A governance framework for the design and evaluation of tree planting schemes

Weldesemaet, Y. T., Wilson, J. R. U. & Dehnen-Schmutz, K

Published PDF deposited in Coventry University's Repository

Original citation:
Weldesemaet, YT, Wilson, JRU & Dehnen-Schmutz, K 2023, 'A governance framework for the design and evaluation of tree planting schemes', Forest Policy and Economics, vol. 152, no. July, 102980. https://doi.org/10.1016/j.forpol.2023.102980

DOI 10.1016/j.forpol.2023.102980
ISSN 1389-9341

Publisher: Elsevier

© 2023 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/bync-nd/4.0/).
This work is supported by a Global Challenges Research Fund (GCRF) PhD studentship from Coventry University, Centre for Agroecology, Water and Resilience (CAWR). JW thanks the South African Department of Forestry, Fisheries and the Environment (DFFE) for funding, noting that this publication does not necessarily represent the views or opinions of DFFE or its employees. The authors are thankful to Carlos Ferriera for his constructive comments to improve the quality of the paper. We are particularly grateful to the reviewers for the positive feedback and helpful comments.

Forest Policy and Economics 152 (2023) 102980

Contents lists available at ScienceDirect

Forest Policy and Economics

journal homepage: www.elsevier.com/locate/forpol

A governance framework for the design and evaluation of tree planting schemes

Tibebe Weldesemaet Yitbarek [a,*], John R.U. Wilson [b,c], Katharina Dehnen-Schmutz [a]

[a] Centre for Agroecology, Water and Resilience, Coventry University, Coventry, UK
[b] South African National Biodiversity Institute, Kirstenbosch Research Centre, Cape Town, South Africa
[c] Centre for Invasion Biology, Department of Botany and Zoology, Stellenbosch University, Stellenbosch, South Africa

ARTICLE INFO

Keywords:
Elements
Framework
Governance process
Influencing factor
Structural phase

ABSTRACT

Tree planting has excellent potential to alleviate the profound negative impacts of global environmental change. However, tree planting schemes often involve complex social, political, economic, technical, and biological dimensions. In improving the performance of tree planting schemes, governance tools and frameworks have been developed by different stakeholders over the past years. In this study, we systematically reviewed existing literature and synthesised qualitative information on the governance of tree planting schemes. We searched five databases, and, after screening the abstracts and full texts, we identified 93 publications from six continents. The publications contained relevant insights on the governance of tree planting scheme practices, processes, tools, frameworks, and guidelines. We identified key issues and thematic concepts and then categorised them into five overarching structural phases or processes (initiation, planning, intervention, monitoring and evaluation, and sustainability) and four influencing factors (actors, resources, information, and legal instruments) with their governance elements. Using these, we propose a governance process framework that we applied to several examples of tree planting schemes worldwide.

The framework distinctly integrates the structural phases and influencing factors, which most users can adapt to different tree planting scheme contexts, linking governance inputs and processes. We argue that the framework's flexibility, clarity, and inclusiveness can help guide the governance of tree planting schemes and how they can best address the challenges of global change and sustainable development. Furthermore, our framework can be applied to varying contexts, in whole or in part, depending on the scheme type and purpose. Specifically, the framework can be applied formally and systematically to assess, analyse, monitor, and evaluate governance processes; or plan new schemes.

1. Introduction

Tree planting[1] is widely seen as an important option to address the profound negative impacts of global environmental change and ensure sustainable development. This view has been reflected in the past few decades through the initiation of numerous **tree planting schemes** as part of multilateral environmental agreements like the Convention on Biological Diversity, United Nations Convention on Climate Change, and the New York Declaration on Forests (Brancalion and Holl, 2020). Examples of these schemes include the One Trillion Trees Campaign, Great Green Wall, Green Belt Movement and Plant a Billion Trees campaign (Chazdon and Guariguata, 2016; Van Oosten et al., 2014). These schemes operate from local (e.g. Green Belt Movement in rural Kenya) to regional (e.g. the Great Green Wall in the Sahel) to global scales (e.g. the Trillion Trees initiative (Holl and Brancalion, 2020; Worku et al., 2017)). However, few planting schemes have achieved the desired long-term goals because either the trees did not grow or social, economic and environmental challenges were not addressed (Duguma et al., 2020; Le et al., 2012). It has been argued that tree planting schemes do not generally consider the issues' multidimensionality (Le et al., 2015). Moreover, most of the failed schemes have had a narrow and short-term focus on planting trees rather than the multifaceted and sustainable goals of mitigating climate change, conserving biodiversity, and addressing socioeconomic challenges (Holl and Brancalion, 2020).

* Corresponding author at: Centre for Agroecology Water and Resilience, Wolston Ln, Ryton-on-Dunsmore, Coventry CV8 3LG, UK.
E-mail address: Yitbarekt.w@gmail.com (T.W. Yitbarek).

