

Modelling the Adoption of Nature-Based Solutions (NBS)

Project Pitch

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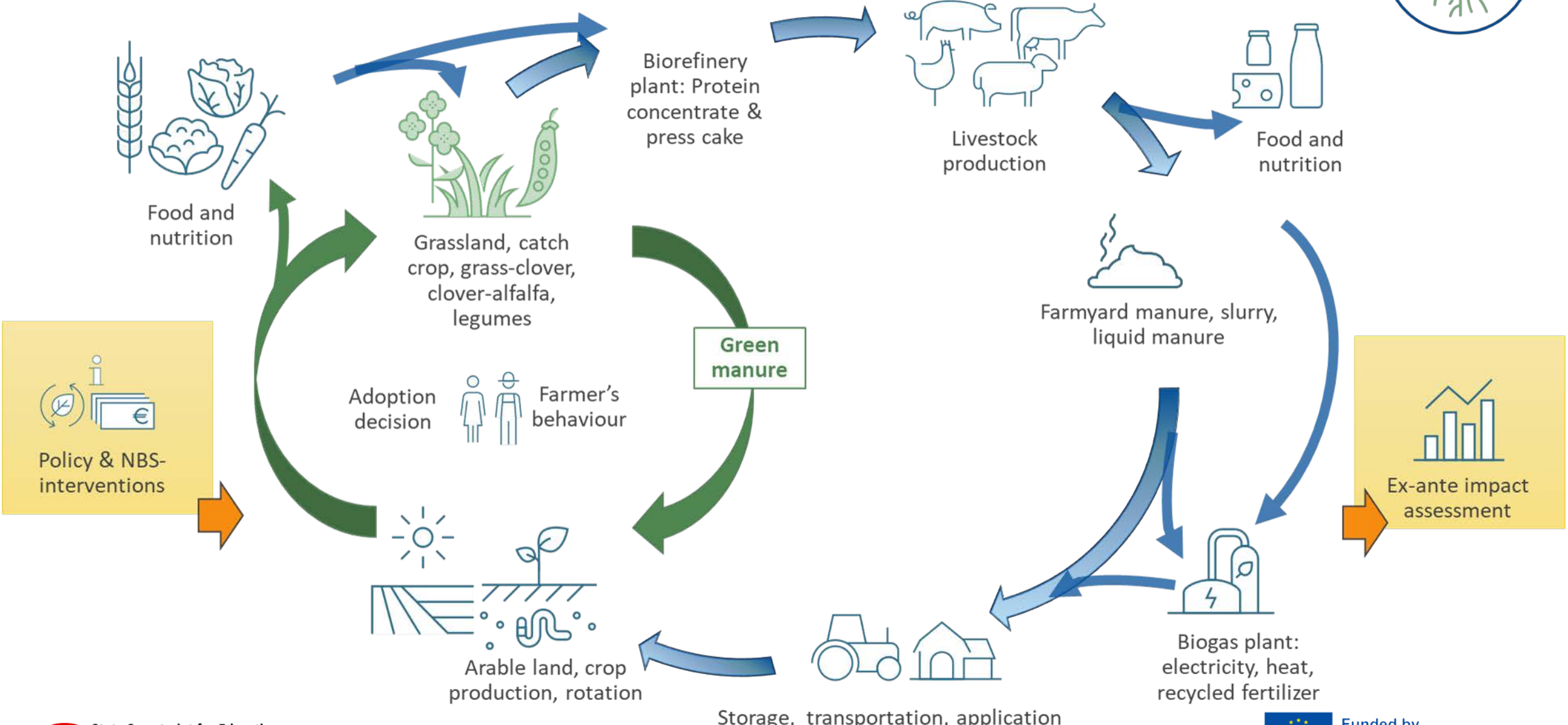
Transformation for
sustainable nutrient
supply and
management

