INITIATIVE ON Mixed Farming Systems

Co-designing and Scaling sustainable intensification of Mixed Farming Systems in Laos

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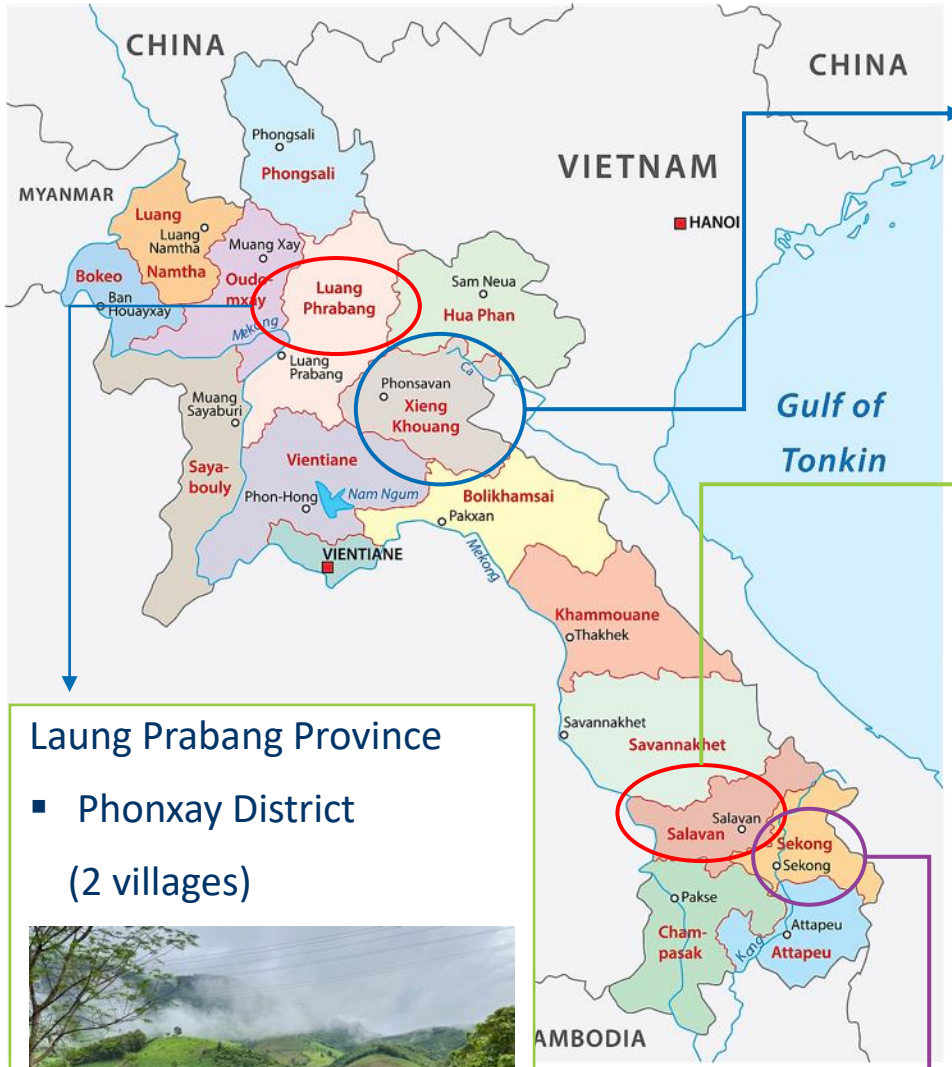
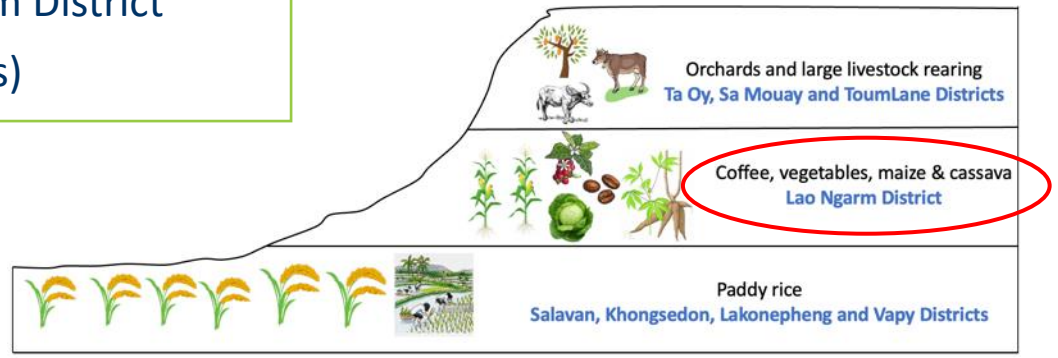