[1] Terms in bold are defined in the glossary.

https://doi.org/10.1016/j.forpol.2023.102980
Received 14 October 2022; Received in revised form 20 April 2023; Accepted 23 April 2023
Available online 25 May 2023
1389-9341/© 2023 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

Governance deals with the decisions to plant trees and how such decisions evolve through the process of schemes from initiation to planning, intervention, monitoring and evaluation, and sustainability to achieve the anticipated goals (Schultz et al., 2014; Mansourian, 2016, 2017). This **governance process** involves actors influencing tree planting schemes, the legal instruments they use to make decisions, and the landscape context within which these schemes are implemented (Pinto et al., 2014; Van Oosten et al., 2014). The focus of a governance process for tree planting schemes is not the technical and biophysical aspects per se but the social, cultural, economic, and political characteristics that ensure a conducive environment and the achievement of goals (Guariguata and Brancalion, 2014; Le et al., 2012). Adapting governance frameworks to tree planting schemes requires considering the spatial and temporal landscape context (Pistorius and Freiberg, 2014; Richardson and Lefroy, 2016; Wiegant et al., 2022). This dynamic approach involves an adaptive response (i.e., observing the different governance arrangements, appropriating, contextualising, and integrating them), legal instruments (i.e., scrutinising the authority and legitimacy of current legal instruments), and accepted practices and forms of action (i.e., looking into past and current tree planting schemes' biophysical and socioeconomic practices and actions).

Various **governance frameworks** have been proposed to improve the performance of tree planting schemes (Ball et al., 2014; Chazdon et al., 2020; Coffey et al., 2020; Dawson et al., 2017; Mansourian, 2017; Miller et al., 2017; Pinto et al., 2014; van Oosten, 2013). However, there have been notable challenges in the uptake and application of the frameworks developed by these governance studies. First, most of these studies lack clarity in putting their conceptual and analytical frameworks in the practical, real-world language of tree planting scheme practitioners (Arts et al., 2012; Chazdon et al., 2020). Secondly, some frameworks are specific to a particular landscape or sector (Anguelovski and Carmin, 2011; Mansourian, 2017). Finally, a few have focused on normative considerations like participation and equity but did not provide a comprehensive framework linking governance inputs and processes to outcomes (Bennett and Satterfield, 2018; van Oosten, 2013). The complexity in developing a governance framework is also partly because most tree-planting schemes are initiated at the international and national levels while the implementation is local (Djenontin and Zulu, 2021). Moreover, the implementation of tree planting schemes is constrained by institutional, technical and historical factors that hinder the guidance provided by the governance frameworks (Hilger et al., 2013; Mansourian and Parrotta, 2019). Hence, there is a need to develop a governance process framework that addresses these challenges if the performance of future tree planting schemes is to be improved (Chazdon et al., 2020; Mansourian, 2016).

In this study, we systematically reviewed existing literature and synthesised qualitative information on the governance of tree planting schemes. We used the term 'tree planting' to refer to schemes with tree planting phases (including **afforestation**, **reforestation**, **ecosystem restoration**, **agroforestry**, and **assisted regeneration**) (FAO, 2012; Bettles et al., 2021; Lamb, 2013; Gann et al., 2019). We did not use the broader term ecological restoration unless schemes explicitly included a tree planting phase related to the prior mentioned concepts (Jones, 2013, 2017). We also did not use the term '**forest landscape restoration**' (Höhl et al., 2020; Stanturf et al., 2017) as this narrows the scope to planting trees on forest landscapes. However, our review identified studies that referred to forest landscape restoration (such as ((Ball et al., 2014; Chazdon et al., 2020; Filoso et al., 2017; Mansourian, 2017) as the most studied concept with a major tree planting phase currently.

Our study aims to develop a governance framework that addresses the gaps identified and that can guide how present and future schemes can design and evaluate their implementation, thereby improving the achievement of their goals. Following Clement (2010) and Ostrom (2010) Institutional Analysis Development Framework, the governance framework developed here focuses on the operational level, where the rules govern decisions on tree planting schemes. Our framework is intended for governments, institutions, organisations or groups implementing tree planting schemes on landscapes from micro watershed scale to transnational landscapes.

