A systematic review of the socio-economic impacts of large-scale tree plantations for local communities

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A systematic review of the socio-economic impacts of large-scale tree plantations, worldwide

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Commodity production
Climate change mitigation
Landscape restoration

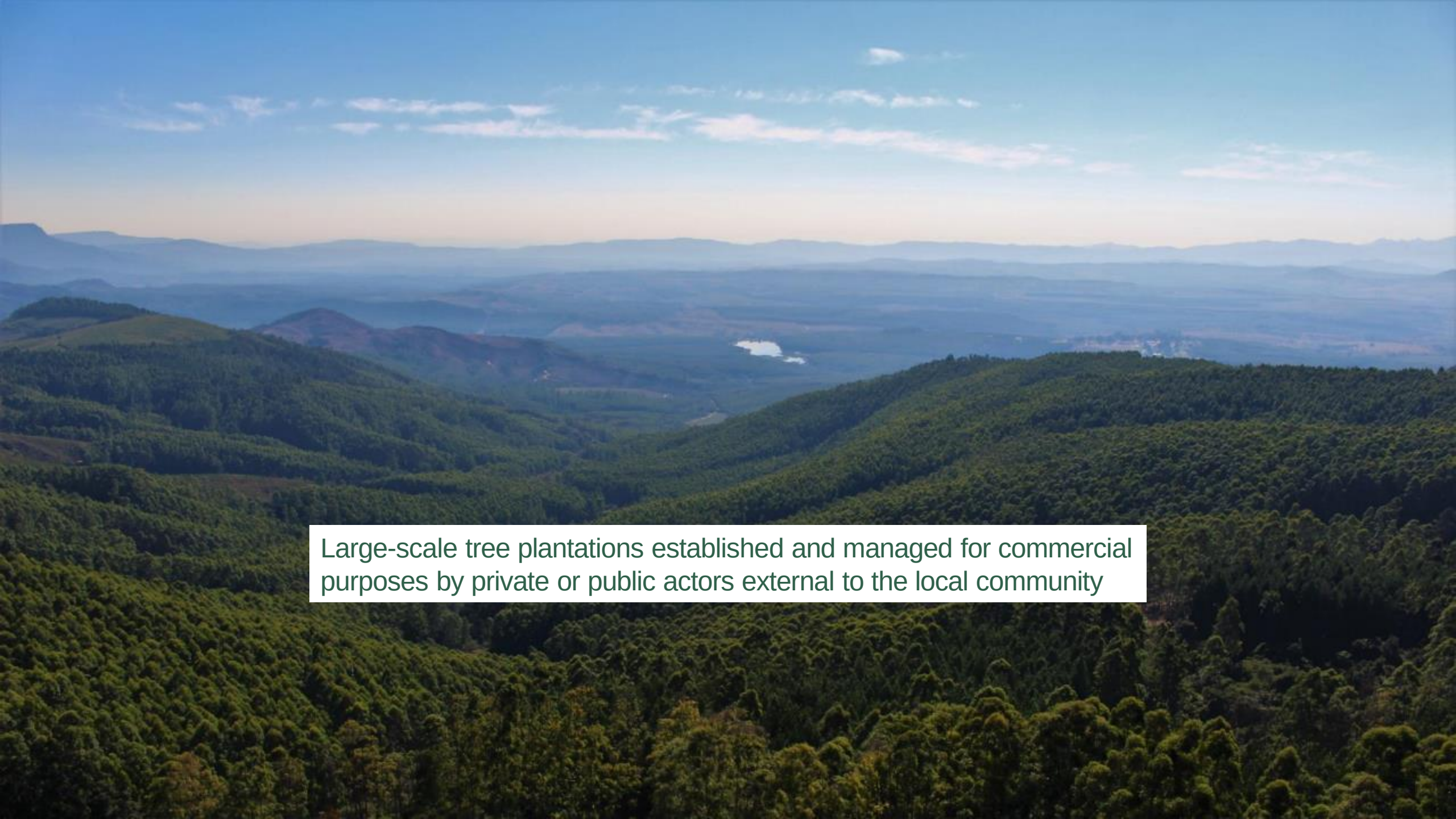
Modifies the previous human-environment system, creating a novel one

What are the direct and indirect socio-economic impacts of large-scale tree plantations for local communities?

How do they differ across contexts?

What are the patterns, biases and gaps in available literature?

