



APUC Grant – Final Report

North Dakota Dept. of Agriculture
600 E. Boulevard Ave, Dept 602
Bismarck, ND 58505

Program: Agriculture Products Utilization Commission Grant Program

Grant Number: 23-432

Grantee Name: EcoBalance Global LLC

EcoBalance Global (EBG), headquartered in North Dakota, is dedicated to supporting local ranchers and farmers. EBG facilitates access to education on innovative sustainable practices, cutting-edge tracking and reporting technologies, and participation in emerging markets for Climate Smart commodities. These markets include carbon credits and value-added products and byproducts, which help diversify revenue streams and enhance economic returns for agricultural producers. Additionally, EBG's efforts contribute to improved soil health and forage quality, delivering economic and environmental co-benefits that foster sustainable farm operations and long-term operational efficiency.

The aim of EBG is to create sustainable wealth and employment opportunities for North Dakota agricultural producers through adoption of regenerative agricultural practices that increase carbon sequestration in the soil, monetize resulting durable soil carbon into carbon credits and value-added products, and promote these products in the marketplace to meet increasing consumer demand for sustainable products.

EBG utilized Agricultural Products Utilization Commission (APUC) grant funds to expand on our initial 8,478-acre pilot project. EBG successfully completed this expansion to over 18,000 acres in rural North Dakota as planned. Through this expansion, the company was able to evaluate results from all enrolled and utilize findings to successfully guide further marketing and product utilization beyond the grant term. As initially planned, through use of the funds the company was able to implement and expand on innovative Soil Organic Carbon (SOC) framework, robust end-to-end data management, marketing of carbon credits and value-added products, and complete the market research needed to launch a comprehensive EcoSmart Brand and Marketing strategy for the evolving carbon market.

EBG was also able to successfully bring the first of its kind low-carbon beef commodity to the market within the United States. Through discussions with product retailers, it became apparent



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that the retirement of carbon credits within the supply chain is important. EBG decided to use an “inset” approach within the supply chain to strengthen the carbon reduction claims made against the products. The cattle in the program were inset with the carbon credits that were generated from the land where they grazed. By updating the ranch management plan to a more sustainable method such as rotational grazing, increasing sequestration and promoting healthier soil, and using the carbon credits generated on that land to create the low carbon beef commodity, EBG has successfully proven that the carbon credits can remain within the supply chain they are linked to. This method also ensured that cattle is a part of the sustainability solution, as opposed to the problem as many have argued in recent years. The fact that the cattle are part of the solution increases the likelihood that the ranching industry can expand to meet increased food needs fueled by population growth, and thrive, into the future as new environmental laws and restrictions are inevitably put in place.

In addition to the expansion of the pilot project acreage, the additional intended use of the funds was for commercialization of the carbon credits and value-added products. This was achieved through cultivating relationships with buyers in local and emerging markets, and through the company’s marketing strategy initiated with this project, that aims to build overall market demand for the products themselves. To put this marketing strategy into action, EBG contracted support from the Public Relations and Marketing firm Novitas. As a result of the company’s new efforts with the firm, EBG was able to spread knowledge and awareness of nature-based solutions to the growing environmental problems. EBG was featured in multiple publications both domestically and internationally, including Forbes Magazine¹. The company also expanded its social media presence and enhanced its website to educate viewers on the industry and the solutions the company could offer. EBG also worked with other contractors with experience in the space, such as GPT, to widen our depth of knowledge and our reach in the market to increase the likelihood of closing deals and building partnerships for the future.

The company was able to utilize the grant funding in line with the APUC mission, including for the following purposes:

EXPAND ND AGRICULTURAL PRODUCT USE: The project successfully expanded enrollment in the program by over 250%, from 8,478 acres prior to the grant to over 18,000 acres using APUC funds.

¹ <https://www.forbes.com/sites/stevensavage/2024/03/28/one-promising-way-beef-can-be-a-climate-friendly-source-of-protein/>



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PROCESSES & TECHNOLOGIES THAT IMPROVE EFFICIENCY: During the grant period, EBG expanded on its innovative framework and technology solutions offering. EBG utilizes an enterprise SaaS management system, EcoSmart Enterprise, to register, track, monitor and retire credits and commodities. Using grant funds, EBG was able to expand on our enterprise platform offering in multiple ways, including finalizing an online portal for current and future EBG customers to show the lifecycle of each carbon credit and commodity from beginning to end of the supply chain, in a user-friendly way. EcoSmart Enterprise can trace each credit and commodity, such as low-carbon beef, back to the specific ranch the credits and/or cattle are connected to. It then has the ability to follow these credits or commodities through each step in the supply chain, ending with the location and information of the end user of those credits/commodities. Our platform also goes one step further by connecting these credits to the blockchain and providing the link to the corresponding public ledger. The goal of these system enhancements was to offer the highest level of traceability, transparency and relevant information, while being able to tell the story of the environmental impacts the products have starting in North Dakota.