Glossary

Afforestation: the process of sowing tree seeds or planting seedlings on land not previously forested (FAO, 2012).
Agroforestry: a land-use system in which trees are grown in combination with agriculture on the same land (Bettles et al., 2021; Cardinael et al., 2020; Liu et al., 2019).
Assisted regeneration: an approach focused on actively supporting a natural forest's regrowth through associated activities on-site or in neighbouring landscapes (Shono et al., 2007).
Influencing factors: the factors that contribute to and influence the performance of the different phases of a scheme's governance (Ngwube, 2013).
Ecosystem restoration: a process that assists the recovery of a degraded, damaged or destroyed ecosystem to a historic ecosystem reference model (Gann et al., 2019).
Forest landscape restoration: a planned process that aims to regain ecological integrity and enhance human wellbeing in deforested or degraded forest landscapes (Stanturf et al., 2017).
Governance: the set of institutions, structures, processes, and mechanisms through which multiple actors collaborate, influence and coordinate their interdependent needs and interests and interactions with the environment at multiple scales (Tacconi, 2011).
Governance framework: an essential supporting structure with rules and practices guiding actors in achieving their objectives through accountability, transparency, fairness, authority and decision-making (Ingason et al., 2022; Klakegg et al., 2008).
Governance process: a mechanism that organises and defines roles and responsibilities, standards, organisational structure, goals, systems of control and evaluation; to facilitate the day-to-day management decisions that improve performance and achievements (Bingham et al., 2005; Muro and Jeffrey, 2008; Plummer et al., 2017; Begum, 2020; Chen et al., 2021).
Elements: a set of influencing factors that need to exist for measuring the quality of governance processes (Bennett and Satterfield, 2018; Mohanty and Sahu, 2012).
Reforestation: sowing tree seeds or planting seedlings on previously forested land (Lamb, 2013).
Scheme: the model of projects, programs, portfolios, and initiatives reduced to its essential elements, the basis of which can subsequently be developed and completed (Durieux and Fayl, 1998).
Structural phase: a management element of the schemes' implementation phases from start to completion (Osei, 2014).
Tree planting: a technique consisting of growing tree seeds into seedlings and transplanting these over an area for purposes like forestry, reclamation, or restoration (Flook, 2020).

2. Theoretical framework

It is increasingly recognised that advances in governance mean improving decision-making rules (e.g., responsiveness, equitablity, participation), structures (e.g., frameworks, arrangements) and processes (e.g., glossary for governance process), with analyses of governance becoming institutionalised and normative in theory and practice (Tacconi, 2011; Guariguata and Brancalion, 2014; Van Oosten et al., 2014). Governance tools (e.g., reforestation rules, restoration principles) and structures define the power and the management roles shaping the rules, procedures, and other informational guidelines. These tools and mechanisms guide by providing opportunities for aligning implementation and inclusion of different transcending governance concepts (Brancalion et al., 2013a, 2013b; Kozar et al., 2014; Mansourian, 2017).

Governance tools are widely used in environmental management and have been analysed concerning how they facilitate day-to-day management decisions and achievements (Bingham et al., 2005; Muro and Jeffrey, 2008; Plummer et al., 2017; Begum, 2020; Chen, 2020; Partelow et al., 2020; Chen et al., 2021). However, it is essential to separate management (i.e., day-to-day plans and actions that enable actors to perform the required functions) from governance (i.e., a system of multi-scale actors coordination to influence major decisions) (Lockwood et al., 2010; van Oosten, 2013). Bennett and Satterfield (2018) pointed out that for desired environmental outcomes, governance frameworks need to have four generalisable and distinct objectives that ought to be considered simultaneously across institutional (multi-actor process),

structural (arrangement within an organisation), and procedural (working plan prescriptions) elements: 1) effectiveness—the system's function is maintained to produce services; 2) equitability—a participatory process that produces fair socioeconomic outcomes; 3) responsiveness—the system can adapt to diverse contexts and changing situations; and 4) robustness—ensuring functional institutions persist, maintain performance, and cope with challenging issues.

The literature on the governance of tree planting schemes has identified at least three main tree planting scheme phases or **structural phases**. In these publications, these phases or structural phases are named differently, including 'stages or phases of implementation, hierarchical decision structures and implementation procedures' (Dawson et al., 2017; de Vente et al., 2016; Nilsson et al., 2016). Whatever they are called, these phases all refer to a scheme's implementation process that starts from the inception of the scheme's idea to the final phaseout. Accordingly, the first and predominant group of scholars focused on schemes' planning, implementation, and monitoring phases (Kersten et al., 1994; de Vente et al., 2016; Brancalion and Holl, 2020; Gregorio et al., 2020). The second group emphasised initiation, planning, intervention and monitoring (LoSchiavo et al., 2013; Fleischman, 2014; Djenontin et al., 2018; Eisenman et al., 2021). Finally, the third group merged some of these phases and only addressed initiation, intervention, and sustainability (Hodge and Adams, 2016; Mansourian, 2016; Coppus et al., 2019; Chazdon et al., 2020. This illustrates that having a structure that includes each phase of tree planting from the literature will make the scheme more predictable, resulting in a higher-quality outcome and a more legitimate process (Vogt and Abood, 2020).

Critical factors influence the effectiveness and sustainability of the governance of tree planting schemes (Foundjem-Tita et al., 2013; Garmestani and Benson, 2013; IUCN and WRI, 2014; Cadman et al., 2017; Djenontin et al., 2018; Dzebo, 2019). These factors include financial incentives, legal instruments, actors' integration, land resource, knowledge, and information (Adger et al., 2003; Bennett and Satterfield, 2018; Borrini-Feyerabend and Hill, 2015). These studies verified how the different factors influenced the various governance of tree planting schemes and how these influences are particular to the different structural phases.

