Towards the Implementation of Natural Climate Solutions: A Systematic Review and Evidence Mapping

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Abstract

NCS opportunity (Griscom et al., 2017)

Figure 1. Emerging research points to substantial greenhouse gas mitigation opportunities for natural climate solutions (NCS) 
(figure 1, Griscom et al., 2017)

Despite large quantifications of the potential biophysical and carbon benefits, there remain uncertainties, few estimates capture the socio-economic bounds, and uptake is slow

Enabling factors needed for implementation, co-benefits, and trade-offs are underrepresented in global narratives

Our research seeks to:
1. Clarify the definition of natural climate solutions
2. Review and map the literature to understand current evidence base around NCS implementation, research trends, and opportunities, gaps, and biases
3. Reflect on dimensions that influence implementation
4. Propose a flexible framework for operationalizing NCS

References


Background

• NCS have high potential (Figure 2, Griscom et al., 2017)
• Rates of ecosystem conversion and associated emissions remain alarming (FAO and UNEP, 2020)
• Understanding the evidence base around implementation can enable better communication (Walsh et al., 2020; Malhi et al., 2020)
• With the body of climate literature rapidly expanding, systematic knowledge generation is valuable (Minx et al., 2017)

Method

Search query

TITLE-ABS-KEY ( forest OR savanna* OR grassland OR wetland OR peat OR peatland OR mangrove OR "agricultural land" AND ( "protected" OR "conserv*" OR avoid* OR "restora*" OR "rehabilitat*" OR "recovery" OR "managed" OR sustainable* ) AND ( carbon OR co2 OR "climate change" OR emission* OR "energy OR gey OR greenhouse gas" OR "global warming"") AND ( "vapor*" OR "sequestr*" OR storage OR sink OR mitigat* OR "redu*" ) AND ( climate OR energy OR gey OR "greenhouse gas" OR "global warming") AND ( "vapor*" OR "sequestr*" OR storage OR sink OR "mitigat* OR "redu*" ) AND ( climate OR energy OR gey OR "greenhouse gas" OR "global warming") AND ( "vapor*" OR "sequestr*" OR storage OR sink OR "mitigat* OR "redu*" ) AND ( climate OR energy OR gey OR "greenhouse gas" OR "global warming")

Platforms: Web of Science, Scopus
• Limited to peer-reviewed literature
• Developed codebook of factors (institutional, social, environmental, economic, technical, financial)

Initial results: 3145 documents

Post-screening: 363 documents

Final database: [?] documents

Preliminary Insights

As the review is still underway the below are tentative and subject to change

• Majority of studies are from post-2010
• Large focus on forests and REDD+ in existing literature
• Wetlands, peatlands, and grasslands are underresearched
• Most literature on grasslands is on China and Mongolia
• Enabling factors commonly interact or may be conditional
• Factors mentioned may depend on context; e.g. recognition of land rights is noted in studies on areas where this is contentious