

Traditional Agroforestry for climate adaptation and resilience

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PRELIMINARY RESULTS • Systematic review and bibliometric analysis • 70 documents • 51 scientific sources • 2002–2026

1. INTRODUCTION

- Traditional Agroforestry Systems (TAS) are multifunctional socioecological landscapes integrating trees, crops and occasionally livestock.
- They support food production, soil protection, carbon sequestration, biodiversity conservation and nutrient cycling.

These systems are increasingly relevant to climate adaptation and resilience under climate change, biodiversity loss and land degradation.

KNOWLEDGE GAP
Scientific evidence remains fragmented across disciplines and geographical contexts.

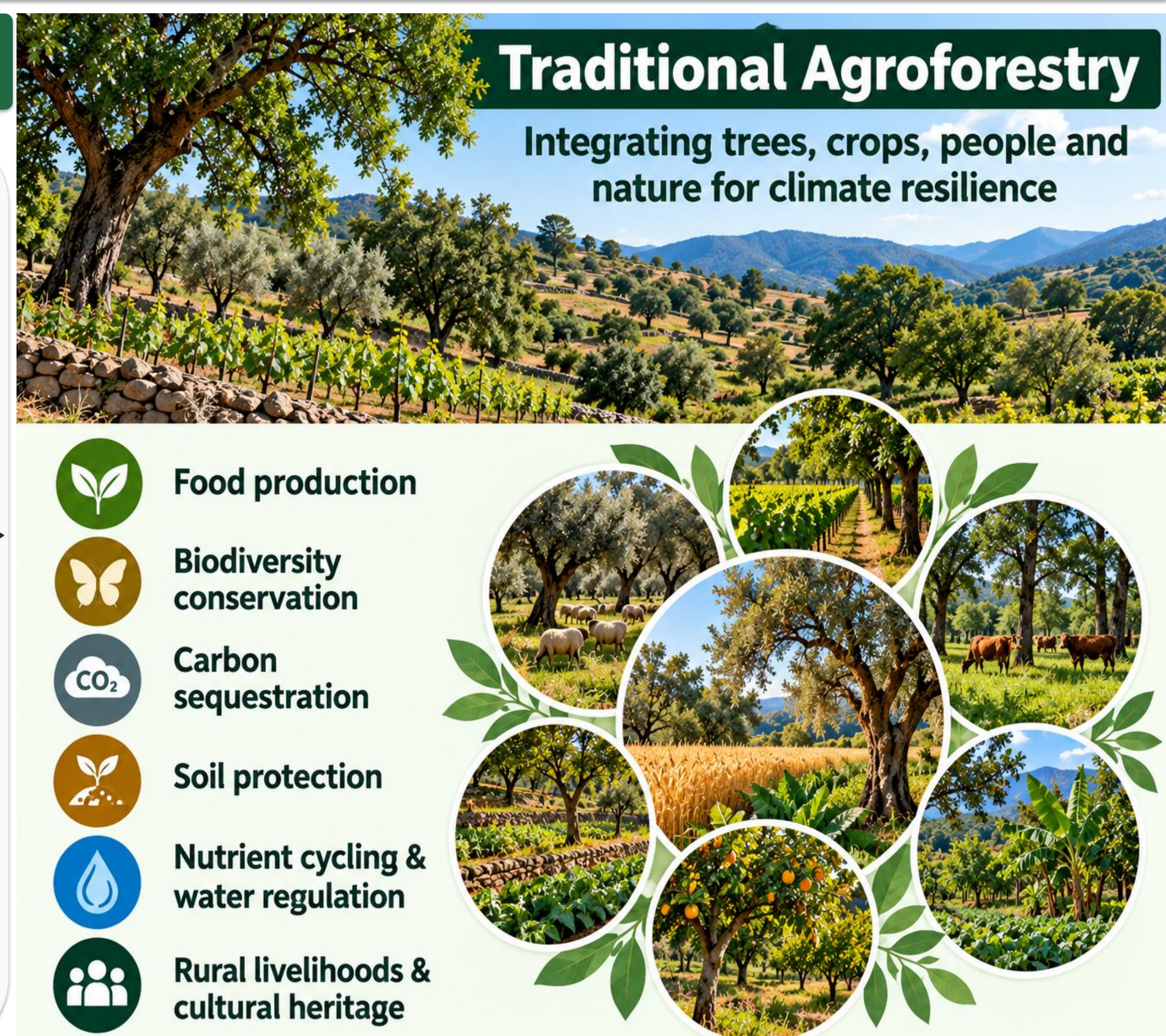
Aim: synthesize scientific evolution and assess contributions to adaptation, resilience and ecosystem functioning.

