PROJECT IDENTITY

trans4num is a four-year project funded under the CL6-2022-ZEROPOLLUTION-01-03 call as an EU-China international cooperation action on nature-based solutions (NBS) for nutrient management in agriculture.

Project Title:
Transformation for sustainable nutrient supply and management
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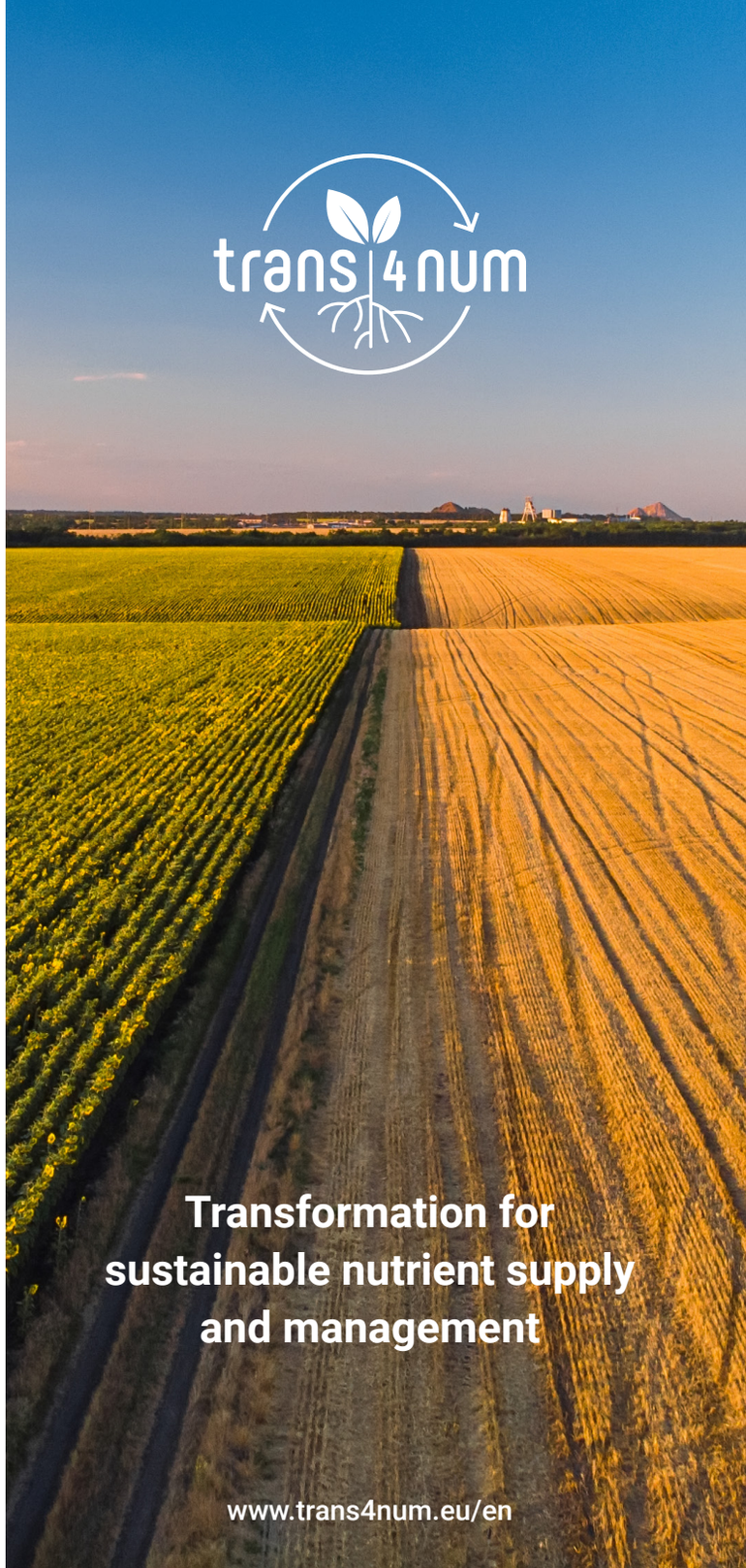