Xiengkhouang Province

- Phoukoud (3 villages)
- Khgam (2 villages)

Salavan Province

- LaoNgarm District (2 villages)

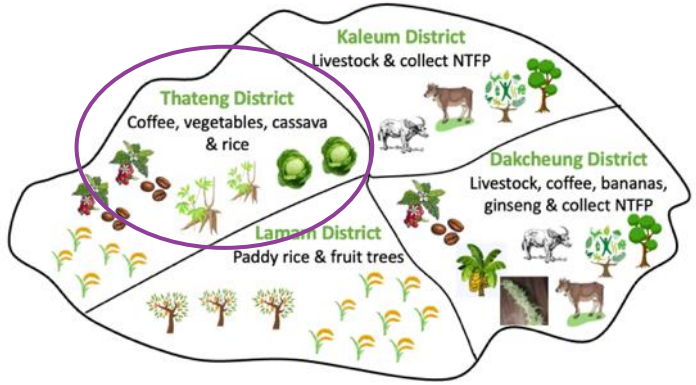


Laung Prabang Province

- Phonxay District (2 villages)

Xekong Province

- Thateng District (2 villages)



Northern Laos
Xiengkhouang Province – Phoukoud and Kham Districts

- Crops: maize, rice and vegetables
- Livestock: cattle and water buffaloes
  - Forages:
    - Nepier (Pennisetum purpureum)
    - Ruzi (Brachiaria Ruziziensis)
    - Israel sweet grass
    - Pangola (Digitaria Eriantha)

Pressures/ risks/ vulnerabilities

- Insufficient family labour
- **Lack of technical skills in cropping systems and innovation**
- Competition with maize traders from outside
- Shorter cycles of crop rotation for their maize and rice
- Very low and declined crop yields i.e. maize
- **Limited land for grazing and cultivating crops & government precludes further opening up of forested lands.**





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Southern Laos
Salavan Province – LaoNgarm District

- Crops: **cassava 'boom', coffee 'bust'**
- Intercropping – cassava + peanut
- Livestock: cattle – no forage cultivation