2. METHODS

**Systematic review
bibliometric analysis following PRISMA**

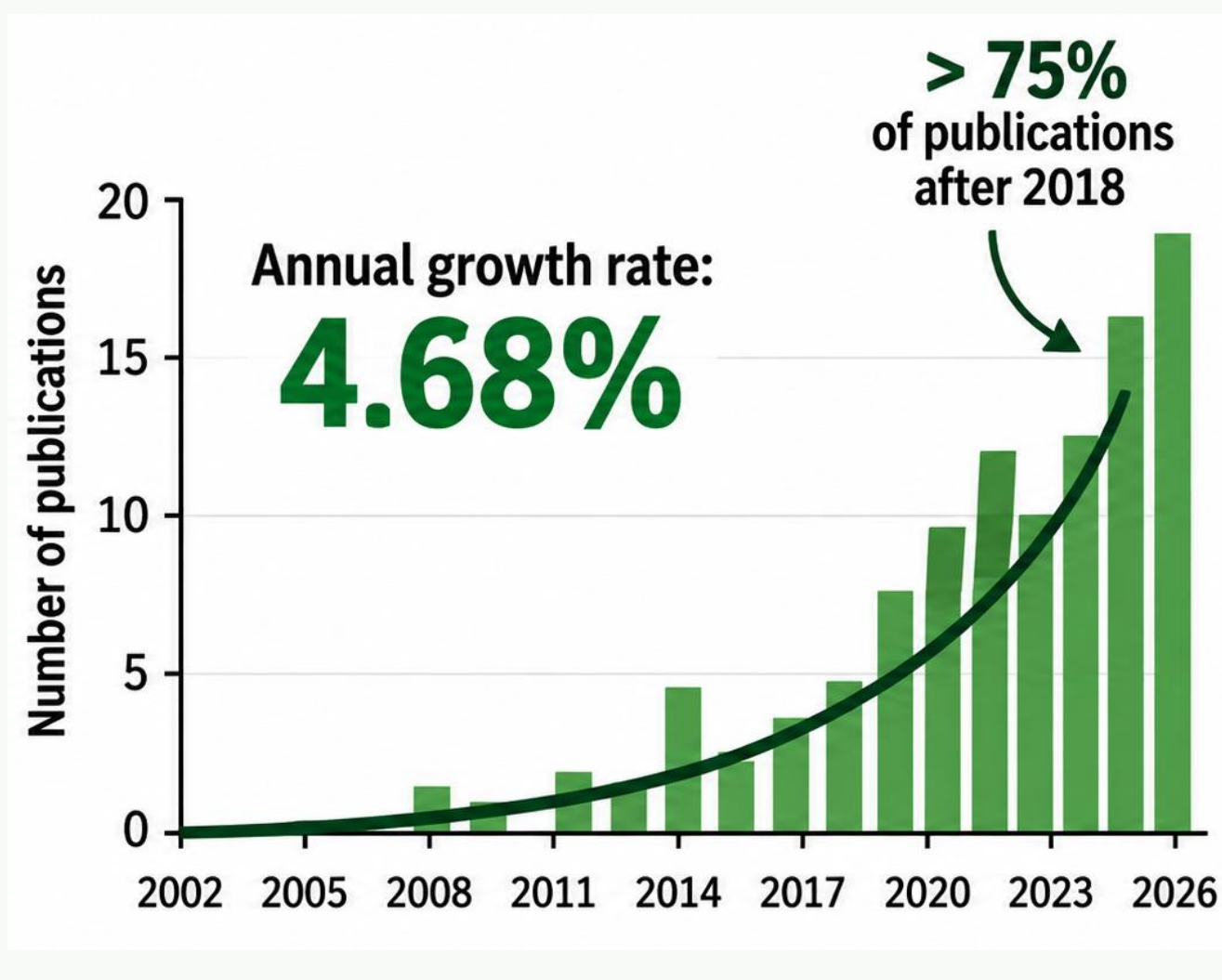
- DATABASES** Scopus + Web of Science
- DESCRIPTORS** “traditional agroforestry” “agroforestry” “chestnut”
- SCREENING** Identification → eligibility → inclusion (PRISMA 2020)
- FINAL DATASET** 70 documents from 51 scientific sources
- ANALYSIS** Bibliometrix (R): trends, citations, geography, themes, emerging directions

