ESMC is a non-profit that works to compensate farmers and ranchers who improve the environment through their agricultural practices. Our market program reduces greenhouse gases, improves water quality, and increases other ecosystem services to benefit society.
Letter from ESMC’s Executive Director, Debbie Reed

As we look back on 2021 and into 2022, it is gratifying to see the progress from another year’s innovation, growth, and collaboration. We continued to successfully engage agricultural value chain and supply chain partners in market program innovation, testing, and refinement to further build our program. Refinements to protocols, data collection, project development and partnership engagement models proceeded, as did efforts to test and embed advanced tools and technologies into our platform.

The results include continued programmatic streamlining and achievement of critical cost-efficiencies to enable scaled program operations. With the generous support of a grant from the Foundation for Food and Agriculture (FFAR) and from many additional funders, members, and collaborators, we have achieved critical progress since launching our public private partnership in 2019 and are on target to launch our market program in 2022. The timeline below showcases our ambition, fast pace, and steady growth.

This Annual Report highlights key ESMC/ESMRC milestones in 2021. Our accomplishments include:
- Receipt of IRS approval as a stand-alone 501(c)3 (non-profit) organization.
- Expansion of our program coverage to eight of twelve US regions.
- Completion of version 9.0 of our integrated credit generation protocols.
- Completion of version 2.0 of our advanced technology Monitoring Reporting and Verification (MRV) platform.
- Refinement and streamlining of other programmatic and infrastructure investments, including our API, data collection and quantification tools and technologies, program resources and materials, and continued growth in the infrastructure needed for end-to-end project delivery.

On behalf of ESMC and ESMRC, I wish to thank and congratulate our members, collaborators, stakeholders, funders, advisors, and supporters for their contributions and efforts this last year that supported our growth and that generated so much progress and enthusiasm for our partnership and programming. Our membership grew from 62 to 72 member organizations during 2021 and we were fortunate to not only expand our ESMC/ESMRC staff but also work with incredible contractors and technical support teams. As a result, we accomplished our ambitious agenda to bring us closer to 2022 market program launch.
Key Highlights from the Year

Pilot Demonstration Projects

We launched 16 demonstration projects with partners across 8 ESMC Program Regions covering more than 55,000 acres. Many of these projects have achieved a state of market-readiness, which will enable them to become scaled market projects. We are targeting enrollment of 500,000 acres in 2022 projects. New projects launching in 2022 projects include program expansion into California’s Central Valley and the Chesapeake Bay regions.

We incorporated additional enhancements and innovations in program operations and systems of our national scale, harmonized, standardized ecosystem services market program. The research and development phase of our projects has generated significant improvements in efficiencies and cost reductions for every step of the program which is graphically displayed in the following process diagram.

*Figure 1: ESMC/ESMRC Project Development Process Diagram*

**Pilot Project Outcome Reports:** ESMC provided detailed pilot project reports for producers based on their 2020 project results. These outcome reports detailed Scope 3 greenhouse gas/carbon credits and water quality credits generated along with producers’ anticipated payments. The reports described the quantification approach and gave producers details on the results of their management practices.

**Biodiversity Pilot Launch:** ESMC partnered with the Missouri Soybean Merchandising Council, Missouri Corn Merchandising Council, Missouri Department of Conservation, MFA Incorporated and Quail Forever to enroll projects with enhanced biodiversity buffer strips across the state of Missouri.

**Protocol Development**

ESMC’s V8.3 Protocol was updated, expanded, and implemented for 2020 cropland projects in ESMC’s Midwestern Corn and Soy, Great Lakes, and Southern Great Plains regions. These projects were submitted in 2021 for validation, verification, and VCI certification by Gold Standard, with results and approval expected in Q2 2022. Seven cropland project producers participated in the validation/verification audit process in 2021 including third-party assessment of project design, protocol, and
credits generated. A significant revision of ESMC’s Integrated Protocol (V9.0) was finalized in December 2021 to include standalone modules for each credit type, more clearly defined eligibility criteria, a revision of the field stratification and soil sampling protocol, more rigorous QA/QC processes for data collection and historical data gap-filling, and a shift to using actual practice baselines rather than prevailing practice baselines.

**Monitoring, Reporting and Verification (MRV) Platform**

The ESMC Monitoring, Reporting and Verification (MRV) Platform underwent significant development with the release of V2 of the Producer Portal which was tested and refined for 2021 program enrollment, data collection, and credit generation. Simultaneously, front-end designers and back-end support were added to develop the design and specifications for MRV Platform V3.

