

A silvo-pastoral approach to managing trees for climate change mitigation in Africa and Europe

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Centre for Agroecology, Water and Resilience (CAWR)

**Brokerage event on calls for collaboration with African researchers
under the Horizon Europe programme clusters 5 & 6**

HORIZON-CL6-2024-FARM2FORK-01-10

**EU-AU cooperation on agroforestry management for climate change adaptation and
mitigation**

Centre for Agroecology, Water and Resilience (CAWR)

About us

Research Centre
Agroecology, Water
and Resilience



- Centre for Agroecology, Water and Resilience (CAWR) is a research center affiliated with Coventry University in the UK.
- <https://www.coventry.ac.uk/research/areas-of-research/agroecology-water-resilience/>
- Focus is on research understanding and developing resilient food and water systems internationally.
- We have over 50 academics undertaking a huge variety of research from fluvial modelling to work on food supply chains with an emphasis on multi-disciplinarity and transdisciplinary thinking.
- Infrastructure, we have: (i) a dedicated growing space, which affords the opportunity to undertake crop trials either in the open or under glass/polytunnels, (ii) a numerical computation suite and (iii) extensive laboratory facilities for environmental and pollution monitoring

Expertise and contribution

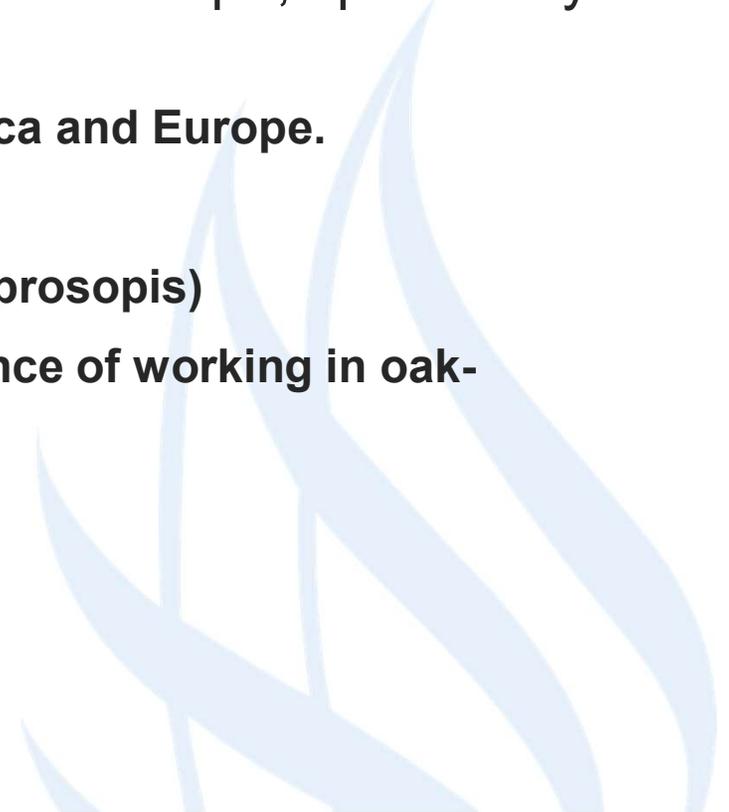
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- We have expertise in many aspects of food and water systems including of particular relevance to these calls: climate modelling with a focus on Africa, invasive plants and trees in Africa and EU, agroforestry systems in Europe, rangelands systems in Africa.
- CAWR has extensive experience of involvement in and leading EU programmes: e.g. AGROMIX and UNDERTREES project.
- We also build from strong connections in Africa, specifically UK funded research in South Africa and Kenya focusing on managing rangeland grazing for improved ecosystem service outcomes.
- At the moment the main project idea we are considering focuses on silvo-pastoral systems in Africa and Europe and key framing issue of 'tree proliferation' and the opportunities and costs this presents in these systems for climate change adaptation and mitigation (see supplementary slides from #6 onwards).
- We would be looking to coordinate around our main idea or join a consortium working on a related topic (very flexible!).

Profile we are seeking

- We are looking for partners in both African and Europe, specifically institutions with expertise in:
 1. **Carbon modelling in tree-pasture systems in Africa and Europe.**
 2. **Silvo-pastoralism in Africa**
 3. **Invasive tree management in Africa (e.g. Acacia, prosopis)**
 4. **Silvo-pastoralism in Europe, particularly experience of working in oak-pasture systems in the Mediterranean.**