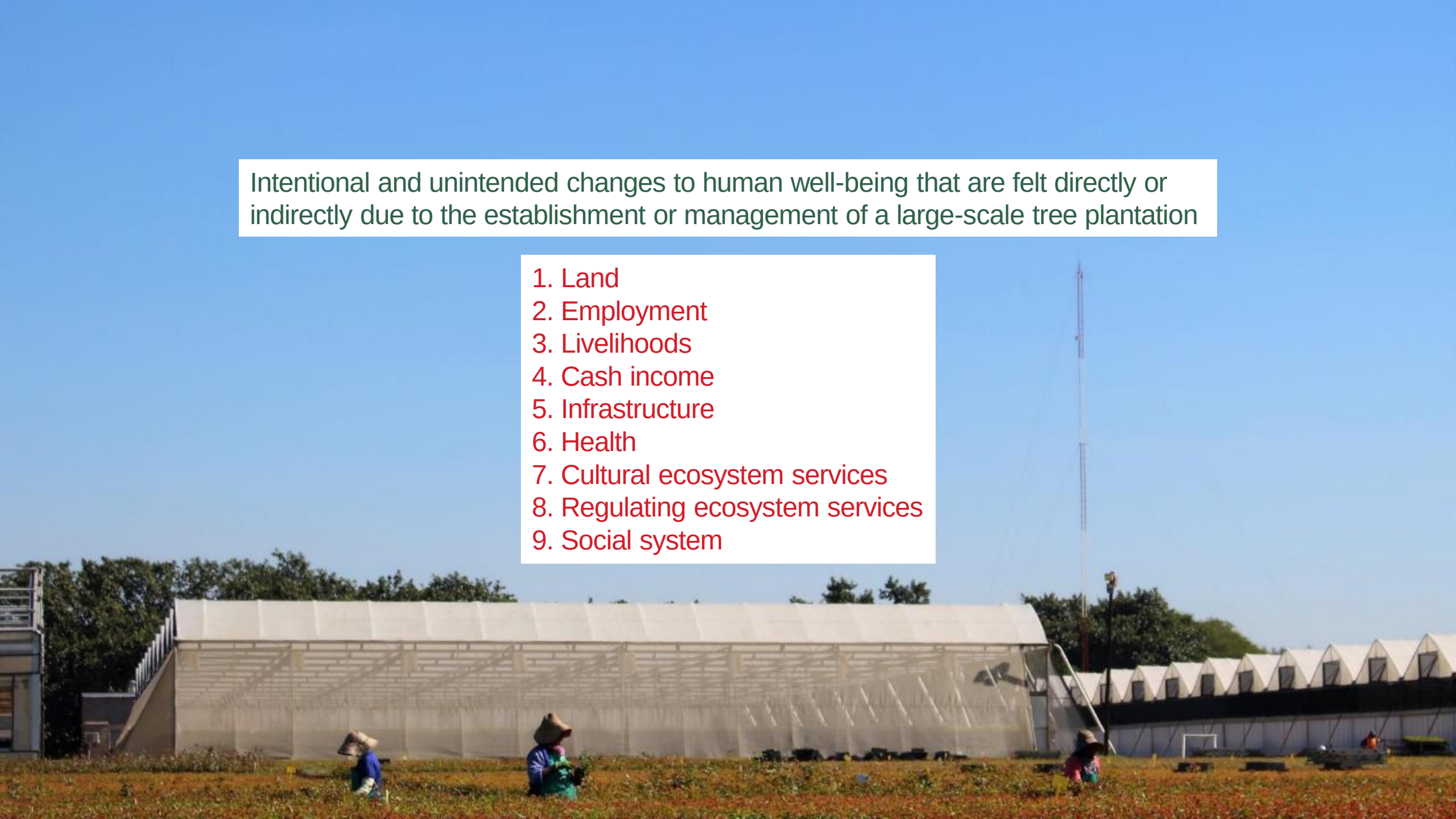
Local households and communities who reside inside or near to an area where at least one large-scale tree plantation is present



Large-scale tree plantations established and managed for commercial purposes by private or public actors external to the local community

Intentional and unintended changes to human well-being that are felt directly or indirectly due to the establishment or management of a large-scale tree plantation

1. Land
2. Employment
3. Livelihoods
4. Cash income
5. Infrastructure
6. Health
7. Cultural ecosystem services
8. Regulating ecosystem services
9. Social system



Systematic reviews focus on reducing selection biases common to conventional reviews

