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Project brief: Chemical engineering internship with Astungkara Way

Subject discipline: Chemical engineering

Organization background: Astungkara Way is a social enterprise working to accelerate the transition to regenerative agriculture for rice farmers in Bali. Rice is responsible for 10% of global methane emissions, and in Southeast Asia, rice cultivation accounts for as much as 25-33% of the region's methane emissions. And Indonesia is the third-largest producer of rice in the world.

Due to practices like continuous soil flooding, synthetic fertilizer usage, and straw burning, rice has been a huge contributor to global greenhouse gas emissions. To combat this, Astungkara Way is encouraging and assisting farmers to transition to more sustainable farming methods like organic and/or SRI (System of Rice Intensification). To secure more funding from investors, the social enterprise must be able to demonstrate the effectiveness of alternative farming methods in reducing greenhouse gas emissions.

Internship activities:

- Gain an understanding of GHG Protocol and how it is relevant to the objectives of the organization.
- Identify properties that indicate soil health that can be used to benchmark organic versus non-organic farming methods.
- Determine suitability of different options for measuring greenhouse gas emissions from rice farming (with limited access to laboratory testing and equipment).
- Measure the amount of methane produced by flooding rice paddy fields and generate an assessment of how much methane reduction could be achieved by ending the practice.
- Develop a testing protocol for the organization.
- Present findings to the organization.