Analysis period: 2002–2026

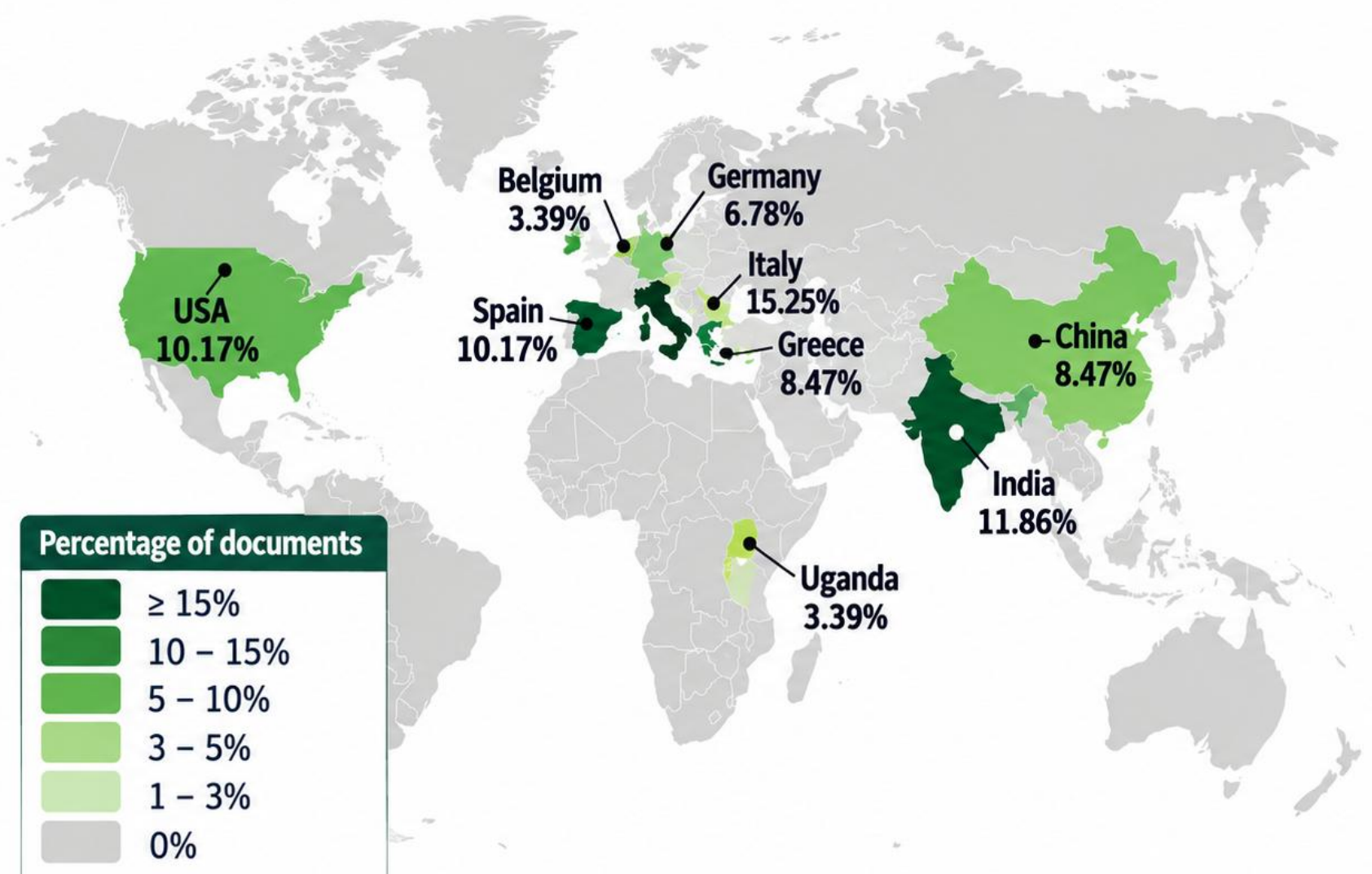


3. RESULTS

3.1 Publication



Distribution of the 70 documents included in the review (2002–2026)