Therefore, for the successful realisation of each structural phase, implementers of tree planting schemes need to consider the factors that determine the performance of each phase (Foundjem-Tita et al., 2013; Garmestani and Benson, 2013). The impact of these **influencing factors** can be specific to each structural phase yet equally critical for the overall governance of tree planting schemes (IUCN and WRI, 2014; Cadman et al., 2017; Djenontin et al., 2018; Dzebo, 2019).

3. Methods

Systematic reviews are a powerful technique to gather existing knowledge and synthesize all available research methods (De la De la Mora-De la Mora, 2022; Ellili, 2022; Sapkota et al., 2018). Such reviews are particularly suited to explore complex processes for which many sources of evidence are of different types, as in the case of governance studies. Accordingly, we followed the systematic review guidelines developed by Collins et al. (2015) and CEE (2018) to: 1) identify the search terms; 2) search the database; 3) screen and manage the accessed literature; and finally, 4) extract, synthesize and analyse the relevant information.

3.1. Identifying search terms and strings

The Population-Intervention-Comparator-Outcome (PICO) model was used to identify the relevant search terms (Table 1) (Collins et al., 2015; CEE, 2018; Garritty et al., 2021). The PICO model helps structure systematic review questions to enable a literature search of relevant citations (Dobbins, 2017; Pullin and Stewart, 2007). By making decisions transparent and the process repeatable, the PICO model helps reduce bias (or at least makes biases more overt), while ensuring the review is practical. The PICO model identifies the Population of interest (P), the Interventions implemented or being considered (I), the Comparator (what the intervention or implemented activity is being compared to) (C); and the Outcomes of the interventions (O) (Pullin and Stewart, 2007).

3.2. Data collection

We conducted the search for publications from January–March 2021 in key academic databases. We selected these databases based on the study by Gusenbauer and Haddaway (2020), who conducted a test and comparison of 28 academic search systems and databases. At first, we performed an initial scoping search to validate the methodology using the search terms from each PICO category. We then tested search terms for specificity and sensitivity using Scopus, where sensitive search attempts to retrieve all search term-related publications. In contrast, a specific search brings out only relevant publications. Accordingly, we

Table 1
PICO model categories, elements and search terms

Category	Elements	*Search terms*
Population	Tree planting types	*Afforestation, Reforestation, Restoration, Agroforestry, Tree Planting*
Intervention	Tree planting scheme types	*Project, Program, Portfolio, Initiative*
	Progression of tree planting scheme governance	*Process, Procedures, Practices*
Comparator	Tree planting Governance studies	*Analysis, Assessment, Evaluation, Monitoring*
	Tree planting Decision-making systems	*Governance, Management, Co-, Adaptive-*
Outcome	Tree planting Governance tools developed	*Mechanism, Guideline, Framework, Plan, Principle, Model*

The search terms from each of the PICO model elements were combined using the Boolean command 'OR'; for instance, search terms from the 'Population' category were combined as.

**afforestation OR reforestation OR restoration OR agroforestry OR tree planting.*

The search terms across each PICO category were combined using the Boolean command 'AND'; for instance, search terms from the 'Population' and 'Intervention' categories were combined, including appropriate bracketing, as.

*(*afforestation OR reforestation OR restoration OR agroforestry OR tree planting*) *AND* (*project OR program OR portfolio OR initiative*).

Accordingly, we built the search strings from the combination of the PICO categories, adjusting them based on the requirements of each search database. For instance, for the Web of Science database, we used brackets along with the Boolean commands as.

**(afforestation OR reforestation OR restoration OR agroforestry OR tree planting) AND (projects OR programs OR portfolio OR initiatives) AND (governance OR management OR co-management OR adaptive governance) AND (process OR procedures OR practices).*

used the following search engines: Scopus, ISI Web of Science, World Wide Science, Microsoft Academic, and Google Scholar. We retrieved all the search outputs from all databases with the exception of Google Scholar, where we only included publications from the first 50 pages of each search using the database relevance search criteria.

The search was limited to English peer-reviewed journal articles, academic dissertations, working papers, and books with no publication date restriction.

3.2.1. Management, screening and inclusion

Following the advice of Wu et al. (2018), we employed Zotero 5.0 for Windows (https://www.zotero.org/download/) software to identify and exclude duplicate records and non-English publications, screen titles and abstracts, screen full-texts, and manage the resulting bibliography.

The database search outputs were screened in four steps (Fig. 1) to arrive at the final list of included publications. We first excluded duplicate records and then non-English publications. Next, we read the titles and abstracts of the remaining publications identifying the ones to be included for full-text screening. Finally, we read the full-text of the remaining publications to include the final list of reviewed publications. The inclusion at this stage was based on the criteria that a publication was included if it guided the governance or management of tree planting schemes and employed tools like frameworks or principles and recommendations to improve governance processes. These included publications are qualitative or quantitative primary, secondary and mixed method case studies, reviews, books, academic dissertations, and organisational outputs or working studies (grey literature).

