



# Accelerating circularity: How digital tools empower circular value chains

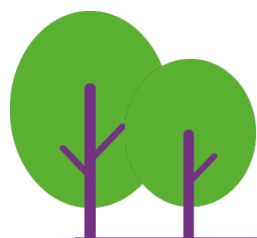
Practical pathways for industry and tech providers to implement circular economy solutions



## Why digitalisation?

Close material loops  
Boost efficiency & traceability  
Enable data-driven decisions

Ensure compliance (e.g., ESPR)  
Reduce environmental impacts  
Unlock new business models



## What solutions exist?

**Digital product passports:** Traceability & lifecycle data

**Digital twins:** Real-time monitoring & optimisation

**Digital marketplaces:** Connect suppliers & recyclers

**Digital waste sorting:** Automate processing, improve recovery

**Smart waste collection:** Sensor-based route optimisation

**Recycling education software:** Engage & educate citizens

**Carbon footprint calculators:** Track & reduce impact



Carbon footprint calculators



Recycling education software



Smart waste collection



Digital waste sorting



Digital marketplace



Digital twins



Digital product passports

## How it works?

**Value chain actors and operators:**

Integrate tools into processes  
Share data for design & recycling  
Collaborate across the value chain

**Tech providers and integrators:**

Design secure, interoperable solutions  
Co-develop & pilot with industry  
Prioritise usability & onboarding



INTEGRATE  
SHARE  
COLLABORATE



DESIGN  
CO-DEVELOP  
PILOT PRIORITISE

## Challenges

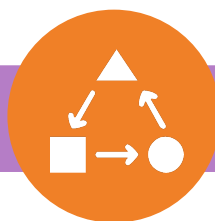
## Success factors



High initial investment



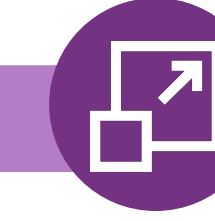
Interoperability issues



Digital readiness gaps



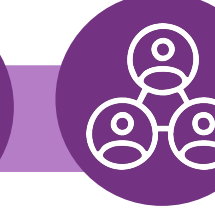
Data ownership & governance



Scalable, modular design



User-friendly interfaces



Multi-actor collaboration



Secure data sharing



### Tech providers

Co-create with industry: design, test, and scale digital tools for circular impact.

### Value chain actors


Start your digital journey: map opportunities for digitalisation, engage partners, and pilot a solution.

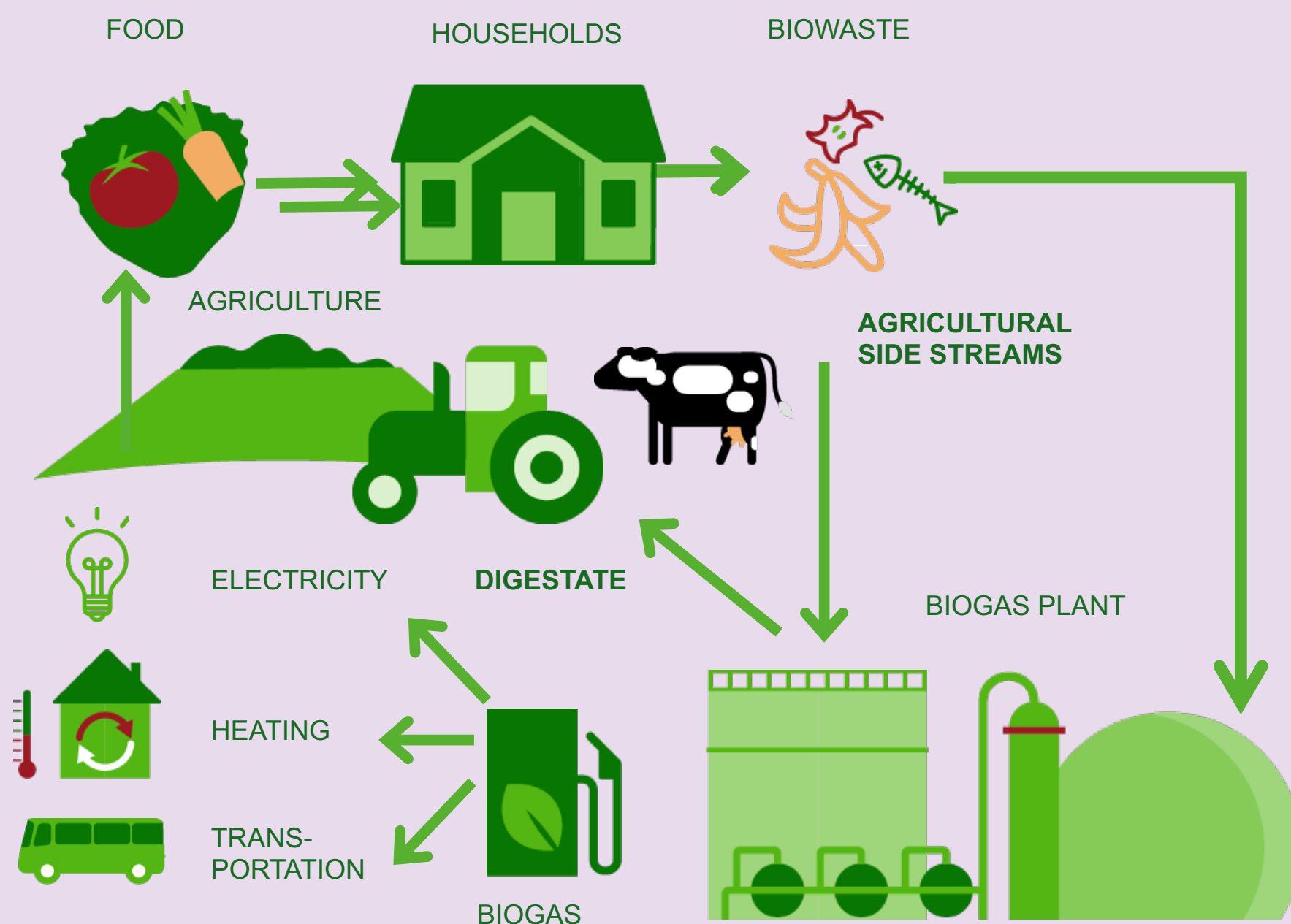


## Case examples



For more details on digital solutions for circular economy, see TREASOURcE [Deliverable report D6.2](#)

### Digital marketplace for biobased side streams

  **KiertoaSuomesta.fi** marketplace, developed in the TREASOURcE project, connects farmers, industry, and other value chain actors to trade biobased side streams for diverse applications (e.g., biochar, packaging, cosmetics).



### Digital twins in battery management

  Digital twin technology enables real-time monitoring and predictive maintenance of EV batteries, extending life and supporting second-life applications.