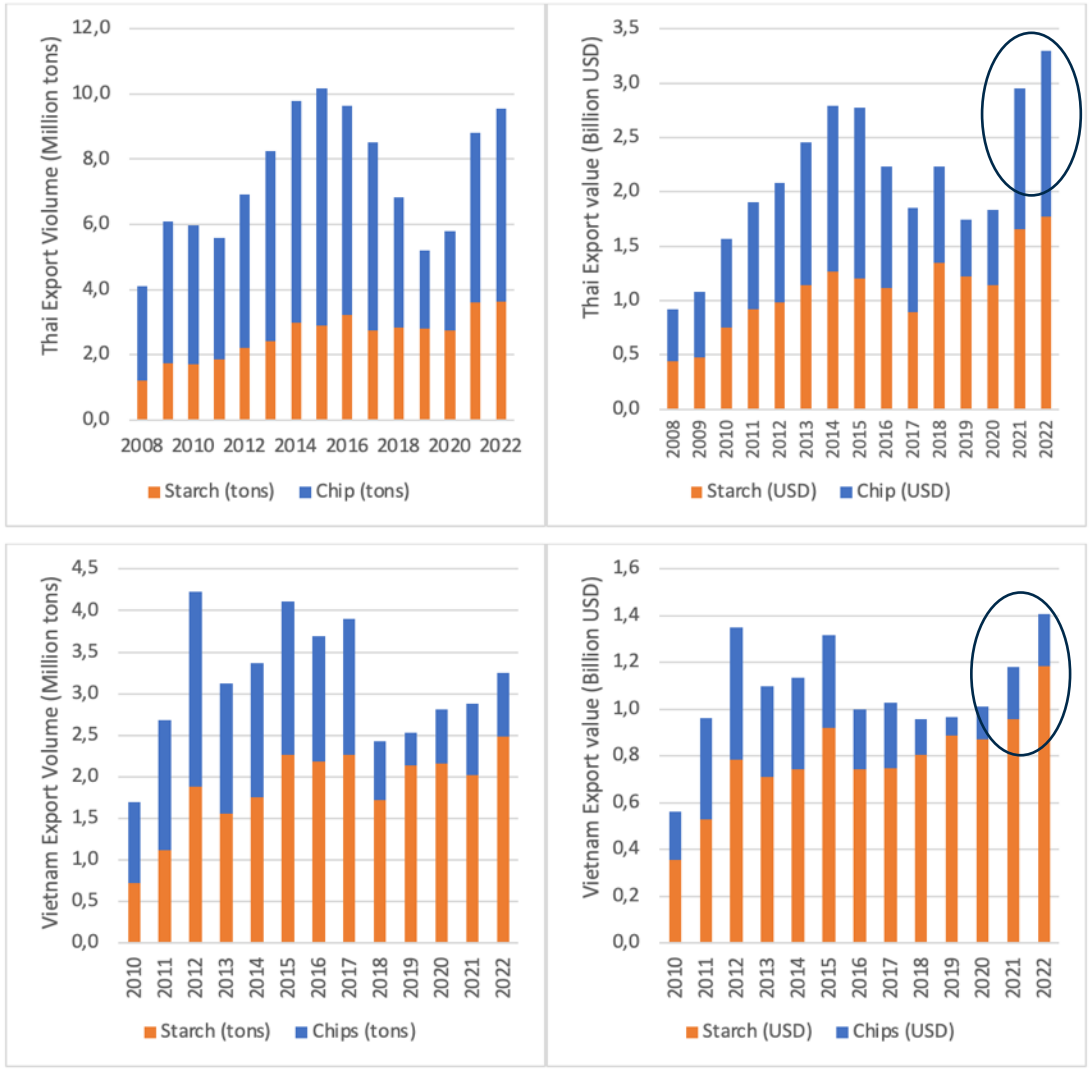
Pressures/ risks/ vulnerabilities

- **Soil quality decline**
- Climate change (warmer and drought)
- **'Input costs' have increased as well as access difficulties**
- Labour shortage, especially during the rainy season
- Drug addiction among (young) men in the village
- **Expanding cassava production ➔ abandoning their paddy rice**
- **Open more forest in the conservation areas due to the cassava boom**