First, one reviewer (YTW) cscreened the titles and abstracts, and screened the full-text of the selection to determine publications suitable for inclusion. Then two other reviewers (KDS and JW) checked a random sample of 100 publications, title/abstract and the full text of 20 publications. The outputs from the three reviewers were then cross-checked, and any discrepancies in screening were discussed.

3.3. Analysis

The 93 included publications were exported from the Zotero library to Cochran's REVMAN5.4 software in non-Cochran mode (Wu et al., 2018). We used this software's standardised data extraction form to extract qualitative data. The extraction is based on the PICO model's intervention, comparator, and outcome categories. Accordingly, we extracted information that included governance or management studies, scheme governance practices, procedures or processes, tools, frameworks or guideline phases. The process started by thoroughly scrutinising the publications' full-text to identify the crucial issues (the relevant issues raised or the main concerns of the literature (Dawson et al., 2017; Paré and Kitsiou, 2017)) and thematic concepts (major concepts and themes used in the literature to address the issues raised (Nowell et al., 2017; Thomas et al., 2012)) (Supplementary Appendix A Table A.1). These issues and concepts sought to respond to the above PICO categories or emerged from the reviewed publications. Then we inductively categorised common themes through reductive and integrative procedures (Morgan, 2014; Zeitoun et al., 2016). Finally, we used a deductive approach to fit the recurrent themes and issues into suitable categories (Krippendorff, 2018; Thomas et al., 2012). These categories were then used to build a practical framework by systematically accommodating all the available key issues and recurrent themes and establishing their association.

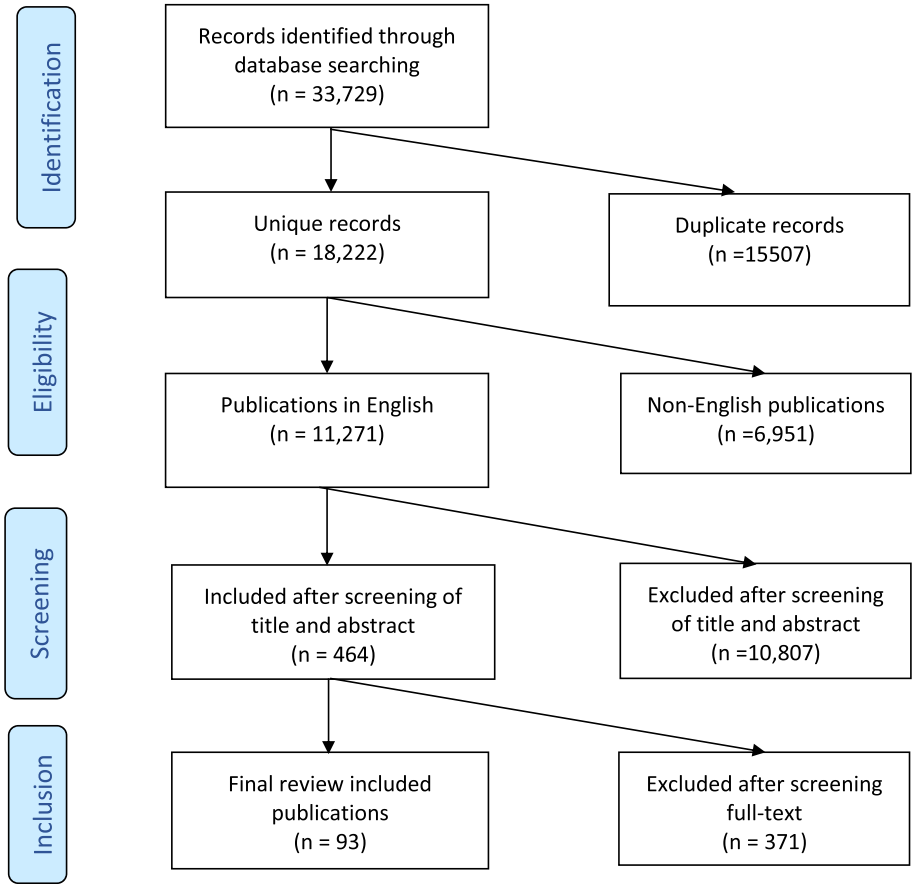

Fig. 1. Prisma diagram illustrating the process used to identify the 93 publications reviewed

4. Results

4.1. The publications included

The 93 included studies were published from 1994 to 2021. Thirty-four articles have a global focus, while the rest have a regional focus: Asia (19), South America (10), Europe (9), Africa (8), North America (9), and Oceania (4). These publications comprise 79 journal articles and 14 books, chapters, published reports or dissertations. Thirty-two were primary (studies that collected original data, whether empirical or otherwise), 44 were secondary (which collected data derived from primary studies), and the rest used mixed-method studies. Most primary studies dealt with one tree planting scheme, while the rest studied between two and 97 tree planting schemes. The 48 publications that used secondary data either focused on developing a governance tool from different perspectives or provided generalisable content about tree planting schemes and their outputs. The primary studies used the case study schemes to demonstrate governance practices, procedures, gaps, outputs, and impacts.

