop a 400 page report⁵ on investment strategies to address the imbalance in water in the Colorado River Basin. The report included a hypothetical case study and a financial model with drivers for returns to highlight the potential for the region. Encourage is currently raising money to develop an agriculture water use fund that will be used to encourage sustainable ranching in the west, crop conversion to rangeland, and infrastructure upgrades to improve water use efficiency.

Tom also described a hypothetical case study of how an investment firm would use environmental impact bounds to help reduce the costs of wildfires. Traditionally, the US Forest Service (USFS) pays for the cost to combat wildfires each year from their fire suppression budget, with any overages coming from other programs' budgets or the next year's fire suppression budget. Under a new financing model an investment vehicle such as Encourage Capital would use a secondary payment fund, possibly a utility or other beneficiary in the watershed, to supplement the financing provided by the Principal Payment Provider (USFS). This funding could be used for fire avoidance strategies, e.g., to pay a contractor to thin out the forest in advance of the wildfire season. Upon completion of thinning activities by the contractor and at the end of wildfire season, an evaluator would assess whether these actions improved the system by reducing wildfires. If so, a payment is made back to the investor based on the reduction in funds that would have been required prior to the contractor's actions.

Sheldon Zakreski with The Climate Trust (TCT) presented the perspective of a firm that invests in the carbon market space and is looking to establish its first fund to encourage carbon market growth. The two biggest challenges with the carbon market are execution risk – will projects generate credits – and market risk – what will the credits be worth. This year TCT received a Conservation Innovation Grant (CIG) to help establish a fund to provide upfront financing for carbon credit projects. TCT will guarantee a minimum carbon value to investors to attract additional capital and will assume the risk of credit generation and price point. To minimize internal risks, TCT will work closely with project developers to overcome challenges along the way and to ensure projects produce the intended tons after verification.

The first round of projects will include forestry projects, anaerobic digesters at dairies, and avoided grassland conversion, since the first two project types are accepted into the ARB compliance market, which guarantees a floor price, and the ACoGS projects have had traction in the voluntary space. As projects deliver tons and money, the principle invested will be returned to TCT to reinvest, and any remaining profit will be split 50/50 between TCT and the project developer and producers. TCT is guaranteeing project developers a minimum carbon price to mitigate some of their risk, which TCT can achieve through the sale of credits to buyers in TCT's network or through purchase themselves to fulfill compliance obligations of buyers

⁵ <http://encouragecapital.com/wp-content/uploads/2015/09/Liquid-Assets-Full-Report-Web1.pdf>

within their network. TCT hopes to close the financing for the fund at the end of 2015 and will begin deploying capital in 2016 or 2017.

Shahira Esmail with TerraGlobal Capital presented TerraGlobal's strategy for building multi-benefit value chains on range and pasture lands. TerraGlobal received a USDA CIG to address constraints in environmental markets including market fragmentation, which makes projects economically unattractive to investors; a gap in available GHG market methodologies that quantify the full suite of NRCS conservation practices; few marketable GHG credits produced; limited consumer branding of conservation and environmental benefits; and a lack of metrics to make investors feel comfortable. The goal of the CIG will be to build an integrated climate smart value chain.

The CIG is designed to allow Terra Global to intervene at various parts of the project development value chain to ensure the production of a "sustainably" branded product that can receive a price premium in the market. The intervention will include trainings for producers and land owners, an assessment of the possible improvements and credits possible, a demonstration of credit staking using existing protocols and submission of a combined modular methodology that includes all conservation practices to a carbon registry. Terra Global will develop an online system to streamline data collection and verification in hopes of decreasing project execution and verification costs.

