JOURNEY TO NET ZERO IN AGRICULTURE SECTOR

Agriculture accounts for approximately 10-12% of global greenhouse gas emissions. Roughly one-third of all food produced for human consumption is lost or wasted. The environmental impact of food loss and waste includes the emissions of greenhouse gases, inefficient resource use, and wasted land and water resources. These statistics highlight the urgent need for the agriculture sector to embark on the journey to Net Zero emissions.

Having grown up in a farming family, I have hands-on experience in agriculture from my childhood. My father being a farmer, I intimately understand the challenges and needs faced by farmers. This personal background provides me with a deep appreciation for the unique requirements and issues that farmers encounter in their daily lives.

1. **Lack of Data:** Agriculture SMEs often lake the necessary data to track their emissions accurately so they are unable to take meaningful actions towards net zero target. Many SMEs don't own the building so it is not always possible to install meters to measure energy usage. Due to this few SMEs don't know how their business is related to sustainability and journey to Net Zero.

2. **Fear of low returns:** Almost 40% of SMEs are hesitant to invest in sustainability measures due to concerns about the costs involved and low returns on investments. Notably, 11% of UK smaller businesses have already accessed external finance to support net zero actions.

3. **Out of control supply chain:** Farmers heavily rely on external suppliers for inputs like fertilizers, seeds and equipment's, which may have associated emissions in their production and supply chain.

Barriers to net zero actions, grouped by broad type
Source: British Business Bank's net zero SME survey
Base: All participants (1,200); multicode*
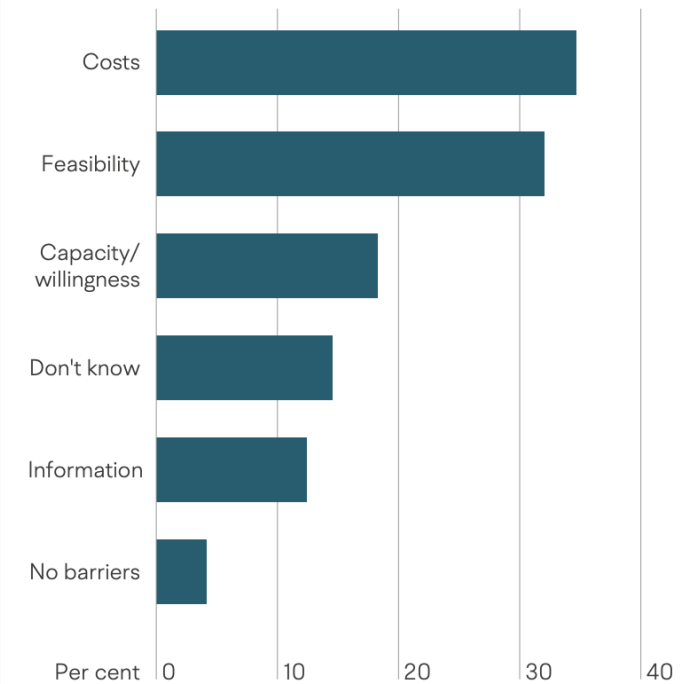
* Proportions represent the share of SMEs that reported at least one barrier within the relevant category

- https://www.britishchambers.org.uk/media/get/BoS%20From%20Now%20To%20Net%20Zero%20FINAL.pdf

- https://vm-01-crm02.altido.com/clients/rase-c3c5ffc2133a3eed/uploads/documents/website-report/Decarbonising%20UK%20Horticultural%20Production%20digital.pdf

- https://www.british-business-bank.co.uk/wp-content/uploads/2021/10/J0026_Net_Zero_Report_AW.pdf

Proposed solution

Emission Tracking & Reporting

- **Identify Emission Sources**
  - *fertilizer application using IoT and remote sensors, fuel consumption in machinery, and land-use changes*

- **Emission Calculator Inputs**
  - *number of employees*
  - *electricity*
  - *fuel consumption (LPG, coal, petrol)*
  - *vehicle fuel*
  - *machinery details*

- **Verification**
  - *validate the accuracy and credibility of emission data and reporting by collaborating with third party verifiers*

Data Analytics and Visualization

- **Data Collection**
  - *farm records, surveys, or sensor-based technologies*
  - *Public API or Private companies*

- **Visualize**
  - *data cleaning and modeling*
  - *create charts and graph using power BI*
  - *predictive analysis of Journey using python and ML models*

- **Analysis and conclusion**
  - *identify emission hotspots*
  - *generate reports*
  - *uncover hidden patterns*
  - *identify opportunities for emission reduction*

Strategy & Action

- **Collaborate and Share Knowledge**
  - *create platform with best practices for farming and share success stories*
  - *collaborate with suppliers*

- **Finance Support**
  - *suggests options for long term benefits*
  - *provide funding*
  - *collaborate with finance companies*
  - *risk assessments*

- **Supply Chain Management**
  - *collaboration*
  - *buy electric vehicles*
  - *move to sustainable manufactures*
  - *provide expert advise and guidance*
  - *build a community*

Is this solution feasible ?

Based on the research, technical capabilities, stakeholder engagement, and successful testing, it can be concluded that the proposed solution is highly feasible. The solution addresses the identified challenges in sustainable agriculture and has the potential to make a significant impact on farmers' decision-making processes and the journey towards net-zero emissions.

- **Market Analysis:** I conducted market research to understand the current landscape, challenges, and opportunities in sustainable agriculture.

- **Technological Advancements:** Leveraged advancements in data analytics, IoT, and cloud computing to develop a robust and scalable decision support platform.

- **Scalability:** We can design the solution with scalability in mind, utilizing cloud-based services(AWS) and scalable databases.

- **Proof of Concept:** Create a proof of concept, demonstrating the technical feasibility and viability of the solution.

Revenue streams

Data Licensing: Monetize the valuable agricultural data collected and analyzed by the platform by offering data licensing opportunities to third-party organizations, such as research institutions, agribusinesses, and government agencies. This can involve providing anonymized and aggregated data sets or customized data analytics reports.

Partnerships and Sponsorships: Forge strategic partnerships and sponsorships with agribusinesses, input suppliers, machinery manufacturers, and financial institutions. These partnerships can involve revenue-sharing agreements, co-branded offerings, or exclusive access to services or discounts for platform users.

Consultancy Services: Establish a consultancy arm or partner with agricultural experts to offer specialized advisory services to farmers. This can include personalized sustainability assessments, customized action plans, and on-site consultations. These services can be billed on an hourly basis or as project-based engagements.