As a result of analysis the governance processes described in the 93 publications were categorised into **structural phases** and **influencing factors**, and governance **elements** for each influencing factor. The complete list of the 93 references and how they are categorised is available in the Supplementary Appendix C.

4.2. Structural phases and influencing factors

From the included publications, we identified five structural phases, four influencing factors, and various governance elements. The structural phases are: Initiation, Planning, Intervention, Monitoring and Evaluation, and Sustainability. The influencing factors are: Actors, Resources, Information, and Legal instruments. The various optional list of elements under each influencing factor are shown in Figure 2.

We also showed the relationship of these factors through the governance elements, which differ for the different influencing factors and structural phases.

Notably, each of the 20 possible combinations of influencing factors by structural phases were discussed in at least three of the 93 included publications (Table 2). Most publications discussed more than one combinationalthough the publications discussed the Planning, Intervention, Monitoring and Evaluation phases more than the Initiation and Sustainability phases. In contrast, the influencing factors were addressed in these publications more evenly, with relatively fewer papers discussing legal instruments. No publication addressed all 20 combinations of influencing factors and structural phases; at most, a publication discussed six combinations (see supplementary Appendix Cto check which specific reference discussed which combination).

Table 2
The combination of influencing factors and structural phases included in the 93 publications; some discussed more than one combination (see complete data in supplementary Appendix C).

		Influencing Factors			
		Actors	Resources	Information	Legal instruments
Structural Phases	Initiation	5	3	7	5
	Planning	11	7	12	7
	Intervention	11	15	12	9
	Monitoring & Evaluation	11	9	13	7
	Sustainability	6	8	7	4

4.3. The proposed governance framework

We developed a governance framework by applying the above integration of the structural phases, influencing factors, and their elements (Fig. 2). This list is summarised from a long list of elements we identified while categorising the thematic issues. This summary list of elements is not exhaustive but can be representative of the contexts of most tree planting schemes. Moreover, the elements can vary or be the same for each structural phase, while the influencing factors are independent.

5. Discussion

In the following sections, we discuss how each influencing factor affects the structural phases (i.e. the combinations depicted in Fig. 2) using contextual examples from different countries.

5.1. Initiation phase

A proposed tree planting scheme must be conceptualised at the initiation stage, considering the internal and external baseline context (Fleischman et al., 2020; Rana and Miller, 2021). The internal context includes identifying the priority landscapes, degradation drivers, land suitability, tenure security, finance, labour, expertise, local practices, data availability, and the local socioeconomic and cultural context. The external context includes multilateral environmental negotiations and the national policy environment, which motivate a scheme's initiation (Wyborn, 2015). Analysing the baseline context is imperative for understanding what a scheme's initiation requires for its success (LoSchiavo et al., 2013). Furthermore, this evidence is essential to set realistic visions and goals, allowing planners to think through strategies for achieving those visions and goals over the scheme's lifetime (Stanturf et al., 2019; Stanturf and Mansourian, 2020).

Tree planting schemes have a long history of engaging *actors*[2] from multiple scales, including international donors, the private sector, national governments, regional agencies, and international, national, and local non-governmental organisations and land users (Moeliono et al., 2020; Sapkota et al., 2018). At the landscape level, local stakeholders will influence the initiation of a scheme and its governance. This is because *actors*' political and socioeconomic context, like their experience of democratic processes, cultural aspects, and economic dependence on natural resources, influence the initiation of a scheme in a landscape (Sapkota et al., 2018). For instance, Brazil's Atlantic Forest Restoration was initiated by a network of local organisations, bringing together many small projects (Brancalion et al., 2013a, 2013b). In addition, multilateral donors, regional organs, and national governments initiate tree planting schemes internationally and regionally. For instance, President Obasanjo of Nigeria championed political will and initiated the African Great Green Wall (Mansourian, 2020).

Another vital factor is the availability of *resources* relevant to implement tree planting schemes successfully. These *resources* include finance, skill, labour, land, water, and genetic resources of plants (Richardson, 2016; Yao et al., 2019). Finance, in particular, can either limit or ensure the success of schemes (Mulyani and Jepson, 2013), with sufficient finance imperative for achieving short-term outputs and ensuring sustainability. Finance is the central elementelement for initiating a scheme by affording *actors* a rallying platform to propose tree planting schemes (Spanidis et al., 2020). Ethiopia's interest in carbon sequestration as a response to the growing carbon market is such an example (Mansourian, 2020). Other *resource* elements to initiate schemes include the availability of priority landscapes, suitability and potential of landscapes, enabling infrastructure, local skill and labour,

[2] The influencing factors are italicised throughout the discussion to highlight them.