Contact details

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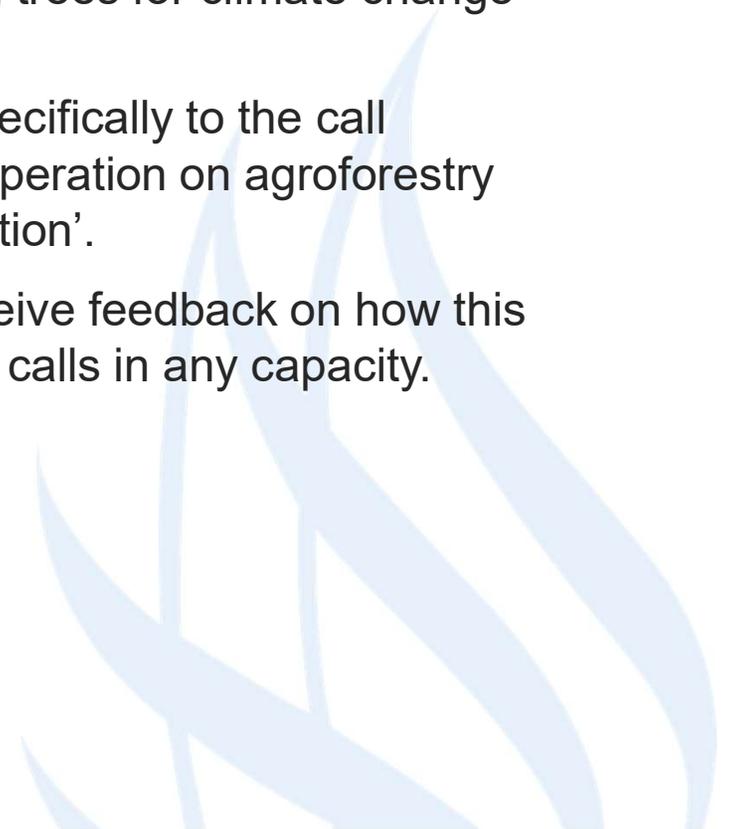
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- Current CAWR projects of relevance: -
- [AGROMIX | Coventry University](#)
- [UNDERTREES | Coventry University](#)
- www.coventry.ac.uk/cawr-tocasa
- [Plant Alert | Coventry University](#)



Supplementary slides

- The following slides develop the main project idea we are focusing on based on the broad theme of 'A silvo-pastoral approach to managing trees for climate change mitigation in Africa and Europe'.
- We have attempted, where possible, to relate these specifically to the call 'HORIZON-CL6-2024-FARM2FORK-01-10 EU-AU cooperation on agroforestry management for climate change adaptation and mitigation'.
- However, this is just one idea and we are happy to receive feedback on how this might be adapted and to be involved with other related calls in any capacity.

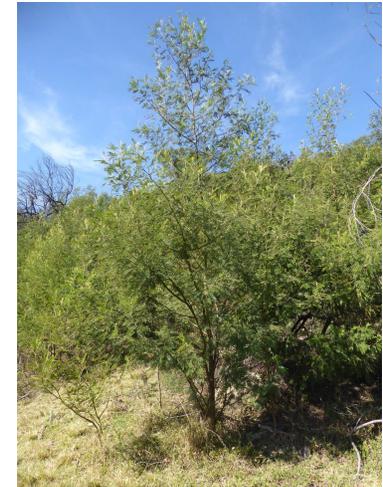


Context for Africa

- Rangeland systems in Africa (grasslands and savannas) encompass large areas of land surface and support large numbers of livestock (GHG emitters).
- Current pressure for afforestation of these areas to meet climate goals (Bastin et al 2019) but this is being strongly contested by many rangeland scientists (e.g. IYRP 2026 position paper on carbon and voluntary markets).
- One particular opportunity to reconcile these standpoints presents itself where rangeland systems are already subject to extensive tree invasion.
- This links to existing research CAWR has been involved in with partners in South Africa.

Rangelands invaded by trees

- Invasion of rangelands by trees in Africa is widespread.
- For example, *Acacia* spp in South Africa (> 700,000 ha) and *Prosopis* in Kenya (> 2,000,000 ha) and Ethiopia.
- Policy focus is frequently on complete eradication where species are alien invasives but is this necessary?
- Some work is already underway to reconfigure invaded areas as silvo-pastoral systems in South Africa as an alternative to clear felling.
- Many unknowns still need addressing:
 - *Do invasive trees add value from a carbon storage perspective?*
 - *Can thinning of invasive trees to create a silvo-pastoral system enable net carbon accumulation whilst also balancing other important ecosystem outcomes?*
 - *What knowledge and practice from European silvo-pastoral systems can help inform and refine these approaches?*



European context

- In Europe Mediterranean regions are often marginal for livestock production silvo-pastoralism is common.
- However, climate change and rural-urban migration are driving change in these systems (Rodriguez-Rigueiro et al. 2021).
- Recent land abandonment particularly associated with oak-based silvo-pastoral systems, has resulted in neglect of traditional systems and proliferation of trees.
- Problematic not only because of loss of grazing and other ecosystem services but also greatly increased risk of fire, with potential loss of stored carbon.
- Some key Qs deriving from this:
 - *Does tree proliferation help to mitigate or exacerbate climate change?*
 - *What mechanisms are appropriate to incentivise improved management of neglected silvo-pastoral systems (e.g. PES) and what can be learnt from functional systems elsewhere in Europe?*
 - *Which types of systems (e.g. tree species) when functional have the greatest potential to mitigate climate change and deliver additional ecosystem services?*

NEXUS

- Similar cross-cutting issue of expansion of woody perennials frames both African and European scenarios – one requiring a focus on how to create silvo-pastoral systems where they have not previously existed and the other on re-invigorating and adapting traditional management systems.
- Potential for considerable cross-fertilisation in addressing issues of:
 1. *Improved silvo-pastoral management approaches, particularly in Africa.*
 2. *Improved data on potential of silvo-pastoralism under these management scenarios to mitigate climate change.*
 3. *Improved understanding of other social and environmental benefits from these approaches (e.g. enhanced grazing services, mitigation of spread of invasive trees with positive impacts on biodiversity and water provision).*