Development of ESMC/ESMRC’s field Stratification and Soil Sampling App, which is currently accessible to all Project Partners, has improved in-field functionality, project management capabilities, and MRV integration through automated data transfers and API modules.

**Research Highlights**

The ESMRC team worked to advance and implement numerous member-approved research and development projects focusing on soil organic carbon, GHGs, and water during 2021.

**Soil Organic Carbon and Greenhouse Gases**

- ESMRC made significant progress on the *Advanced Soil Carbon Quantification Technology Assessment Project*, which focuses on the identification, assessment, testing, and development of advanced tools and technologies to more efficiently and cost effectively measure and quantify changes to soil carbon and avoided or reduced GHGs.

- *The N₂O Quantification Project* was launched in July 2021 and involves using measurements at long-term monitoring sites, remote sensing, neural networks, and machine learning to test and improve alternative methodologies for predicting N₂O emissions at a field scale. The results will improve the scope and accuracy of GHG credit quantification and inform water quality modeling approaches. Preliminary results are currently under review for model validation and assessment of improvements to model performance.

- The *Alternative Scope 3 Soil Sampling Protocols Evaluation Project* explored alternative stratification, soil carbon sampling protocols, and measurement results to improve ESMC market program operations. Preliminary results from two separate analyses showed that significantly reducing soil sampling density on a field- or project-level basis has little impact on soil carbon crediting outcomes. Continued evaluations using both 2020 and 2021 pilot data will result in updated recommendations for soil sampling density aimed at generating substantial cost reductions for the market program while ensuring continued scientific rigor.
Water

- The Alternative Scope 3 Water Quality Quantification Tool Evaluation Project completed a technical evaluation of potential water quality quantification models and tools to meet Scope 3 corporate supply chain reporting needs. Based on project results, ESMRC is developing a customized model for simplified Scope 3 water quality credit generation.

- ESMRC is continuing work on the Water Quality Modeling Improvement Project to test and improve APEX model functionality for credit generation. Four new conservation practices – drainage water management, bioreactors, constructed wetlands, and saturated buffers – were added to the APEX model specific to tile drainage management activities.

- The Water Quantity Asset Development Project resulted in the development of a new Scope 3 water quantity credit – the Environmental Flow Credit – using quantification of hydrology changes from agricultural management practices. This credit, measuring both surface water flow reduction and groundwater recharge, was incorporated into Protocol v9.

Communications

ESMC undertook a full communications refresh of all organizational graphics. We developed a new ESMC logo and launched an updated website that allows users to interact with ESMC pilot maps and contains expanded and specific program details for producers, buyers, members, and the public.

Policy

In 2021, ESMC hired a Policy Director to lead policy efforts at the federal and state levels. An early success included formation of the ESMC Policy Committee which engages ESMC member organizations to advise ESMC on legislation, regulations, and other public policy developments that will impact the successful launch and scale of ESMC’s market program.

ESMC was active in responding to requests for expert advice from policymakers in the Legislative and Administrative branches of the federal government during 2021. ESMC’s engagement with the Senate Agriculture Committee helped inform the development of the Growing Climate Solutions Act and build bipartisan consensus which led to its passage in the U.S. Senate by a 92-8 vote margin. ESMC’s Executive Director testified at a hearing on Voluntary Carbon Markets in Agriculture and Forestry before the Committee on Agriculture of the US House of Representatives.

To scale all aspects of its market program, ESMC engaged with select state and local officials to gain insight into regional and watershed efforts to improve water quality and conservation practices. ESMC met with agricultural and environmental policymakers in in various states to discuss ways that ESMC’s market program could incentivize local producers to contribute to watershed management best practices while maximizing state and local budgets. This collaborative, local approach helped demonstrate how agricultural solutions can deliver results that meet corporate and societal demand, leading to first-time payments to farmers in Kansas.
Looking Ahead: Our 5 Year Vision and Timeline

The ESMC & ESMRC 5-year goal for 2022 – 2026 is to transform decarbonization along the US agricultural supply chain through collective action. This includes:

1. **Continue to build and strengthen ESMC/ESMRC governance structures** to meet the evolving needs of members, partners, and stakeholders.

2. **Scale the ESMC market program to enable Net Zero outcomes** in agricultural supply chains through repeatable market program growth models and a high-integrity and credible science-based/standards-based program. Through the market program, by 2026, we will:
   - Enroll at least 5 million acres in the market program.
   - Deliver at least 2.5 million mtCO2e from removals and reductions.
   - Deliver improved water quality credits on at least 1 million acres and water quantity credits on at least 500,000 acres.