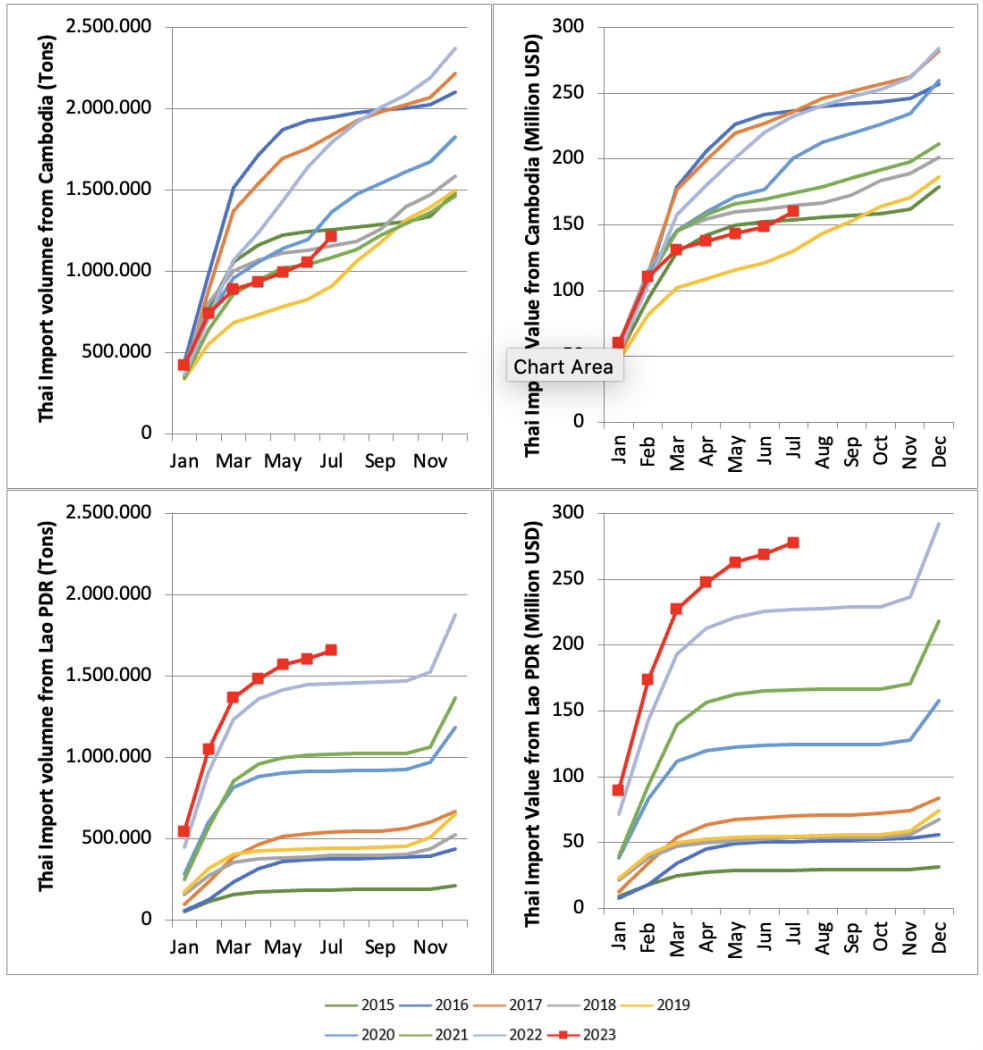




Volume & value of cassava Thai and Vietnam starch and dried chips



Thai Imports of cassava (roots and chips) from Cambodia and Lao PDR by volume and value



Cash crop expansion

Southern Laos
Xekong Province – Thateng District

- Crops: coffee, cassava and vegetables
- Livestock: cattle and water buffalos
    - Forages: Nepier, Ruzi, Israel sweet grass, Pangola

The silvopastoral system has not yet been practised in this district.

Pressures/ risks/ vulnerabilities

- **Cassava production has declined**
- Difficult to access microfinance, and no one wanted to take risks
- **High cost for agriculture inputs; difficult to access**
- **Difficult to access forage seeds**
- **Farmers followed market trends and abandoned coffee**

Promoting improved forages and locally available feeds (Based on G-FEAST fieldwork)

- Mainly Napier & Ruzi grass
- Men & women work together – but **men** take responsibility for **animal health** while **women** responsible for **buying forage seeds**
- Forages demonstration trials & Farmer and expert participatory research

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Silvopastoral and agroforestry systems

- Fodder banks provide quality feed between seasons
- **Additional income or nutrition from tree products (timber, fruit trees)**
- **Trees on pastures and hedgerows help control erosion on sloping and steep lands**
- Buffer strips around rivers and streams protect water resources and conserve biodiversity
- **Aligns with Lao Agroforestry Master Plan**

Challenges in expanding silvopasture and agroforestry

- **How do trees complement farmers' livelihood strategies?**
- Which species and systems are suitable to local agroecological contexts, under a changing climate?
- Is land and tree tenure secure?
- **Are markets available for tree products?**
- Do farmers have access to finance to make investments?
- **Do farmers have access to quality planting material for their chosen trees?**
- How to improve regeneration and seedling survival on existing pastures?
- Do the innovations respond to the needs of women and marginalised groups?