During the discussion, participants were very interested in better understanding the metrics used and revenue sources relied upon for specific types of conservation investment. Encourage typically accepts a high single digit to low-teen return on investment, which for ranching projects can be achieved through increased yields, premium prices on the product produced, and appreciation of real asset value of the improved land. Investors need to be able to underwrite their investment with a market floor price or some other established value in the market, so if an ancillary benefit of a project does not fit into an existing market an investor will not include this "value" in their projections. Until policies or other mechanisms establish floor prices for all ancillary benefits of conservation practices in the agriculture sector, ancillary benefits will remain ancillary benefits and not actual financial benefits of a project. One of the 2015 Conservation Finance CIGs will be addressing this exact issue within the market by attempting to combine a number of databases that quantify the market value of these benefits to produce a final investment profile for agriculture projects.

Delivering and Scaling Sustainable Agriculture and Climate Change Commitments from the Agriculture and Food Sectors

Chief Weller with USDA-NRCS introduced and moderated the panel. NRCS is very interested in leveraging public/private partnerships to increase conservation. Secretary Vilsack has challenged NRCS to find new and innovative ways to finance their efforts that contribute to national GHG emissions reductions in the face of declining or static budgets. Sean Babington provided Congress's perspective on scaling conservation in the agriculture sector through the programs included in the farm bill (e.g., Environmental Quality Incentives Program

(EQIP⁶)/Conservation Reserve Program (CRP⁷)/Regional Conservation Partnership Program (RCPP⁸)).

Allison Thomson with Field to Market (FTM) introduced their efforts to focus on continuous improvement in the agriculture sector through use of the FieldPrint Calculator™ (FPC). FTM has currently enrolled 2M acres in FPC with a goal of 50M by 2020. To reach this scale, FTM is developing an API system to align FTM data collection and input with systems farmers are already using, to hopefully simplify project development for FTM members and allow more acres to be enrolled.

Mike Lohuis with Monsanto discussed Monsanto's work with the World Business Council on Sustainable Development (WBCSD) to set GHG reduction targets for the US agriculture sector. Monsanto has been working to adapt crops to withstand the pressures of a changing climate, but realized that adaptation was not enough and that mitigation would also need to be part of their strategy if they wanted to sustain their business. To develop a mitigation strategy, Monsanto engaged in the WBCSD process to discuss the program and goals they already had in place for GHG emission reductions from the agriculture sector. WBCSD had set a 30% reduction by 2030 based on the IPCC's goals. Monsanto sought to adopt a similar goal, but needed to better understand emissions reduction potential in the US. They enlisted ICF International to quantify the emission reduction potential for 6 technologies (tillage, precision agriculture, cover crops, stover biochar, hybrid ethanol, and nitrogen inhibitors) based on current uptake and an assumption that 50% of those currently not using the technology will adopt it. With this adoption rate, a 30% reduction (120 MMT CO₂e) could be achieved by 2030.

Tris West with the White House Council on Environmental Quality (CEQ) provided the White House's perspective on scaling emission reductions from agriculture to reach the national goal of a 26-28% reduction by 2025. The building blocks put forth by the USDA will be the primary strategy the administration uses to scale up reductions in the agriculture sector.

Roger Johnson from National Farmers Union (NFU) provided the producer's perspective on emission reduction potential, stating that NFU has been in this position before, when the cap-and-trade legislation was being debated on Capitol Hill. Farmers were excited about the potential to be compensated for conservation through the generation of carbon credits and were actively participating in the Chicago Climate Exchange (CCX) before its collapse. NFU acted as an aggregator for CCX and wrote over \$5.8 M in checks to producers. Farmers continue to express interest in participating in market-based approaches and NFU is eager to get back into the space to bring reductions to a scale that matters in a timeframe that matters.

⁶ <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/eqip/>

⁷ <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/?cid=stelprdb1041269>

⁸ <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/farmbill/rcpp/>

While there is certainly new energy emerging around the topic of sustainable agriculture, Roger admonished the group to take the lessons learned from the past to ensure a more successful future trajectory. For a new system to be successful it must be simple, involve minimal regulation, be incentive based, scientifically defensible, and provide value to farmers. FTM has found that turning big data into actionable results has been the biggest value add for farmers using the FPC. Giving farmers relevant and meaningful feedback including comparisons to their county averages has been the most successful use of their tool so far.