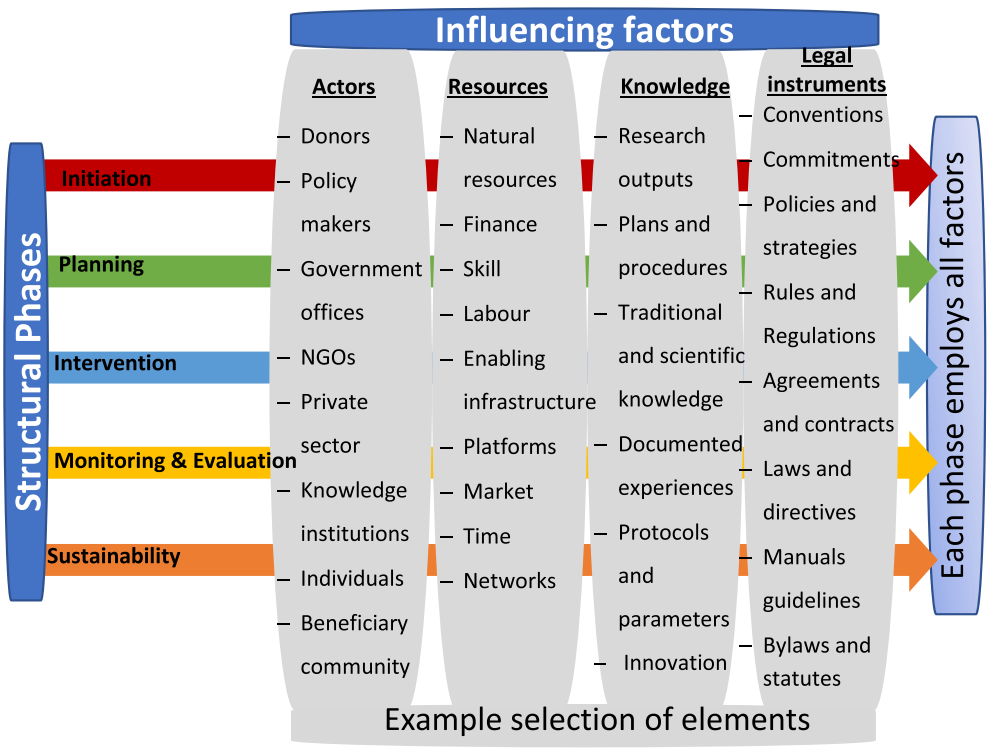

Fig. 2. A proposed governance framework for tree planting schemes. The horizontal bars indicate that each structural phase can be applied across all factors to select elements according to the context. To demonstrate this, we used a selection of the elements for each structural phase and influencing factor (Supplementary Appendix B.1.) Furthermore, in the discussion section 5 we provide examples from tree planting schemes in different countries to demonstrate how the framework is applied. In addition, we used a selection of elements for each influencing factor to demonstrate the interaction with the structural phases. The examples demonstrate how the four influencing factors influence each of the five structural phases through the elements. The framework is also applied to a specific tree planting scheme from Ethiopia implemented by an NGO named We Forest, which is demonstrated in Supplementary Appendix B Table B.2 as an example.

which could be determined through baseline assessments at the initiation phase (Viana et al., 2016). For instance, the African Great Green Wall's initiation was criticised for considering all landscapes, including natural grasslands, as potential landscapes for planting (Bond et al., 2019).

Knowledge denotes the availability and accessibility of information, scientific developments, and innovations about the tree planting scheme and its governance mechanisms (De Groot et al., 2013; Lake et al., 2018). The availability and accessibility of this *knowledge* allow the integration of environmental, technological, social and economic realities within a tree planting scheme's governance process (Tougiani et al., 2009). The availability of international and national-level study outputs on tree planting can be a potential *knowledge* factor when initiating schemes. At the international scale, the availability of the global map of restoration potential highlighted the amount of available land for planting, while at the national level, for instance, a map of priority areas for planting was identified in Uganda (Bastin et al., 2019; Stanturf et al., 2019). Innovations with tree planting schemes or governance mechanisms are another element that spurs the initiation of schemes (Brancalion and Holl, 2020). The use of drones to plant tree seeds is one such example (Mohan et al., 2021).

Achieving the goals of tree planting schemes requires adherence to the local, national, and international *legal instruments* within which the tree planting schemes are implemented. International communities can also shape tree planting schemes by promoting progressive governance perspectives and approaches (Laestadius et al., 2015; Chazdon et al., 2017a, 2017b). At the national scale, *legal instruments*, including national policies or local customs mandating or promoting tree planting, are the main element (Hodge and Adams, 2016). For instance, countries like Brazil and Paraguay supported tree planting schemes by legislating and mandating planting (Mansourian, 2016). In addition, an international political commitment that supported the initiation of tree planting was the global Aichi Biodiversity Target 15: "By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification." (Navarro et al., 2017).