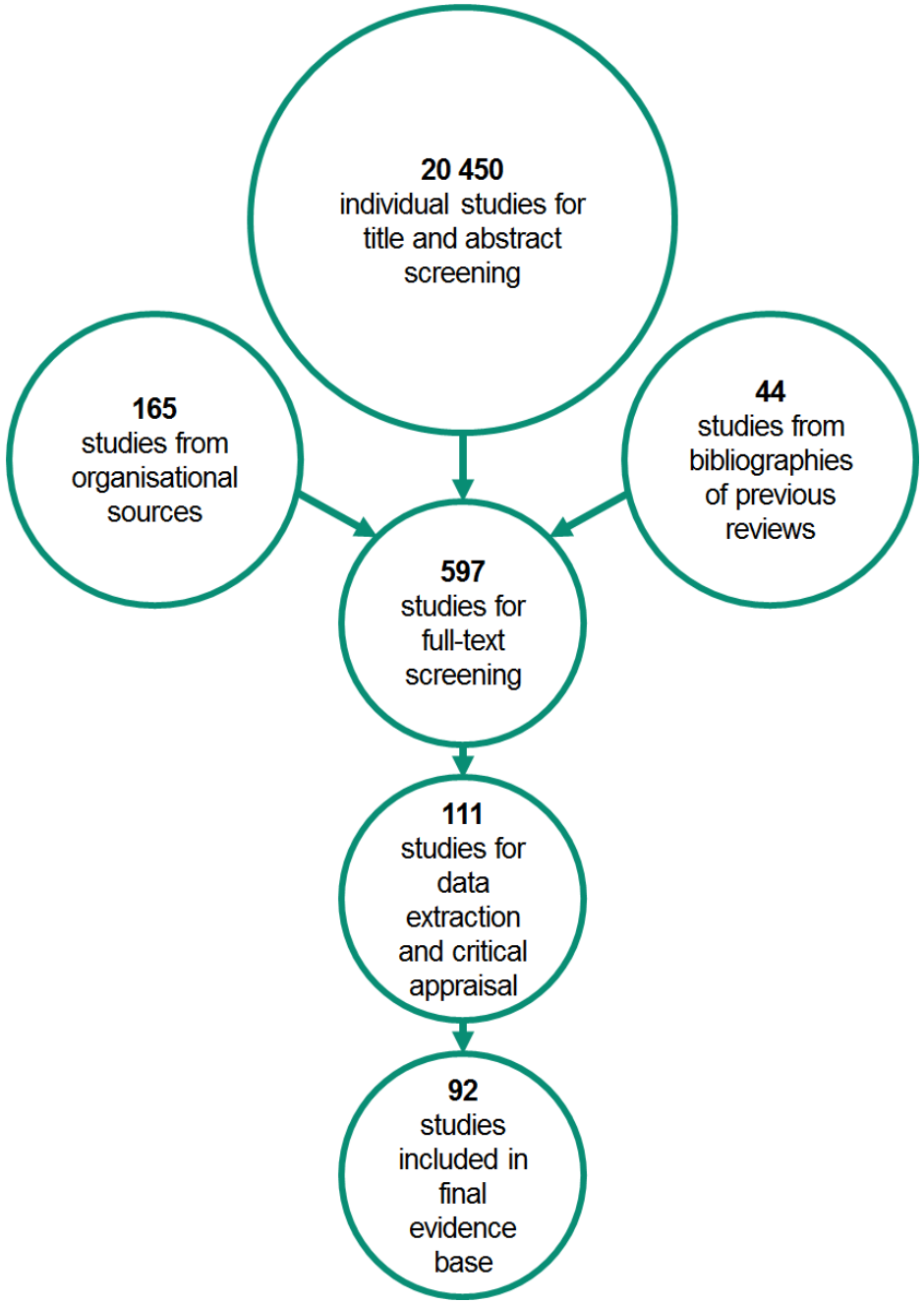
A detailed search strategy (Malkamäki et al., 2017)

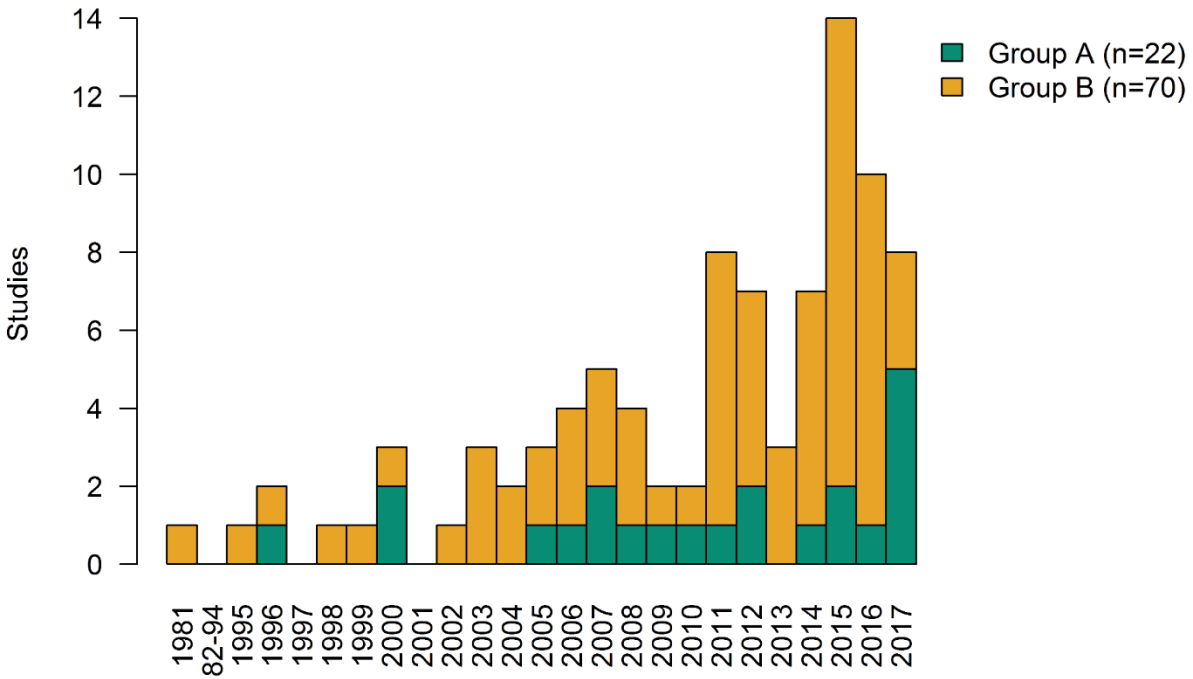
Key results and conclusions are logically derived and supported by the data and methods