To scale sustainable agriculture, farmers must be compensated, which could be through participation in ecosystem service markets, provision of NRCS conservation program dollars, or price premiums for more environmentally friendly production practices. All of these strategies require scientifically defensible metrics that quantify the changes in environmental performance. Thus, to effectively scale, the industry needs to invest in robust and consistent metrics that can be used by multiple stakeholders to establish a value for the environmental benefits achieved by the farmers. The establishment of these incentive programs is something Congress should consider going into the negotiations for the 2018 Farm Bill. All panelists agreed that a policy signal would significantly improve the state of markets and the ability to reach a scale that matters in a timeframe that matters. Companies are doing what they can and what the administration is expecting from them, so it is time for the regulators to set the rules that everyone must adhere to.

Tuesday, November 10, 2015

USDA 2011 GHG Conservation Innovation Grants: A High Level Overview of Successes and Challenges

In 2011, USDA-NRCS awarded 9 Conservation Innovation Grants to projects focused on GHG market development. Originally, NRCS expected all projects to work independently to achieve their project goals. However, when C-AGG approached NRCS to act as a convener for the projects, NRCS realized that bringing the projects together to share challenges and learnings would significantly improve the projects' success rate. The success of the 2011 projects and the community building is one of the primary reasons NRCS funded a new round of GHG market CIGs this year. In preparation for the 2015 class of CIGs, the 2011 project developers highlighted the major successes and challenges each project experienced over the lifetime of their projects.

The Climate Trust (TCT) worked with The Fertilizer Institute to promote increased nutrient use efficiency through carbon markets. TCT learned that landowner enrollment is key to achieve the economies of scale necessary for nutrient management carbon credit projects. The biggest challenges to landowner enrollment are uncertainty in the credits that a farm can expect to generate, the inability to give a farmer a set carbon price to inform a business decision, the high costs associated with data collection in the format required by the protocols, and the limited market for offsets. Though the challenges were many, TCT was able to understand the barriers

at every stage in credit generation and identify possible solutions. Next steps for TCT include pressing for a compliance market protocol for N₂O reductions to provide a steady market signal, enhancing connections between protocol writers, USDA data platforms and precision agriculture software companies to develop regional emission education default value tables, and refining long term data needs.

Ryan Anderson with the Delta Institute also undertook a nutrient management CIG focused on developing credits for the voluntary market. Delta developed and sold 2 tons, which was a major success for the project, but faced numerous challenges along the way. The biggest challenges to implementation were the state of the science and farmer receptiveness. Neither were quite ready to implement this type of project. Delta learned it was important to discuss the benefits of the projects in terms of the framework the farmers are using. For example, they were more successful engaging producers when they discussed the benefits to soil health, nutrient leaching, and water quality then discussing the potential revenue from the sale of a carbon credit. Keeping it simple was also key. Delta distilled the MSU-EPRI methodology into a one-page questionnaire that farmers could fill out on Delta's website if they were interested in participating in the project. This proved to be a successful outreach strategy and one they will continue to use going forward.

Beth McGee with the Chesapeake Bay Foundation (CBF) added a few additional challenges and successes CBF encountered when trying to implement their nutrient management project. Historical data access to calibrate the biogeochemical process model CBF used to quantify reductions was one of the biggest challenges they faced. While CBF was able to calibrate the model with the limited data available, the modelers were forced to make assumptions to fill the gaps, resulting in larger uncertainty values for changes in emissions. While CBF was able to quantify positive emission reductions for farms using the GreenSeeker technology, it was unclear if these reductions fit the additionality criteria required in the carbon offset methodologies. CBF will work with ACR to improve the clarity around additionality for future project implementation. Another major lesson learned was the importance of soil type on the potential for N₂O reductions. Soil type has a big impact on the total reductions that can be achieved from improved nutrient management, so it is important to pursue projects on soil types that can produce the largest delta to make credit generation more economical. While the GreenSeeker technology did produce reductions, it requires large upfront investment and increases the amount of time required to apply fertilizer, so without the added carbon credit value farmers are unlikely to implement the technology.