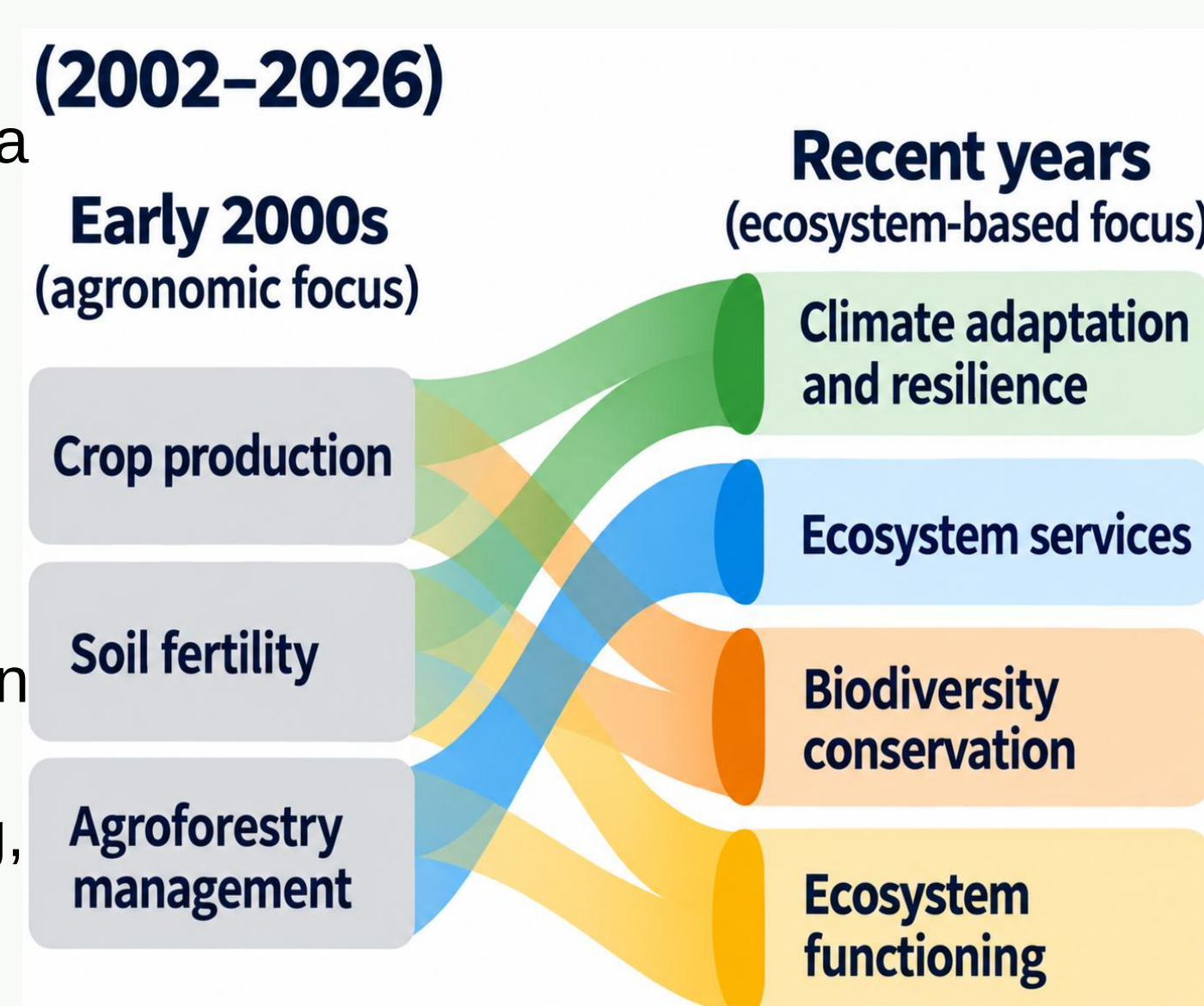
Top contributing countries (n = 70)

Rank	Country	Percentage (%)
1	Italy	15.25%
2	India	11.86%
3	Spain	10.17%
4	USA	10.17%
5	China	8.47%
6	Greece	8.47%
7	Germany	6.78%
8	Belgium	3.39%
9	Uganda	3.39%

Traditional agroforestry research has expanded markedly since 2018, reflecting its growing relevance to ecosystem science and climate adaptation.