92 studies [105 case studies] met this criterion

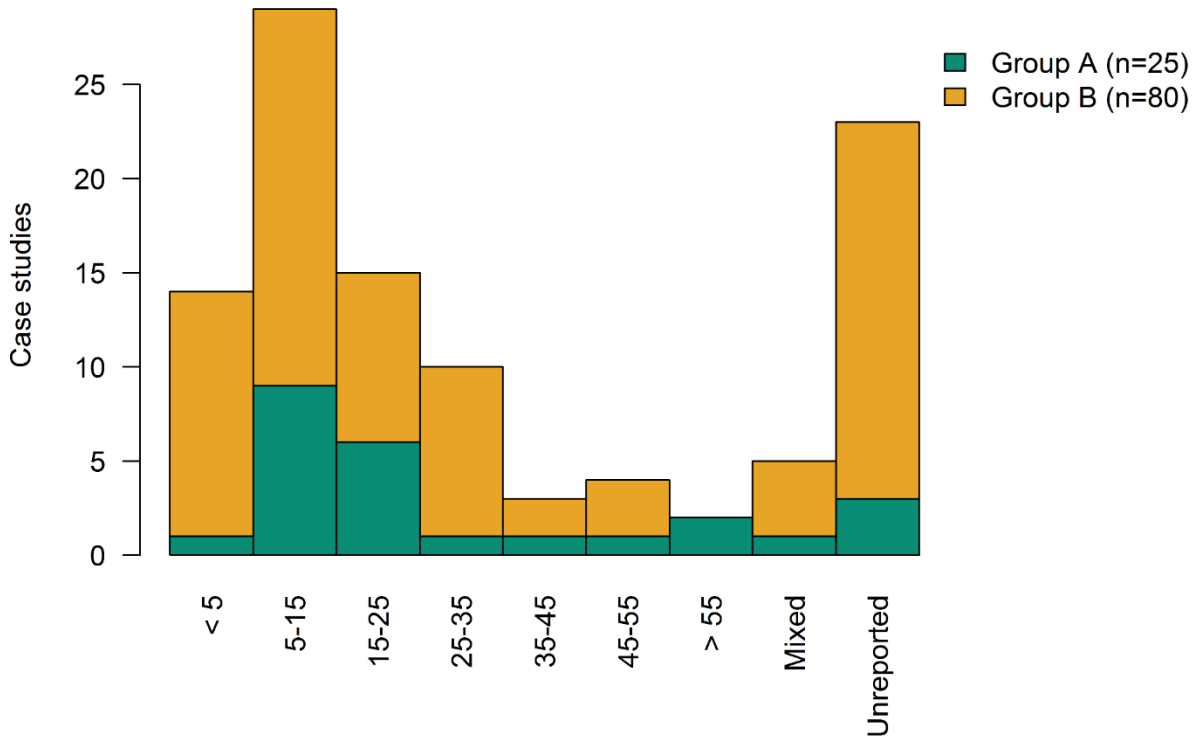
22 studies [25 case studies] to group A