Robert Parkhurst with the Environmental Defense Fund (EDF) worked to develop a rice protocol that could be used under the California compliance market. The project successfully supported the CA Air Resources Board's (ARB) development of a rice protocol that could be implemented economically. They have currently engaged 22,000 acres (0.8% of US rice produced) in an aggregated methane reduction project for generation and sale of carbon credits to the compliance market. Staff turnover, project complexity, and balancing conservation trade-offs were the biggest challenges faced by the project. Going forward, EDF hopes to improve

upon the verification and aggregation pieces of the protocol to make them more cost-effective for implementation.

Dennis Carman flagged some challenges and successes he faced trying to implement the rice projects on the ground. To date, no carbon credits have been generated, but throughout project implementation the team has learned how to collect the appropriate data under the protocol, how to monitor the impacts, and the value of remote sensing data for verification purposes (once they were allowed under the protocol). Dennis stressed that the economics must work and right now they do not, so that is one of the remaining challenges project developers will face when trying to implement these projects.

Billy Gascoigne with Ducks Unlimited (DU) presented the successes and challenges DU faced during development of an avoided grassland conversion protocol. Protocol development was a huge success and DU successfully enrolled 26,000 grassland acres resulting in 40,000 tons of credits that were purchased by Chevy. Project economics were not great, however, and the due diligence required upfront to determine the total quantity of credits possible was lacking, and the diversity of expertise required to make a project successful was daunting. Moving forward, DU will apply these lessons learned to the implementation of their 2015 CIG projects.

The group acknowledged that implementing these projects required years of learning and trial and error. The reason the rice and avoided conversion projects were more successful than the nutrient management projects is a result of the potential per acre of the different project types and the longer history both organizations -- EDF and DU -- had trying to implement them. The 2015 CIGs focused on nutrient management should start to see some of the successes the rice and avoided conversion projects saw since those methodologies and institutional knowledge have matured through implementation of the 2011 CIGs.

USDA 2015 GHG Conservation Innovation Grants: Building on Success: A Roundtable Discussion

NRCS and the 2011 Conservation Innovation Grant (CIGs) awardees hoped to build on the success of the 2011 projects, especially with the current policy environment. With the 2015 projects, NRCS is seeking to provide a more coordinated effort on markets and a more strategic approach to building networks around project cohorts. They are trying to replicate the C-AGG convening model for all CIG projects moving forward. NRCS awarded \$11M for CIG projects focused on GHG market development, water quality market development, and innovative conservation finance. Ninety proposals were received for GHG market projects, making this the most competitive of the three areas.

The 2015 USDA GHG CIG class includes 9 projects focused on nutrient management, avoided conversion of grasslands, and the potential for avoided drainage of wetlands. The following are high level project summaries for each project as described by project leads.

Dennis Carman – White River Irrigation District Project

Establishment of a Mid-South Environmental Stewardship Marketing Cooperative

The goal of the project is to form a Farmer-Driven, Market-Based Sustainable Agriculture Cooperative to Market Agricultural-Based GHG Offsets and develop an Environmental Stewardship Branding Program. Winrock International will assist with the initial formation of the CO-OP. Carbon Credit Solutions Inc. will transfer their extensive experience and expertise as a project developer to the CO-OP to perform program development and aggregation tasks. The American Carbon Registry (ACR) will develop methodologies and protocols that lead to the issuance of a “recognized seal of authenticity” for environmental branding. The Environmental Defense Fund will provide training and the promotion of environmental stewardship practices for environmental trading opportunities. Cooperation with businesses such as RiceTec, Entergy Corporation, and MARS foods is based on common environmental interests and compatible programs such as RiceTec’s SmartRice program and Entergy Corporation’s programs to reduce fossil fuel use in agriculture. The White River Irrigation District will facilitate the initial formation of the CO-OP with administrative, technical assistance, measurement tools, and monitoring technology.