WHY

Today's agriculture is highly dependent on external nutrient inputs, and in particular mineral fertilisers supplying nitrogen (N), phosphorus (P), potassium (K), and other elements, which are indispensable components of many intensive farming systems.

trans4num's ambition is to substantiate and broadly promote the **nature-based solutions** (NBS) approach for sustainable agricultural practices in Europe and China, focusing on nutrient management (bio-based nutrient sources, sustainable crop rotation, integrated pest management).

HOW

trans4num methodological road map

1 Systemic analysis and state of the art	2 NBS Characterisation and appraisal	3 Optimising nutrient flow	4 Scenario development	5 Designing transformative learning
				
Literature review on NBS transformation pathway options, local nutrient management tools	Observe, test, discuss, assess NBS cases and nutrient management plans	Calculate nutrient flows using satellite based data at regional and watershed level	Bio-economic simulations for the ex-ante impact assessment of NBS using agent based modelling	Stakeholder workshops to design future social innovations
Literature review for SET based variables identification for NBS cases cross analysis	Map AKIS actors in the NBS sites using interviews	Adapt existing nutrient management tools to develop a dynamic decision support system for optimum nutrient supply	Model the regional food system and assessing potential trade offs and synergies	Hackathon workshops to engage technology development actors
Review local nutrient management tools at farm scale and national decision support tools	Cross analyse NBS cases through multi-perspective assessment criteria			Transdisciplinary workshops for actor involvement and assessment of NBS innovations and transformation pathways
WP1, WP2, WP3, WP4	WP1, WP2, WP3, WP4	WP1, WP2, WP3, WP4	WP1, WP2, WP3, WP4	WP1, WP2, WP3, WP4
WP5 and WP6				

WHERE

To study NBS with a **multi-level, multi-actor** approach, **trans4num** has selected four European and three Chinese sites.

NBS site locations

EU

- Northern Jutland
- Kollumerwaard; Ebelsheerd
- Szigetköz region, Danube valley
- Harpenden; North Wyke

Asia

- Northeast – Innermongolia
- North China Plain – Henan
- Southwest – Chongqing

NBS topic

- Crop rotation and Bio Based fertilisers
- Legumes, spoon-feeding, mixed/inter/strip-cropping, agro-forestry
- Biomass crops, biobased fertilisers, crop rotations
- Crop rotation (large trial), biomass crops, farmyard manure
- Reduced fertilizer, reduced chemical fertilizer, crop rotation and bio-fertilizer

Outputs

Innovative NBS practices

DSS tool nutrient budget methodologies

Scenarios for improved nutrient management

Dissemination to stakeholders on all levels

Outcomes

Strong international cooperation

New transformation pathways

Optimize nutrient flows

Market opportunities for NBS

OBJECTIVES

The objective is to develop and test innovative NBS practices and pathways that contribute to a socio-ecological transformation of existing intensive agriculture systems towards increasingly sustainable nutrient management.

SO1.
Develop, practice, and assess inter and transdisciplinary, systemic research conducive for a transformative learning approach towards sustainable agricultural practices.

SO2.
Develop a differentiated understanding of NBS potentials for sustainable agricultural practices in the context of intensive farming systems.

SO3.
Understand and analyse the complex interdependencies of applying NBS.

SO4.
Develop a dynamic and smart nutrient management tool to support decision making.

SO5.
Provide an integrated assessment of food systems, value chains and policy levels' leverage points for a robust transition to nature-based nutrient management in in Europe and China.

SO6.
Develop evidence-based knowledge, create awareness for necessary conditions in a food system context, disseminate information and recommendations related to the design, development and implementation of NBS in different farming systems.

SO7.
Enhance Europe-China exchange and learning process.