70 studies [80 case studies] to group B

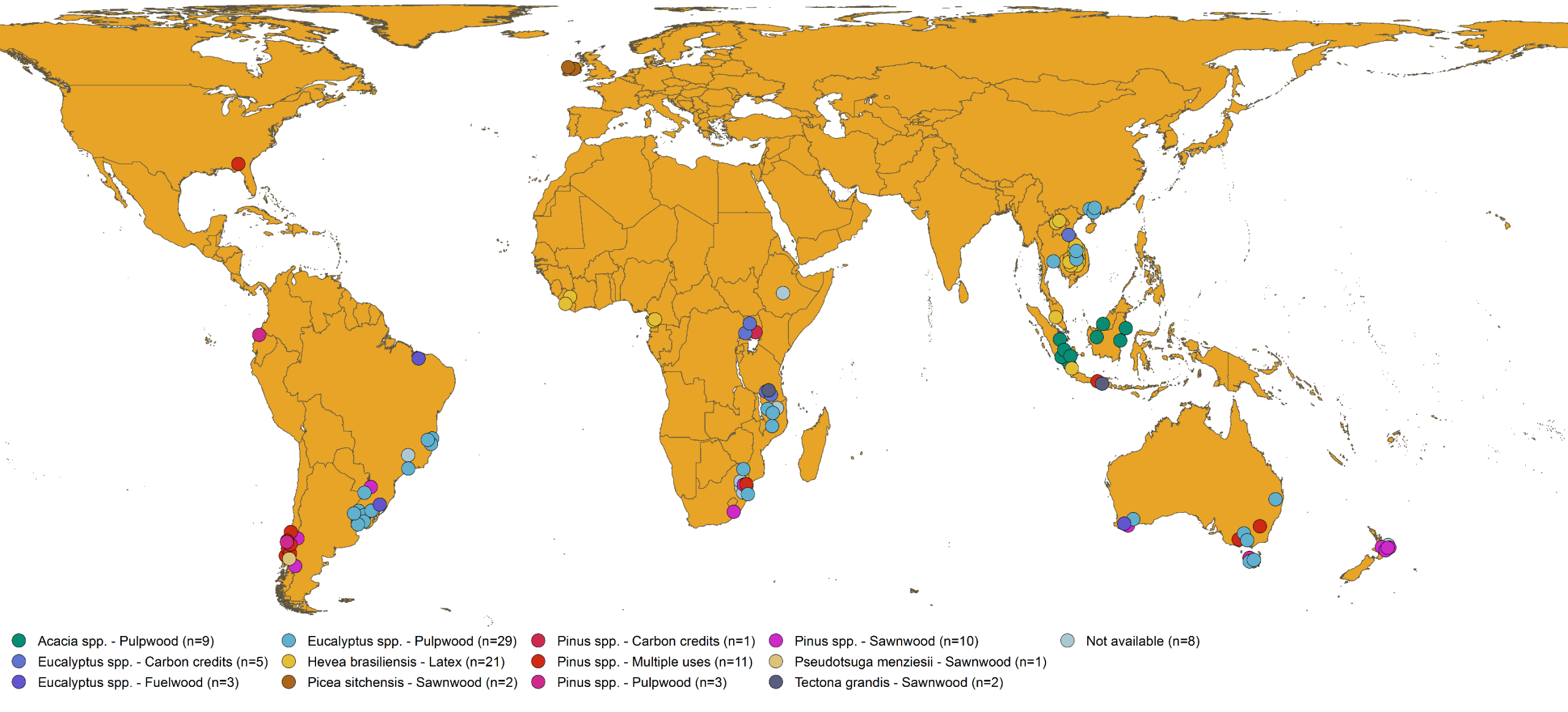




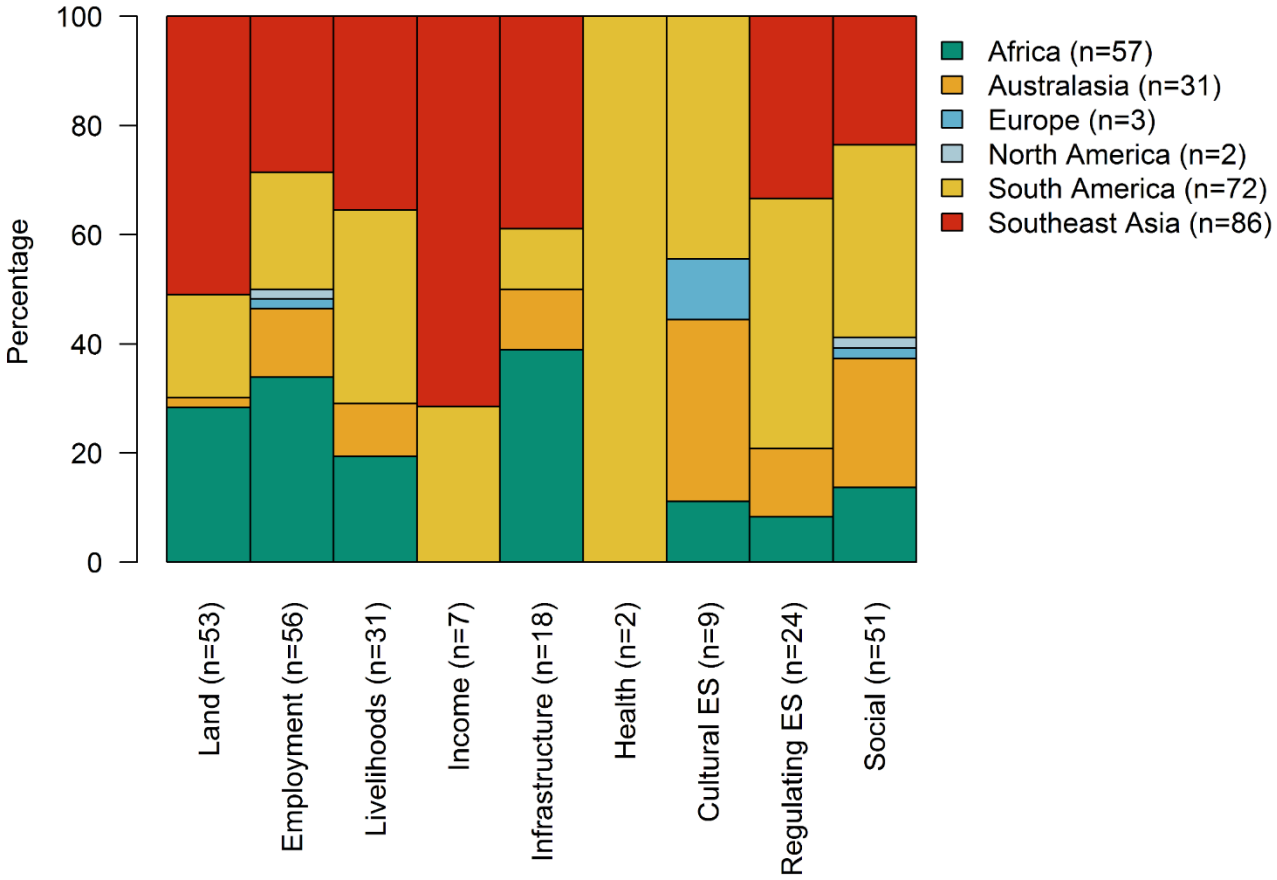