Beth McGee – Chesapeake Bay Foundation

Promoting Rotational Grazing in the Chesapeake Bay Watershed

CBF will build on ongoing efforts to promote rotational grazing in the Chesapeake Bay watershed by developing a robust regional network of grazers in PA, VA and MD, quantifying the environmental and economic benefits of converting to a rotational grazing system, exploring related market-based opportunities for grazers (i.e., carbon and nutrient trading programs) and sharing this information via the network.

Sara Kroopf – Environmental Defense Fund

Demonstration of a Scalable Nutrient Management Project

EDF’s project will focus on reducing nitrous oxide emissions and nitrate leaching from agriculture by incentivizing optimized nitrogen fertilizer applications, and will help farmers participate in environmental markets and earn revenue for the environmental benefits created. The primary objectives of the project are to reduce barriers for growers to participate in environmental markets (voluntary and CA compliance carbon markets) by refining and improving existing nitrogen fertilizer management protocols and quantification tools, to create a large-scale nitrogen fertilizer management project, to increase access to environmental market incentives for U.S. corn farmers and almond growers, and to quantify co-benefits from optimized nitrogen application that reduce N losses to air and water.

Erick Giles – Indian Land Tenure Foundation

Using Carbon Markets to Finance Grassland Conservation and Rangeland Restoration on Tribal Lands

By the end of the three-year project, ILTF seeks to work with ACR to draft and adopt the first GHG offset market guidance specific to the land tenure status of tribal trust lands and individual Indian allotments, to develop offset projects in pilot areas on Indian Lands, and to expand its outreach and education network.

ILTF will engage private investment in projects that meet investors and credit buyers' interest in high-quality carbon offsets, and Tribes' interest in promoting appropriate conservation practices and economic development. Engagement in the marketplace will allow Native American communities to improve management of agricultural lands by reducing soil erosion, surface compaction, and maintaining the content of organic matter in the soils. Important components of this work include outreach to Indian producers and the establishment of a pilot carbon offset aggregation program.

John Nickerson – Climate Action Reserve

Standardized Inventory Methodology, Analytical and Reporting Tools for Forest Carbon Projects

The goal of this project is to increase participation in California's cap and trade market among small and medium-size forest landowners. The Climate Action Reserve will develop a highly standardized inventory methodology and provide data management and reporting tools, which are anticipated to reduce implementation barriers for forest carbon projects. Success for this CIG is defined as the submission of new small to mid-sized forest projects to the California cap-and-trade program.

Neal Feeken – The Nature Conservancy

Avoided Rangeland Conversion: A carbon offset program in South Dakota and North Dakota

TNC will be engaging in an effort to establish a carbon offset program focused on avoided conversion of rangeland in South Dakota and North Dakota. TNC's goals include the enrollment of 50,000 acres of rangeland, encompassing approximately 100 ranches, into a carbon offset program by layering perpetual conservation easements and direct carbon payments; generation of new revenue for additional rangeland conservation – up to \$7 million over 20 years; certification of a first round of carbon offsets for sale on the voluntary market; and the avoidance of approximately 750,000 t CO₂e emissions over 20 years.

Billy Gascoigne – Ducks Unlimited

Expanding the Carbon Offset Market for Working Rangelands in the Northern Great Plains

Led by Ducks Unlimited, Inc. (DU), this project looks to leverage experience from a 2011 CIG in which the Avoided Conversion of Grasslands and Shrublands (ACoGS) methodology was developed and certified offsets were generated. The overarching objective of this new CIG-funded project is to continue to improve carbon offset opportunities for grassland-based producers and, through innovation, ensure the provision of important ecosystem services. Specifically, the project team—Ducks Unlimited, American Carbon Registry (ACR), and The

Nature Conservancy – will reevaluate and refine the current ACoGS methodology, strategically identifying ways in which transaction costs and project development burdens can be reduced while maintaining scientific rigor. The next phase of the project will utilize the methodology revisions and bring additional grassland-based carbon credits to market. DU will look to model multiple vintages worth of carbon offsets on 26,000 grassland acres in its portfolio.