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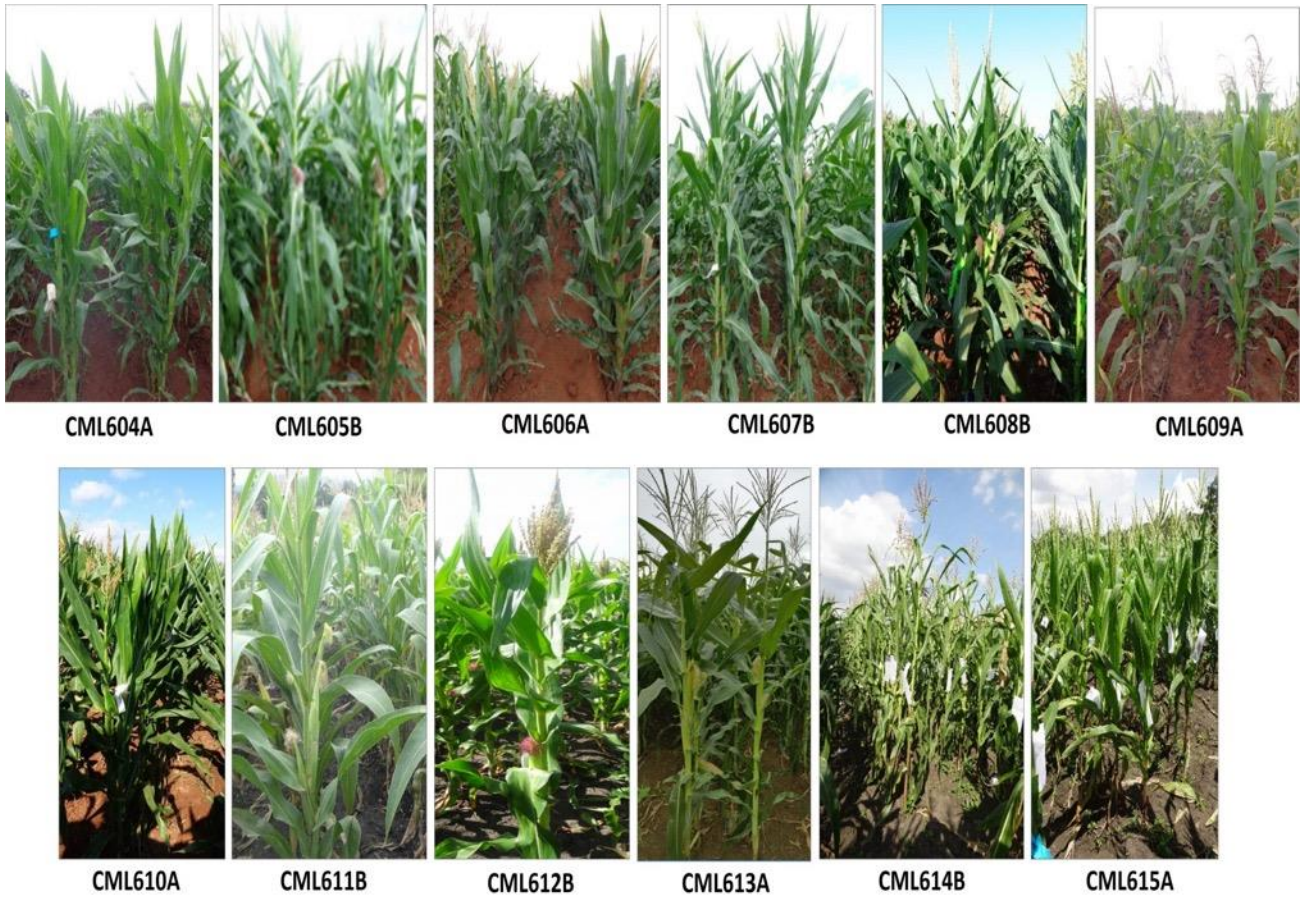
Prospects for *dual-purpose maize* (grain and fodder) production

On-farm and on-station testing of silage maize varieties for dual purpose (in collaboration with Lao institute - NAFRI)

- 16 varieties (from India, Nepal, Thailand and Vietnam) being tested in two locations
- Farmers and improved management (e.g. soil preparation, sowing date, fertilizer use).

Adaptability assessment, farmers' preferences and training materials on silage making