Publication years of studies



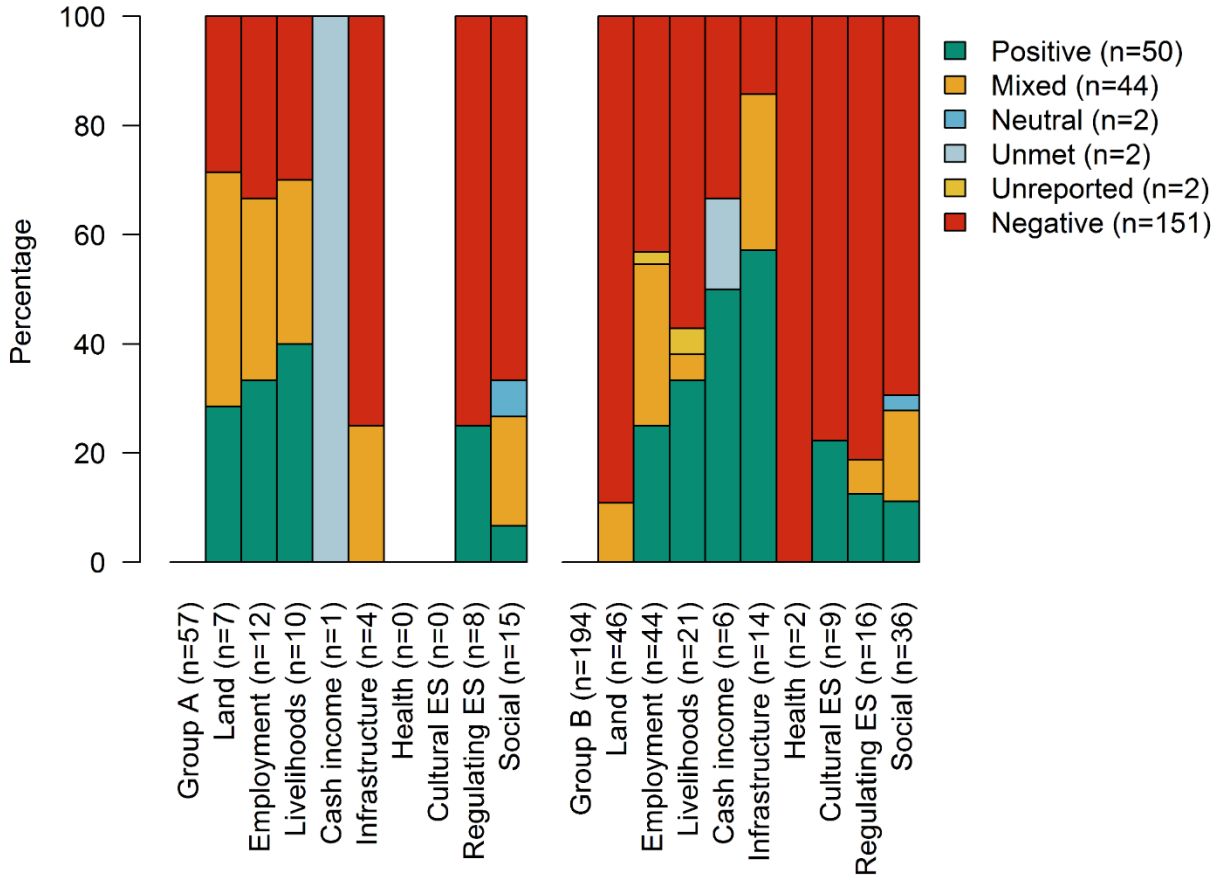
Time from plantation establishment to data collection