Furthermore, DU will invest in acquiring new contracts on upwards of 10,000 working grassland acres from EQIP-eligible producers in waterfowl sensitive areas in North Dakota. DU will lead all landowner engagement, modeling, report writing, and certification efforts. Market expansion efforts will be limited to the Northern Great Plains region given the amount of conversion taking place, the carbon emission implications, and overall habitat values to migratory waterfowl.

Billy Gascoigne – Ducks Unlimited

Developing a Greenhouse Gas Protocol for Restored and/or Avoided Drainage of Wetlands in Agricultural Landscapes: Phase 1

Led by DU, the objective of this project is to investigate the feasibility and potential application of a new GHG protocol based on the restoration of wetlands and/or avoided drainage of wetlands, with a concentration on the Northern Great Plains. To date, no wetland-based carbon offsets have ever been registered, yet wetland drainage in agricultural systems continues to be a significant contributor to GHG emissions in the U.S. This project will develop an expert working group that will help identify the science gaps or other potential hindrances to market development for such a protocol. A formal summary report of the working group efforts will be developed and submitted to USDA. In doing so, it is the aim of this effort to provide assurance to USDA (and any others financially supporting emerging market opportunities) on whether or not a sustainable GHG wetland-based market can take effect in the NGP and provide financial compensation for producers facing economic decisions associated with wetlands.

Max DuBuisson – Climate Action Reserve

Stimulating Grassland Conservation through GHG Markets

This CIG builds on the work recently completed by the Climate Action Reserve to develop a standardized offset project protocol for the avoided conversion of grassland to cropland. CAR will expand adoption of the protocol and greatly reduce barriers to implementation of the project activity by: (1) developing tools and procedures to assist landowners and project developers; (2) conducting outreach and education; (3) identifying and implementing a pilot project; and (4) translating any lessons learned into updates and improvements to the protocol. This will result in GHG emissions reductions on agricultural lands in the United States, immediately and for decades into the future. In addition to the reduction of carbon emissions, the project has potential to provide additional environmental benefits such as enhanced wildlife habitat and improved watershed health.

US Priorities for Agriculture and Land Use, Land Use Change at the UNFCCC COP21 in Paris

Bill Hohenstein, the Director of USDA's Climate Change Program Office, provided an update on the current status of negotiations leading up to the UNFCCC 21st Conference of the Parties (COP 21) in Paris. Bill has been participating in these negotiations since COP2 and as a result has witnessed the good and the bad of the negotiations including the failure of the 2009 negotiations in Copenhagen. Based on his experiences with past negotiations, he feels the current negotiations are on track to produce an agreement that will be acceptable to all parties and actually achieve global emissions reductions. Going into this COP, all countries were required to submit their Intended Nationally Determined Contributions (INDCs) to create a bottom-up approach to a final agreement rather than a top-down approach used in the past. The US committed to a 26-28% reduction by 2030, which includes all sectors' sources and sinks. The US has already started laying the groundwork to achieve these reductions through establishment of the Climate Smart Agriculture (CSA) Building Blocks, the Renewable Fuels Standard, and the Clean Power Plan.

Based on a review of the major players' INDCs, the US feels there is alignment amongst major countries and a clear path forward for bringing all the commitments together. Over the past few months, the US has been coordinating with other countries, such as Brazil and China, to discuss collaboration and create bi-lateral agreements to provide technical support for implementation post-Paris. Brazil has a great story to tell about combatting deforestation with the help of the agriculture sector that will be of interest to other countries facing similar challenges. Sharing this story will be important during and after the meetings.