WP 4.1



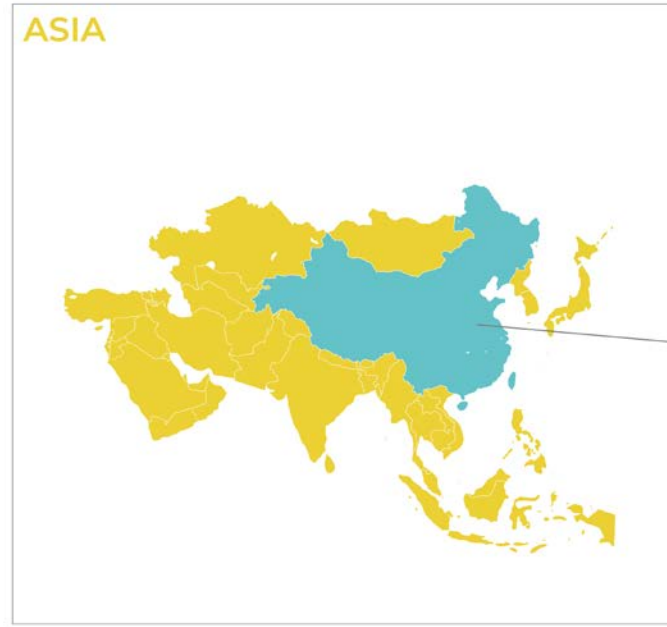
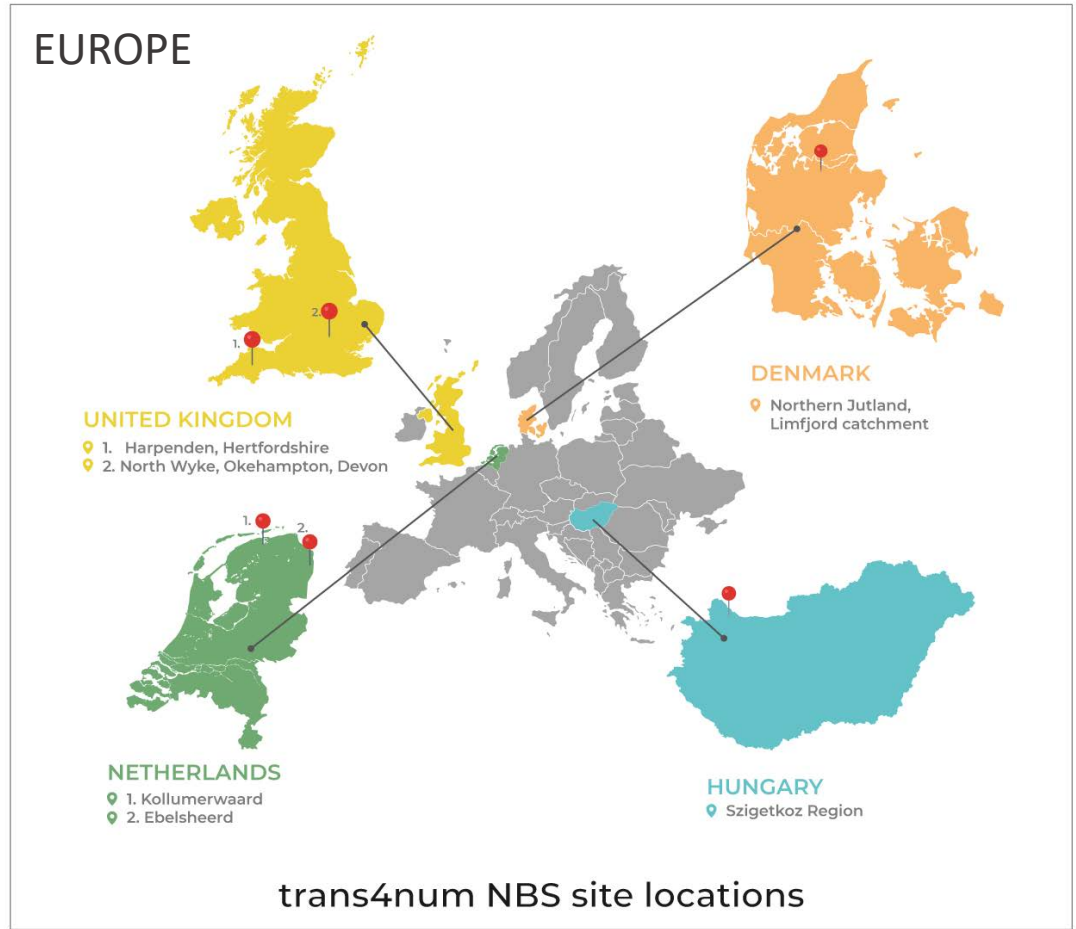
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Rethink the cycle...





Trans4Num case studies focus on effective and efficient nutrient management and sustainable crop rotation



Agent-based model approach – details and solutions

Trans4Num case studies

- The Netherlands: Organic arable rotation with no input of manure or compost but 100% nitrogen supply by means of green manure.
- Denmark: Prioritized N crop-rotation combined with local protein supply chains
- UK: Usage of bio-fertilizer processed from abattoir by-products
- Hungary: Minimize negative environmental impacts by providing educational services
- China: Nutrient management strategies, including organic fertilizer alternative technologies and products

Multi-level & multi-agent exchange and assessment approach

Interventions

Core model

- Agent population
- Decision-making behaviour
- Neighbourhood
- Scenario analysis
- Validation
- Disclosure

Purpose

- Find strategies to speed up adoption
- Model farmers' adoption decision...
- Capture the socio-ecological system
- Assess the impacts of interventions
- Study the reliability of the model results
- Share the model code & document it

Entities & Scales

- Representative sample of case study region
- Farm, processor, service entity, info-hub, network
- Neighbourhoods on square grids
- Baseline-, intervention- & batch runs
- Stakeholder panel, observed vs. model data
- Code in: NetLogo & R, csv-files, ODD, CoMSES

Ex-ante impact assessment

Diffusion of Innovation

Output

- Adoption speed and (up)scaling potential
- Role of social network & behaviour
- Environmental impact change
- Income, land use and rotation change
- Model uncertainty level
- Reusable & extensible model code

In a nutshell: with our model we intend to ...

- ... understand the impact of the diffusion of Nature-Based Solution innovations, particularly those related to crop rotation and bio-based fertilizers as widely as possible!
- ... be transferable to other framework conditions!
- ... be as simple as we can be & only as complicated as we need to be!



Thank you!

<https://trans4num.eu/en/>