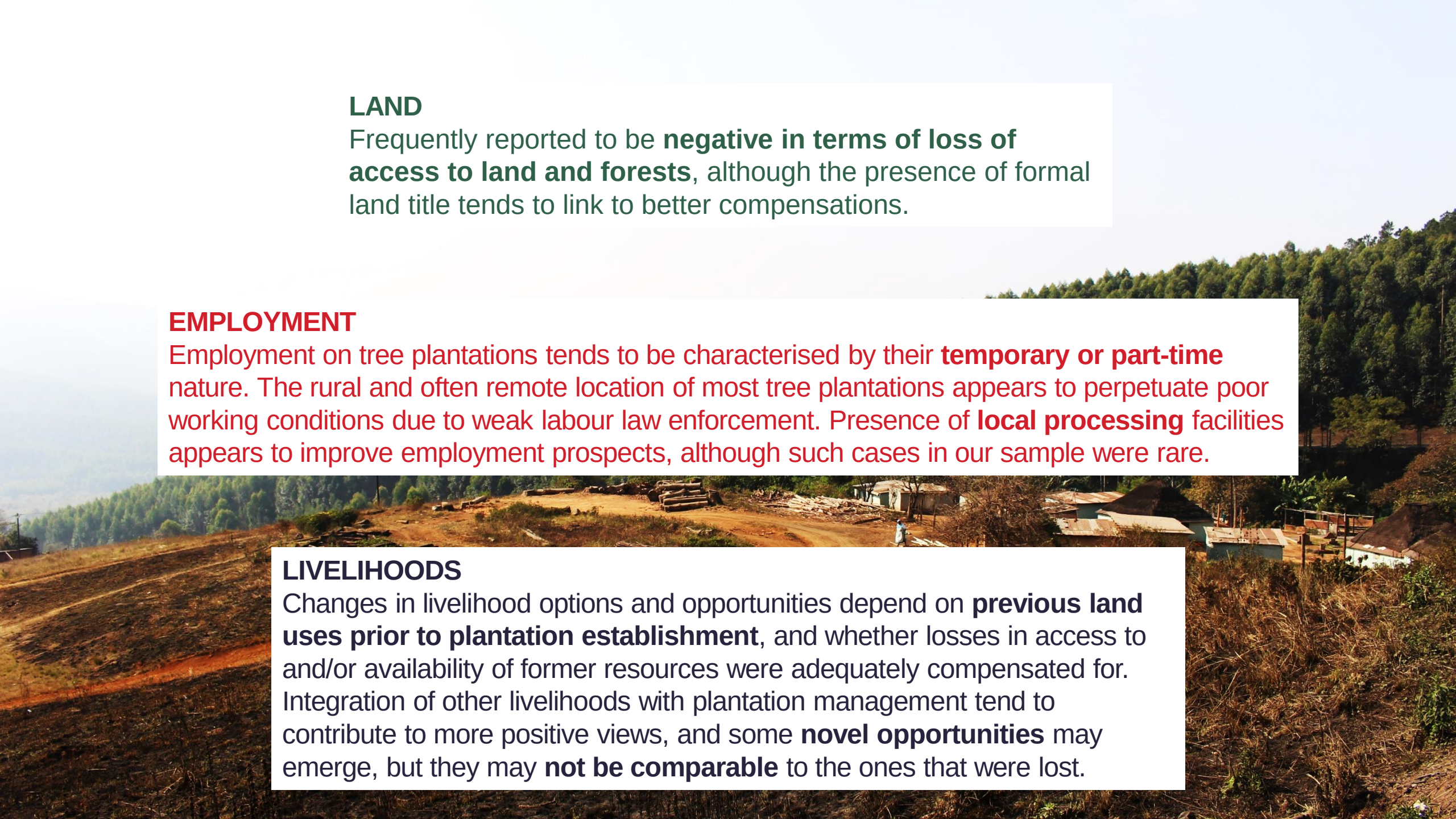

Acacia spp. - Pulpwood (n=9)
Eucalyptus spp. - Carbon credits (n=5)
Eucalyptus spp. - Fuelwood (n=3)
Eucalyptus spp. - Pulpwood (n=29)
Hevea brasiliensis - Latex (n=21)
Picea sitchensis - Sawnwood (n=2)
Pinus spp. - Carbon credits (n=1)
Pinus spp. - Multiple uses (n=11)
Pinus spp. - Pulpwood (n=3)
Pinus spp. - Sawnwood (n=10)
Pseudotsuga menziesii - Sawnwood (n=1)
Tectona grandis - Sawnwood (n=2)
Not available (n=8)

