Service ID S00330

Location Remote, Sweden

Life cycle assessment (LCA) of AI, Robotic & Digitalisation (AIRDIG) serv

Provider service

Research Institutes of Sweden

Link to content

https://agrifoodtef.eu/services/life-cycle-assessment-lca-ai-robotic-digitalisation-airdig-services-agrifood-sector

Type of Sector

Arable farming, Food processing, Greenhouse, Horticulture, Livestock farming

Accepted type of products

Data

Type of service

LCA assessment

Description

This service helps you understand how AIRDIG technologies impact the environment throughout their use in food production. From building the tech infrastructure to using and eventually discarding AI and robotic systems, this assessment pinpoints key areas like energy use, electronic waste, and resource consumption. It also explores how smart farming tools—like automated machines and precision farming—can improve environmental sustainability by reducing waste, conserving resources, and boosting efficiency. This approach offers a clear roadmap for making agrifood innovations more environmentally friendly.

How can the service help you

This service addresses the customer's need to make informed, sustainable choices when integrating advanced technologies into the agrifood sector. Before the service, customers may lack clarity about the environmental impacts of their AI, robotic systems, or digital solutions—such as how much energy they consume, how much waste they generate, or their overall resource efficiency. After the service, customers receive detailed insights into the lifecycle impacts of these technologies, pinpointing areas of inefficiency (e.g., high energy use, e-waste) and identifying opportunities to reduce environmental harm while improving operational efficiency. This helps businesses meet sustainability goals and optimise their use of digital technologies for smarter farming, leading to cost savings and better performance.

How the service will be delivered

The LCA service for AIRDIG technologies in the agrifood sector is typically delivered over 6-8 weeks and can be repeated periodically based on system updates or operational changes. It is not limited by agricultural cycles and can be conducted remotely, making it accessible around Europe, provided the customer shares the required data (e.g., energy usage and hardware specifications). The service generates a comprehensive report outlining the environmental impacts of AI, robotics, and digital systems, highlighting energy use, waste, and efficiency improvements, and offering actionable recommendations for reducing these impacts. The customer must provide detailed operational data and collaborate with the LCA team for accurate assessments.

Service customisation

Examples of AIRDIG technologies that can be assessed include precision farming tools, automated harvesting robots, and AI-driven supply chain management systems. Customisation options allow the LCA to focus on specific areas, such as energy efficiency, waste management, or carbon emissions, depending on the customer's priorities. Limitations may arise if insufficient operational data is provided, particularly regarding energy use, system lifespan, or supply chain details, which can affect the accuracy of the assessment. Additionally, the assessment assumes the availability of accurate data on the customer's digital infrastructure and usage patterns. Customers should be aware that the results depend heavily on the