3.2 Evolution of the research focus

The literature reveals a clear transition from predominantly agronomic and production-oriented perspectives toward ecosystem-based approaches centred on climate adaptation, ecosystem functioning, and resilience



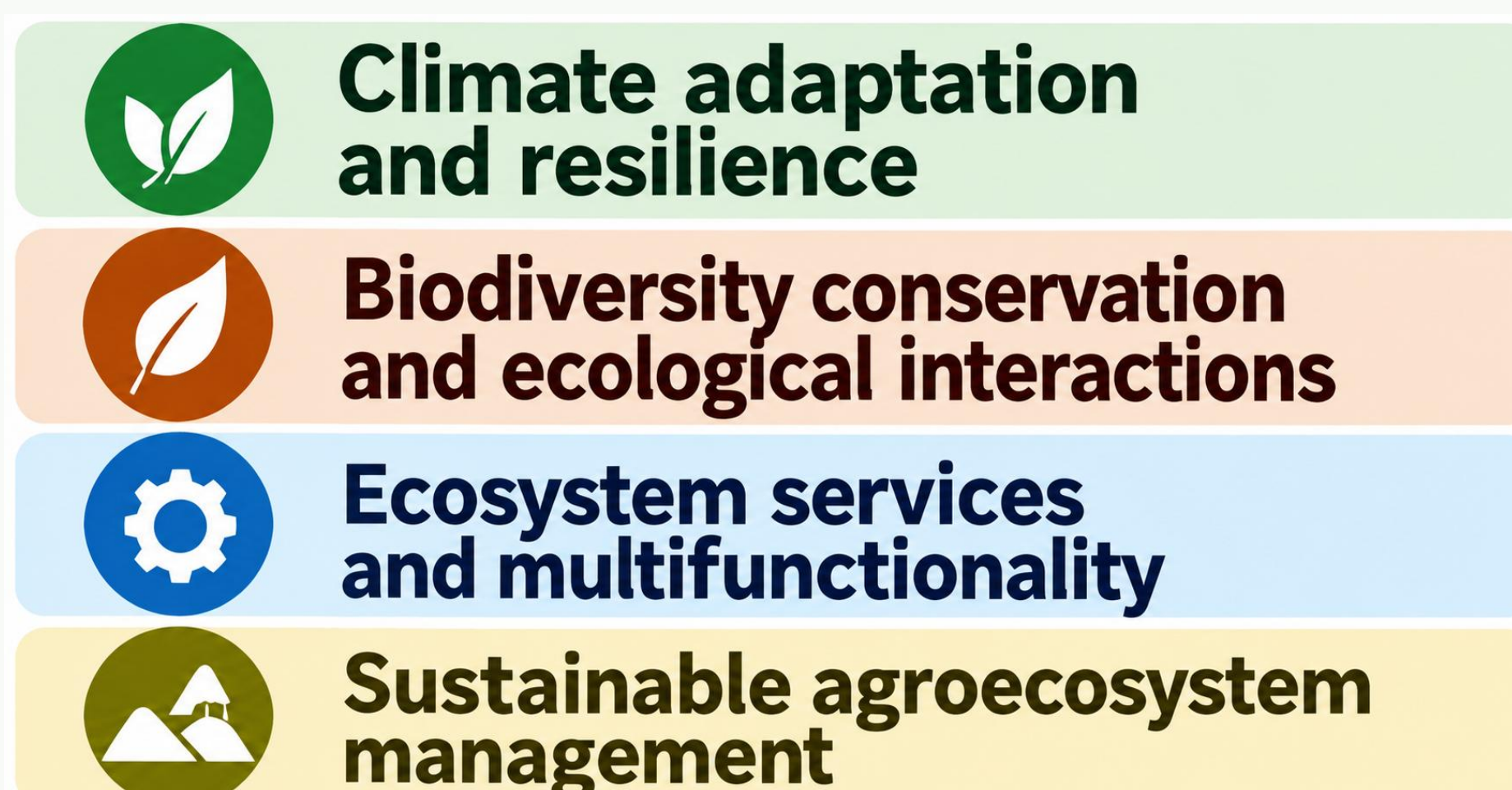
3.3 Evidence base

70 documents
51 scientific sources
25 Years covered*

*Publications span 2002–2026. The review combines bibliometric mapping with systematic synthesis.

No annual publication counts are displayed here because the submitted abstract reports aggregate growth metrics rather than the yearly series.

3.4 Four core research domains



Traditional agroforestry integrates production and ecological functions within the same landscape.