Geographical distribution of impacts by category



Share of impacts by group and category





LAND

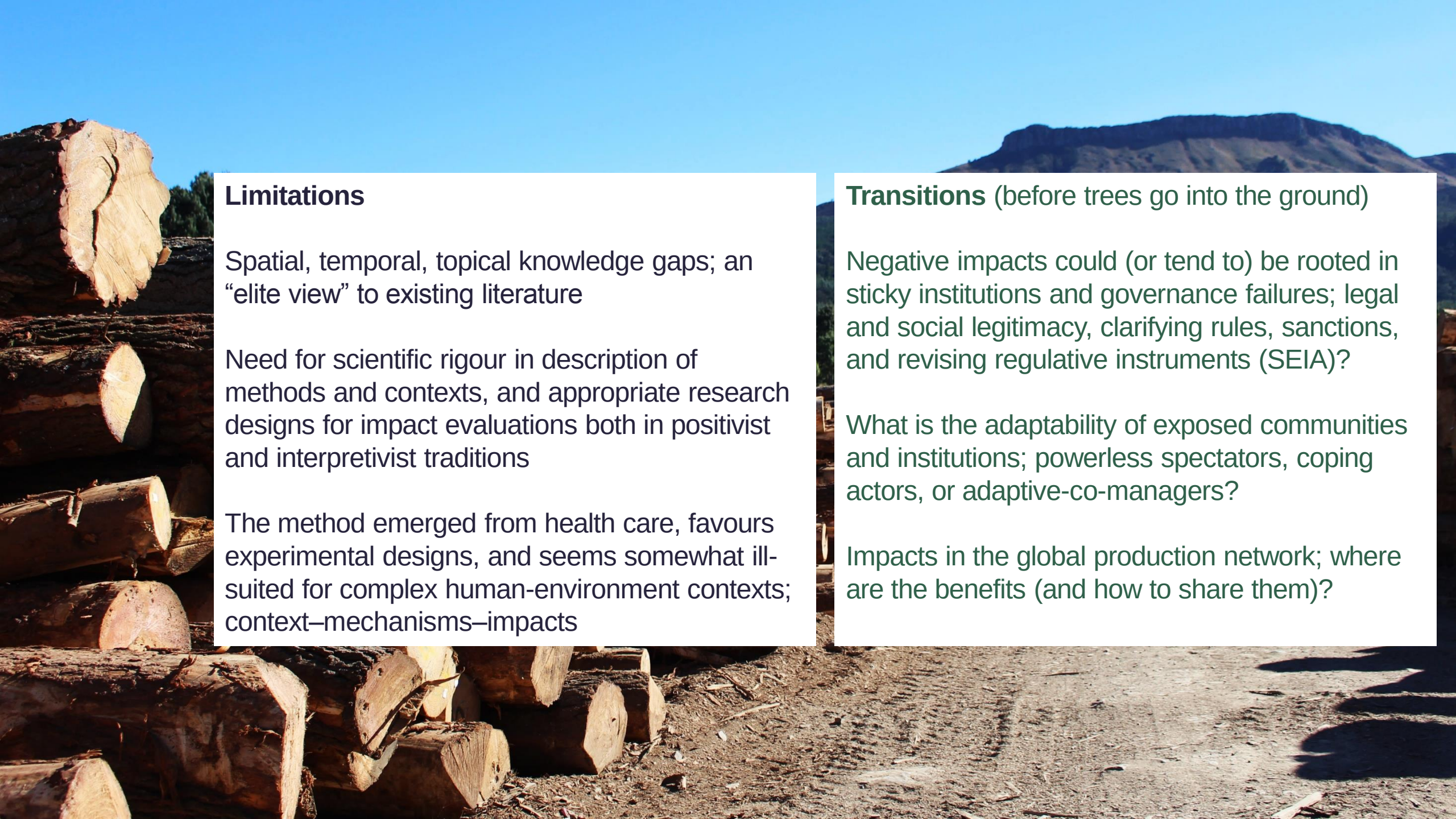
Frequently reported to be **negative in terms of loss of access to land and forests**, although the presence of formal land title tends to link to better compensations.

EMPLOYMENT

Employment on tree plantations tends to be characterised by their **temporary or part-time** nature. The rural and often remote location of most tree plantations appears to perpetuate poor working conditions due to weak labour law enforcement. Presence of **local processing** facilities appears to improve employment prospects, although such cases in our sample were rare.

LIVELIHOODS

Changes in livelihood options and opportunities depend on **previous land uses prior to plantation establishment**, and whether losses in access to and/or availability of former resources were adequately compensated for. Integration of other livelihoods with plantation management tend to contribute to more positive views, and some **novel opportunities** may emerge, but they may **not be comparable** to the ones that were lost.



Limitations

Spatial, temporal, topical knowledge gaps; an “elite view” to existing literature

Need for scientific rigour in description of methods and contexts, and appropriate research designs for impact evaluations both in positivist and interpretivist traditions

The method emerged from health care, favours experimental designs, and seems somewhat ill-suited for complex human-environment contexts; context–mechanisms–impacts

Transitions (before trees go into the ground)

Negative impacts could (or tend to) be rooted in sticky institutions and governance failures; legal and social legitimacy, clarifying rules, sanctions, and revising regulative instruments (SEIA)?

What is the adaptability of exposed communities and institutions; powerless spectators, coping actors, or adaptive-co-managers?

Impacts in the global production network; where are the benefits (and how to share them)?