CONSUMER PREFERRED PRODUCTS: The carbon credits and value-added commodities respond to a growing consumer demand for sustainable products. EBG was able to sell these products to multiple end-users, including the sale of North Dakota raised low-carbon beef to a restaurant management group in Dubai and participating restaurants at Taste of Vail in Colorado. The company also completed a sale of carbon credits to offset emissions at the Pac-12 Championship Football game held at Allegiant Stadium in Las Vegas. The ability to utilize and sell carbon credits in multiple ways is a key lesson that we believe our framework uniquely enables and can be expanded through the state of North Dakota to assist in achieving some of the goals of the APUC grant.

DIVERSIFY AGRICULTURAL INDUSTRY: Through extensive research and relationship building during the grant period, EBG was able to identify sectors of interest for potential partnerships and locations of emerging markets to focus on. The team identified that universities with strong ties to the agriculture industry could be an option for potential partnerships where both sides could mutually benefit. EBG has visited with these universities and is pursuing several opportunities to leverage the knowledge gained from this grant initiative. The team also identified the Middle East and Central Asia as emerging markets for environmentally friendly and sustainable products. The EBG team attended the COP 28 Climate Change conference in Dubai, as a guest delegation for the Kazakhstan Department of Agriculture, for whom the



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company is actively working to finalize a carbon credit and climate smart commodity project to supply Central Asia and beyond with these products. As a first step and important result from this project, the team finalized a sale of low-carbon beef from North Dakota to the restaurant group in Dubai and is actively working on expanding its reach in the region.

MATCHING FUNDS: In addition to matching the required 25% of the grant funds, EBG invested over \$500,000 on the project to enhance each grant dollar invested. EBG has leveraged the \$2.4M in funding received prior to the grant period, along with an additional \$600K in funding since the grant period began. This increase in funding aligns with the team's commitment to finding an economical solution to agricultural emission reductions that benefits and incentivizes local ranchers and farmers.

IMPLEMENTATION FRAMEWORK: This project was managed by a dedicated team with experience in grant management, financial planning and project management. This enabled the team to utilize the funds as intended and carry out the project in a timely manner while meeting project objectives. This stewardship of grant funds was further bolstered by rigorous certification protocols as required by BCarbon registry and third-party verification. The company framework put in place ensured accurate tracking and reporting in line with grant requirements.

FINDINGS: EBG had many findings obtained throughout the course of the project that will be very beneficial for farmers and ranchers in North Dakota as the carbon and agricultural industry continues to develop sustainable and low carbon intensity practices. Regarding the voluntary market for carbon credit sales, we found that this market has not rebounded as quickly as anticipated after the downturn of nature-based credits in 2022. As a result, the company found that the market is less liquid than estimated in relation to sales of credits, but it is anticipated this will change as the U.S. SEC implements required ESG reporting for public companies and many state governments, large corporations and public corporations will have to focus more on meeting their stated emissions and sustainability goals for 2030 and 2040. In the short term, it was found that off-take agreements for the credits are still valued in more niche markets where sustainability and emission reduction is more important to the related stakeholders, and it is anticipated this will expand into the larger market as the industry develops in the U.S.



Figure 1: Value of N-GEO futures (nature-based carbon credit futures)²

Regarding a voluntary market premium for climate smart commodities, it was found that the premium an average consumer is willing to spend on these commodities, such as low-carbon beef, is still being determined within the U.S. While the data is being collected by early adopter retailers and restaurant chains, the larger retail businesses are hesitant to go under contract of long-term supply deals with commodity developers. The short-term solution to this delay in market adoption that EBG found was to work with emerging markets both domestically and internationally, and to do business with the niche market as described, even if at lower margins.

EBG also analyzed the value of grassland preservation, which would be enabled through a free-market approach via carbon storage certification, water credits, and other emerging crediting mechanisms. Approximately 0.63% of pastureland is converted into cropland each year in the Upper Great Plains. In North Dakota, this equates to 24,000 acres. The ND Priority Climate Action Plan (2024, Fig. 2) calls out agriculture as a large source of emissions, however this does not count soil carbon storage which likely offsets most of these emissions.

² July 31, 2024: <https://carboncredits.com/carbon-prices-today/>

Table 1.2 Rationale for Sector Selection

Sectors Included in Inventory	Rationale for Including in GHG Inventory
Agriculture and Natural and working lands ⁹	Agriculture accounted for 22% of emissions for the year 2018. With the state of North Dakota being largely rural, most land is in a natural state or utilized in agriculture. Nearly 40 million of the 45 million acres in North Dakota are utilized for farming. ¹⁰ The sector is widespread geographically across the state.

Figure 2: Snapshot from North Dakota Dept. of Environmental Quality “Priority Climate Action Plan”, 2024 ³

While cropland is vital to the production of food and fuel, preserved grasslands provide a myriad of environmental benefits. These environmental benefits provide value to the state of North Dakota through the following mechanisms:

- 1) Water runoff prevention⁴
- 2) Phosphorous⁵ and nitrogen⁶ runoff avoidance (as pasturelands are not typically fertilized)
- 3) Topsoil runoff prevention⁷
- 4) Biodiversity benefits⁸
- 5) Soil carbon storage⁹
- 6) Increased animal carrying capacity
- 7) Drought prevention

EBG estimates that the first five mechanisms provide approximately \$340 per acre per year of value to the state of North Dakota and landowner, excluding improved cattle operations. This means that our pilot project on 18,000 acres provided over \$6,100,000 in environmental services through avoided conversion of grasslands. The 9.4M acres of grasslands in North Dakota provide \$3.2B in environmental value to the state each year compared to converting to cropland. For \$20 per acre spent to preserve grasslands via the crediting mechanism, this is a 4,200% ROI. See Table 1 for further details.

