Back to the Future:

Reintegrating Land and Livestock for Greenhouse Gas Mitigation and Circularity

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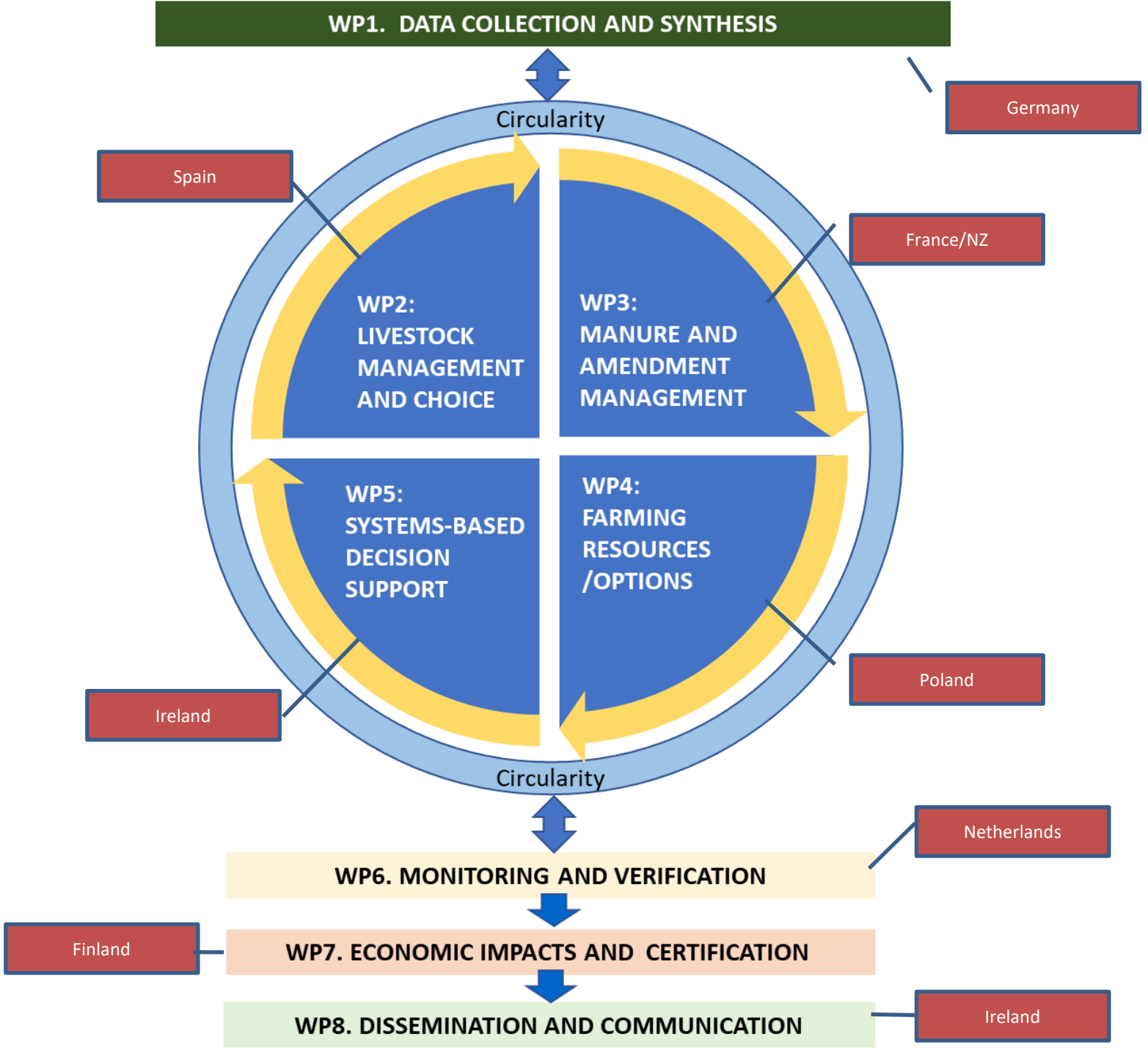
Aim & Objectives

To develop cost-effective crop-livestock production systems with a minimal environmental footprint.

1) assess the contribution of novel/alternative grazing practices, selection of livestock and forage type and soil sequestration in reducing methane and nitrous oxide emissions,

2) assess best practice in manure management and the efficacy and capacity of manures to offset external nutrient inputs,

3) capture and test this information, including economic consequences, in newly developed models that will be used to inform farmer-friendly decision support tools.



NZ involvement

WP1

- Case study farm data for WP5

WP3

- Co-lead with INRAe (FR).
- Response functions GHG from manure mgt.
- Review on amendment mgt

WP5

- Contribute to simulation of whole farm's GHG and C budget

WP8

- Dissemination

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NZ involvement

1. ID suitable case study farms (with FAR) (e.g. Waikato, Canterbury, Southland); discuss with farmers and collect data for WP5 modelling (Holos-EU, Cool Farm Tool)

2. Contribute data on effect of forage types on GHG emissions (WP2)

3. Expand DATAMAN database (organic amendments, biochar, anaer. digestion) → develop GHG response functions (NZ & FR) → include in WP5 modelling

4. Contribute to review of amendment mgmt. (organic amendments, biochar, Anaer. digestion)

5. Contribute to WP5 modelling → examine scenarios for improved circularity, reduced GHG & waste, reduced inorg fertiliser use.

6. Potential to explore alternative models more suitable to NZ farming systems/climates/soils/scenarios (with FR) (TBD)

7. Disseminate new knowledge via conferences, publications, FAR field days, etc.

Expected outcomes (NZ)

1. Farmer/science/industry (FAR) working together to identify farm system changes to improve circularity and reduce GHG (HWEN),

2. New knowledge on better integration of cattle/sheep within cropping systems, capturing nutrient value and soil C inputs from manure returns,

3. Opportunities for reduced synthetic fertiliser use identified (role of manures, crop rotations),

4. Improved understanding of merits of Anaerobic Digestion and Biochar for NZ livestock-cropping farm systems,

5. Tools for capturing livestock-cropping circularity evaluated and identified.