After the INDCs were released, the chairs of the UNFCCC process published a 100-page negotiating document with several potential paths forward. After an additional round of talks with the parties in early fall, the chairs released an updated shorter (20 page) version of the document that maintained the sentiment, but was more digestible and easier to agree upon by participating countries. The parties have since met again and the text has crept back up to 55 pages. When the parties meet to discuss this version of the document in Paris, the first week of talks will be focused on the technical details while the second week will be negotiating the final financing and obligations and reduction pieces of the agreement. USDA is not worried about the specifics included in the text, so if consensus is not reached amongst the agriculture sector in week one USDA will go forward with whatever the output is. The CSA Building Blocks will inform the agriculture sectors commitments, so USDA's focus will be on how to quantify and implement these rather than concern over a specific mention of the land sector in the final agreement. What is most important to USDA and the US is the inclusion of a rigorous and transparent reporting and review process for all national inventories to ensure reported reductions are real.

The COP will have 3 arenas: (1) the actual negotiations which will involve a small group of people from the State Department; (2) pavilions for the countries to further explain their

positions; and (3) civic and NGO engagement. USDA will participate in the pavilion presentations to discuss how the US agriculture sector is addressing climate change including a brief on the Global Climate Alliance for Sustainable Agriculture in collaboration with Costa Rica and Vietnam and the release of a report highlighting the impacts the world faces in terms of food security in the face of a changing climate.

Pipa Elias provided TNC's thoughts on the status of the negotiations, generally agreeing with Bill's summary. She pointed out that agriculture is responsible for 50% of emissions in 42 countries, which are mostly small countries that must balance their agriculture emissions with their development goals. TNC's view of a successful meeting will be the acceptance of an agreement developed with full participation, a commitment by all countries to increase their reduction goals over time, a provision of incentives for the agricultural sector to take action, and a goal of increasing transparency to monitor countries' actions.

TNC hopes the private sector comes to the table to pressure countries to put in place an agreement that provides certainty for their businesses. TNC agrees that transparency in the inventory is huge and a lot of countries are not following this especially with regards to the land sector. It will be important to think through how the US can share lessons learned to allow all countries to be part of the solution.

During discussion, Bill was asked how methane's increased global warming potential (GWP) metric, as established by the IPCC, would be handled moving forward. He indicated the US would follow the IPCC's guidance which does not yet include an update for the new metric to be included in national inventories. On the topic of markets, there will likely be no detail included in the text on the establishment of markets, but TNC would like to see a sentence that references the potential for markets in the future and commits to reducing double counting.

Participants made the point that as the US scientific community improves the tools and quantification methods to capture agriculture emissions, our emissions could be higher now than we think. Bill noted that a big concern for the State Department and CEQ is any methodology or emission factor updates that will be applied to the inventory time series. To mitigate any potential problems with updates that could increase emissions, the US has provided caveats in its targets that allows for improvements in data collection and quantification to change the numbers without any repercussions. The key to making the international community comfortable with any changes that may occur to the inventory is to maintain transparency so the international community can understand why the numbers have changed.

The US will likely have to concede to providing financing for programs and loss of damage, compensation to developing countries for losses incurred as a result of a changing climate.

The French government has been pursuing a Lima to Paris Action Agenda⁹ which has involved scheduling sector meetings to get deeper commitments from the sectors. The government will have sessions with the agriculture and forestry sectors on December 1 during the first week of the COP to discuss potential options at a very high level. To frame these discussions, the Paris government put forth a 4/1000 annual growth rate goal for soil carbon stocks around the world, which would offset the current trajectory of emissions growth. While the French are putting forward a declaration to date the US has not signed off on it. The French have asked USDA to participate in the meeting on December 1st and USDA has agreed to participate, but before signing on to the goal USDA must better understand what the initiative looks like post-conference and whether is possible for the US to meet the goal.

⁹ <http://newsroom.unfccc.int/lpaa/agriculture/join-the-41000-initiative-soils-for-food-security-and-climate/>