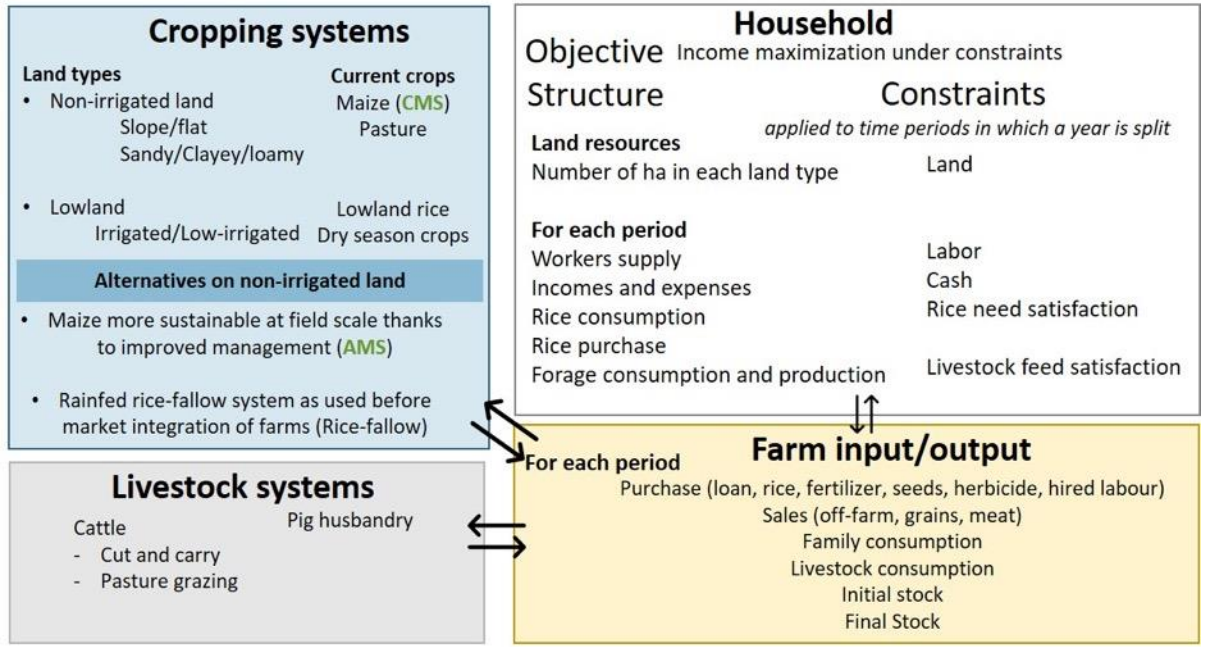
Exploring SI options for the diversity of farming systems

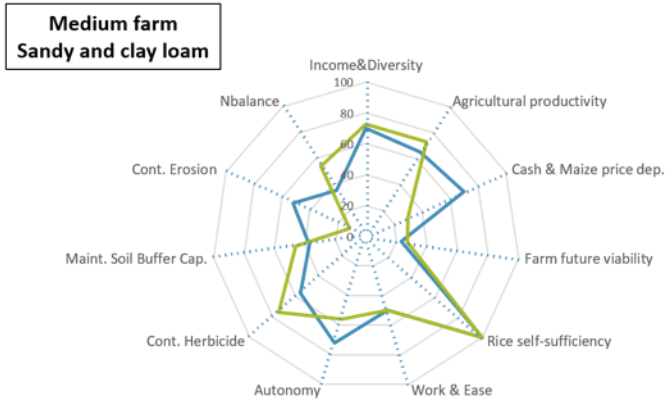
Farming systems typologies based on survey data in Xiengkhuang province of northern Laos.

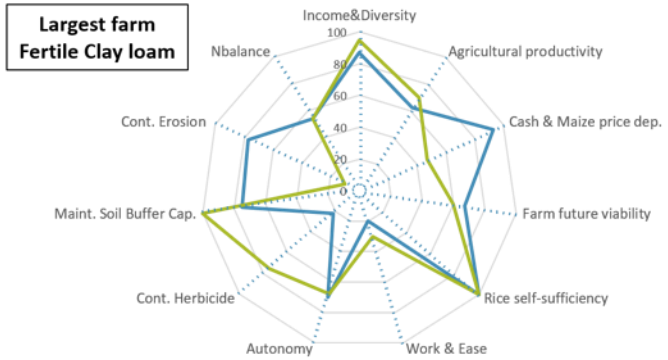
Farm level modelling (optimization) under different constraints and management options.

Identification of best fit alternatives (for maize production).

- Multi-criteria assessment of different scenarios
- Identification and quantification of trade-offs and synergies







Lairez et al. 2023 AgSys (in Press)

Understanding power dynamics of food security – opportunities for co-design of sustainable intensification of mixed farming systems

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Thank you!

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