Table 1: Environmental services provided by grasslands through avoided conversion to tilled cropland.

³ https://www.deq.nd.gov/publications/Director/Sustainability/NDDEQ_PCAP_Report.pdf

⁴ <https://www.pnas.org/doi/10.1073/pnas.2005835117>

⁵ <https://www.sciencedirect.com/science/article/abs/pii/S0921344920305164?via%3Dihub>

⁶ <https://pubs.acs.org/doi/abs/10.1021/es303804g>

⁷ <https://heinonline.org/HOL/LandingPage?handle=hein.journals/jms7&div=19&id=&page=>

⁸ https://dash.harvard.edu/bitstream/handle/1/37371589/Gibson_Aislin_Thesis-final_21Apr2022.pdf?sequence=1

⁹ <https://www.science.org/doi/10.1126/science.267.5201.1117>

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	<i>Value per acre per year</i>	<i>EBG pilot, 1y</i>	<i>ND grasslands</i>
<i>Irrigation water savings</i>	\$ 27	\$ 481,057	\$ 251,218,760
<i>P/N runoff prevention value</i>	\$ 254	\$ 4,579,454	\$ 2,391,492,455
<i>Topsoil runoff prevention value</i>	\$ 29	\$ 530,712	\$ 277,149,600
<i>Biodiversity value</i>	\$ 9	\$ 163,968	\$ 85,627,530
<i>Carbon storage value (\$20/tCO₂)</i>	\$ 20	\$ 360,000	\$ 188,000,000
<i>Total land value provided</i>	\$ 340	\$ 6,115,190	\$ 3,193,488,345

EBG has provided a proven framework and accounting methodology that can be scaled throughout North Dakota to assist in creating incentives that will be generational. As discussed, the attention to detail and transparency is paramount.

In the 2024 North Dakota Priority Climate Action Plan (Fig. 3), the state has committed to developing the Alliance to Advance Climate-Smart Agriculture Program. The Alliance is aimed at expanding its reach to support farmers and ranchers in up to eight additional Soil Conservation Districts (SCDs) with financial incentives for climate-smart agriculture practices on working lands. A key action item from this initiative is for the State of North Dakota to implement the Framework EBG developed during the grant period. This Framework provides flexible general guidelines that can be applied to various emission reduction measures outlined in North Dakota's plan of action.

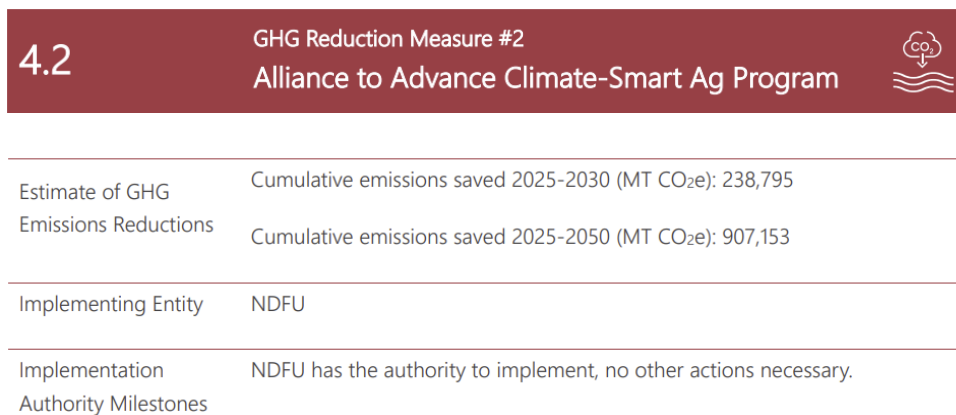


Figure 3: North Dakota Alliance Emission Reduction Goals³

Another specific action item would be a collaboration with EcoBalance to utilize its dataset for soil carbon in the United States. With a partner, we co-developed the highest resolution dataset

of soil carbon using USDA data, climate data, soil information, and more than one hundred covariates into a machine learning algorithm. This dataset, shown in a snapshot in Figure 4, could be utilized by the state to estimate soil carbon storage/loss rates on an annual basis.



Figure 4: EcoSTAC soil carbon stocks in North Dakota. Data plot shows one random farm from 2000 through 2022.

In conclusion, our work under the APUC grant is crucial for achieving the State of North Dakota's ambitious emission reduction goals and meeting its reporting requirements. Over the past year, government and commercial "Climate Action Plans" have faced increased scrutiny, resulting in a surge of lawsuits. EBG believes it is essential to apply the lessons learned from this grant



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initiative to deliver precise and well-substantiated environmental claims, particularly as North Dakota implements its Climate Action Plan.