

# EUROPEAN GREEN DIGITAL COALITION

Supported by the European Commission and Parliament at the EU Council's request, the EGDC unites companies to use digital solutions for reducing emissions across key sectors.



Funded by  
the European Union



TCS' Digital Platform for NextGen Agriculture (DNA) supports rice farmers in adopting Carbon-Smart Crop Protocols (CSCP) through a mobile app that records field operations and integrates weather, satellite, and soil data. The platform guides farmers in implementing climate-smart practices such as water-saving irrigation, precision fertiliser use, and organic soil treatments. Data collected and input by the farmers into the app feed into a process-based simulation model to estimate GHG emissions and soil carbon changes, while a machine-learning model analyses crop images to optimise farming practices, such as fertiliser application, reducing N<sub>2</sub>O emissions without compromising, and often increasing, yield.

This case study is an ex-post assessment carried out to quantify the avoided emissions from improved nitrogen application through fertiliser efficiency and reduced machinery fuel consumption for tilling under two carbon-smart crop protocols (CSCP-1 and CSCP 2), representing two different scenarios, compared to conventional practices. The assessment is based on a pilot in Tamil Nadu, India during the rice harvesting season of July-October 2021.

**Organisational contribution:** TCS worked to innovate, develop, and deploy the solution. This aligns with A-level classification as defined by ITU-T L.1480 (contribution of the integrated solution or the innovation of the solution).

## Quantified impacts:

1 year

Assessment period  
(based on 2021 pilot)

-6.93 to -44.14 tCO<sub>2</sub>e/year

Net carbon impact range  
accounting for uncertainty

CSCP-1: -0.09 kgCO<sub>2</sub>e/kg  
CSCP-2: -0.12 kgCO<sub>2</sub>e/k

Net carbon impact per kg  
of rice per year

## Other identified impacts:

**Economic: Cost savings** - Reductions in fertiliser and fuel lead to cost savings for farmers. If all cost savings are invested into typical business carbon-intensive activities, this could result in an increase in emissions.

Website

Contact TCS

Relevant links: [Contact us](#) | [Methodology](#) | [Calculator](#)

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