3. **Expand our market program via the ESMRC Innovation and Research Pipeline** to:
   - Complete 100% of US geographic coverage.
   - Add key sectoral coverage from additional livestock systems as well as cropping and specialty crop systems.
   - Add a dedicated Black, Indigenous and People of Color (BIPOC) focus to ESMC/ESRMC governance, programming, and coverage.
   - Develop new project, partnership, and program delivery models to decarbonize agricultural supply chains and help achieve Net Zero.
   - Continuously improve our technologically advanced, digitized, automated, scalable infrastructure to fuel program growth, scale outcomes, drop operational costs, and improve return on investment for members, partners, buyers, and sellers.
   - Address systems and producers not currently eligible for Scope 3 credits such as compensating early adopters and innovators; preserving native grassland systems experiencing high conversion rates; creating flood reduction units; and biodiversity credits.

4. **Expand program and project validation of new systems and geographies** through globally recognized third-party certification organizations.

5. **Grow ESMC/ESMRC spheres of influence and reach** through increased membership and partnerships; public policy engagement to leverage private sector action; and continued engagement of standards, guidance, accounting, and reporting entities.
ESMC/ESMRC Funding

Sources of Organizational Support

ESMC/ESMRC receives funds from diverse sources, including public and private foundations, the award of competitive and philanthropic grants, and dues from our members. Under ESMC/ESMRC’s FFAR grant, FFAR releases research and development funds when cash or in-kind matching funds are provided from our members or via other non-federal sources – so these matching funds are included as a funding source.

Expenses

ESMC/ESMRC expenses are primarily centered on funding for research, development, demonstration, and deployment efforts to build and test our dynamic program, to retain staff and technical contractors, and support to allow ESMC/ESMRC representation at meetings, conferences, and presentations. Travel in 2021 was greatly curtailed due to the COVID-19 pandemic.

*Consulting Services include contractor support for Technical and Research Development, Certification and Verification Refinement, MRV Platform, Legal and Accounting Advisement, and Program Infrastructure.

**Administrative Costs include software and subscription services, insurance, office supplies, filing fees, bank charges, and advertising.
Our Funders
We thank our funders for their generous support in 2021. Without our funders and their strong commitment to ESMC/ESMRC, we would be unable to drive collective and meaningful change for the betterment of agriculture, farmers and ranchers, people, and planet.

1. Foundation for Food and Agriculture Research
2. General Mills, Inc
3. The Ida and Robert Gordon Family Foundation
4. United Soybean Board
5. Walton Family Foundation

Our Members
As a public-private partnership, we were joined by over 70 members in 2021 including farmers, ranchers, agriculture commodity organizations, food and beverage companies, agribusinesses, land grant universities, and non-profit environmental and conservation organizations across the agricultural supply chain and value chain. ESMC members represent the spectrum of the agricultural sector supply chain with whom we are scaling sustainable agricultural sector outcomes.
Our Staff

We could not achieve all our progress without the work of our dedicated and experienced staff. Sincere thanks and kudos to our dedicated team throughout 2021, including Debbie Reed, Shiva Scotti, Caroline Wade, Jack Jeworski, Andrew Lentz, Thayer Tomlinson, Amanda Raster, Stacy Cushenbery, Isidora Jimenez LaCasse, Austin Arrington, Alana Pacheco, Lizzie Rose, Sarah Siemens, David Dayhoff, Benjamin Bartley, Neville Millar, and Christina Coffman. To read about our current staff, see: https://ecosystemservicesmarket.org/about-us/esmc-esmrc-team.

Our Board

With ESMC/ESMRC's receipt of official IRS 501(c)3 status on September 1, 2021, we constituted a new board of directors. We thank departing board members Wayne Honeycutt Ph.D., President and CEO of the Soil Health Institute; Bruce Knight, Principal and Founder, Strategic Conservation Solutions; Tim Palmer, President of National Association of Conservation Districts (NACD) and farmer; and Gary Price, Rancher, 77 Ranch.

Our current board of directors includes:

**Board Chair: Chad Ellis**, Chief Executive Officer of the Texas Agricultural Land Trust

**Board Vice-Chair, Kris Johnson, Ph.D.**, Deputy Director, North America Agriculture Program of The Nature Conservancy

**Mary Jane Melendez**, Chief Sustainability and Social Impact Officer, General Mills

**Emily Johannes**, Head of Sustainable Sourcing, Nestlé USA

**Rattan Lal, Ph.D.**, Distinguished University Professor of Soil Science and Director of the CFAES Rattan Lal Center for Carbon Management and Sequestration, The Ohio State University

**Ryan Sirolli**, Global Row Crop Sustainability Director, Cargill

**Debbie Reed**, Executive Director, ESMC