3.5 Mechanisms supporting stability and adaptive capacity



Traditional agroforestry connects food production, biodiversity and ecosystem functioning, strengthening resilience to environmental change

4. INTERPRETATION

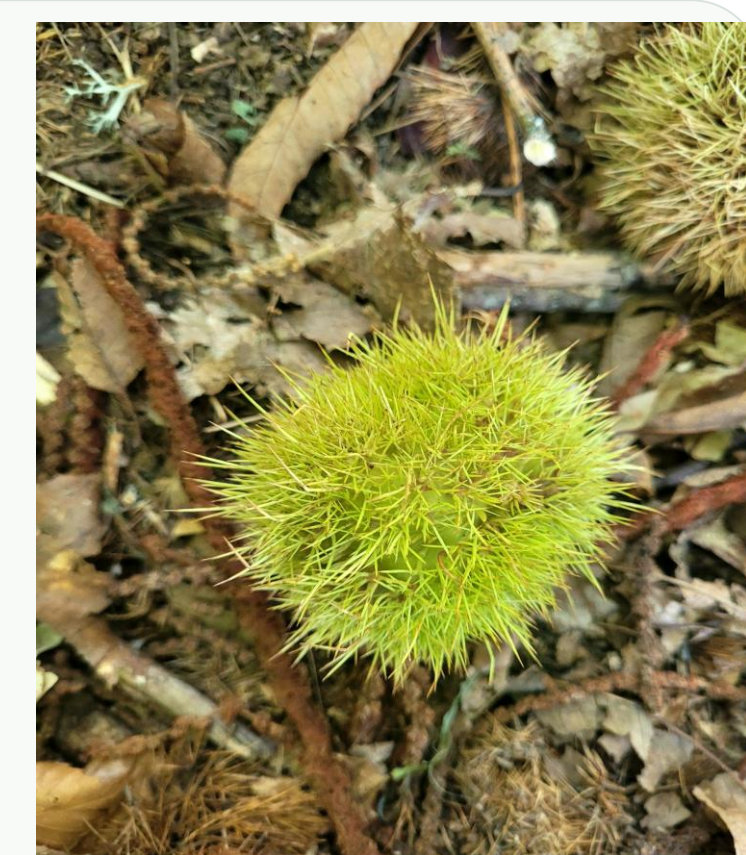
What the review indicates

- Traditional agroforestry systems are increasingly recognized as multifunctional socioecological systems that integrate productive and ecological functions.
- Ecosystem services and ecological interactions emerge as key mechanisms linking traditional agroforestry to ecosystem resilience and adaptive capacity.
- Diversified systems can support adaptation to environmental change.

Traditional landscapes as socioecological infrastructures

The synthesis highlights traditional agroforestry as a landscape-level strategy that integrates ecosystem functioning, resilience, and adaptation to global environmental change.

Chestnut agroforestry represents a distinct strand within the broader traditional agroforestry literature, with *Castanea sativa* recurring among author keywords. Rather than forming an isolated research domain, chestnut-related studies connect with wider themes of ecosystem functioning, biodiversity conservation, ecosystem services, and climate resilience.



5. CONCLUSIONS

- Scientific production on traditional agroforestry has grown steadily, with >75% of publications concentrated after 2018, **reflecting increasing scientific interest in its ecological roles.**
- The literature **shows a clear shift from agronomic and production-oriented perspectives** toward ecosystem-based approaches, emphasizing climate adaptation, ecosystem functioning, biodiversity and resilience.
- Four **interconnected domains** structure the field: climate adaptation/resilience, biodiversity conservation, ecosystem services/multifunctionality, and sustainable agroecosystem management.
- TAS emerge as **multifunctional socioecological infrastructures, integrating production, biodiversity conservation and ecosystem services** while supporting adaptive capacity and resilience under global environmental change.

❖ **Take-home message: Traditional agroforestry is evolving from a production-centered practice into a key socioecological strategy for climate adaptation, ecosystem resilience and sustainable land management.**

Selected references: Jose, S. (2009). Agroforestry Systems 76(1):1–10. doi:10.1007/s10457-009-9229-7
Wolz et al. (2018). Global Change Biology 24(3):883–894. doi:10.1111/gcb.13986
Study Scope Image: Authors' own elaboration with AI-assisted graphic design (2026).

6. ACKNOWLEDGEMENTS

Funding / project context

TRANSFORM — “Back to the future: Traditional agroforestry systems as NbS to face multiple societal challenges” — Biodiversa+.

TRANSFORM project



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Conference abstract



CETRAD
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Fundação para a Ciência e a Tecnologia

biodiversa+
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