5.2. *Planning phase*

Planning tree planting schemes is a process that turns the visions and goals of the initiation stage into clear and measurable objectives and actions, including identifying starting and ending points (Mbeche, 2017). Plans for tree planting schemes provide details of who will do what, when, where, at what costs, and in which order (Mansourian, 2017). In responding to these questions, *actors* implementing the planning phase look back into the initiation context's internal and external baseline evidence. (Le et al., 2015). This means that in the planning phase, scheme implementers check the evidence on the availability of finance, labour, skill, and land to identify and plan management of possible degradation or deforestation drivers. The planning phase also describes how the scheme will develop from the baseline situation to the envisioned future through specific targets and detailed plan (Eisenman et al., 2021).

This phase can be influenced by the type and number of *actors* involved in planning tree planting schemes. Various *actors* can be involved based on the scale of the tree planting scheme and the complexity associated with planning schemes (Pistorius and Freiberg, 2014). Examples of such multiple *actors* in the planning phase are Kenya's multi-stem stakeholder national technical working group for planning the national initiative, Madagascar's provincial and established regional champions for a landscape-scale scheme, or Colombia's local arm of the environment ministry named 'Corporcion Autonoma' for local schemes (Mansourian, 2020).

The availability of *resources* like finance, seed genetic sources, nursery accessibility, and species biodiversity are some of the elements influencing this phase (Baruah, 2017). For example, Mansourian et al. (2020) found that the forest department provided seedlings in Zambia but could not succeed in planting the seedlings due to a lack of finance. In the same study, the authorsshowed that Ethiopia and Vietnam are accessing a significant amount of finance for better tree planting schemes from the Global Climate Fund and bilateral donors. The availability or lack of a skilled resource person at the planning stage with the

knowledge of the best seed collection protocols, nursery practices or the transfer of seedlings to planting sites is another element that defines this phase's effectiveness (Mansourian et al., 2017). Considering that planning is conducted among different landscape *actors*, a phased approach is required to reach a more comprehensive planning agreement.

The first element under the *knowledge* factor is the information communication between phases, i.e., the input the planning can obtain from the initiation phase. When there is incomplete baseline data, the planning returns to fill the gap (Laska and Ireland, 2019). For instance, a lack of landscape *knowledge* prompted a tree planting scheme in Ethiopia to develop a participatory planning tool, while in Ruanda, planning resulted in mapping and setting planting objectives (Gatwaza and Wang, 2021; Yimer et al., 2016). This phase also draws on the research findings of landscape-scale research relevant to planning tree planting schemes (Thomas and Wooster, 2009).

The planning phase needs to align the scheme with international *legal instruments* like the Convention on Biodiversity and Sustainable Development Goals, United Nations Convention on Climate Change, which may be hard to address during the intervention phase unless these are clearly stated during planning. According to Stanturf and Mansourian (2020), the strategic objectives of many countries' tree planting schemes have been identified and developed as part of the Bonn Challenge or the New York Declaration. Weak national and local *legal instruments* are another element for planning (Bennett and Satterfield, 2018). For example, when the agriculture sector is prioritised, in Ethiopia, as in many countries, *legal instruments* for tree planting become weakened and unenforceable, resulting in many failed schemes (Mansourian, 2020).

5.3. Intervention phase

In the intervention phase, detailed plans are translated into action (Yin and Yin, 2010; Campbell, 2014). Interventions should ideally produce tangible and measurable outputs that can be tracked using elements. Interventions include nursery preparation, planting, engaging stakeholders to scale up, capacity building, and addressing associated landscape-level issues (Pistorius and Freiberg, 2014). In practice, interventions involve many activities and *actors* that require coordination for a landscape-scale impact (Sikor and Cầm, 2016).

The *actors* at this stage are those with the mandate of implementing the tree planting scheme by managing its *resources*, applying *legal instruments*, and collaborating with others, which are appropriate at the planning phase. (Campbell, 2014). For example, Brazil's Atlantic Forest Restoration Pact has engaged landowners, non-governmental organisations and local governments to plant over half a million hectares (Crouzeilles et al., 2019).

One of the main elements for this phase is financial *resource*, which is the ability to secure and sustain adequate funding to implement the planned activities. However, finance is not always associated with the success of tree planting schemes; for example, while significant funding for tree planting schemes led to possible results in Vietnam, it did not have the same impact in Ethiopia (Mansourian, 2020). In addition, the availability of seedlings, planting landscape, and skills are critical elements for this phase (Turner-Skoff and Cavender, 2019).

In some circumstances, *knowledge* of the risks, scheme size, complexity, and momentum influence this phase's governance (Guerrero et al., 2017). Furthermore, logistical information like the optimum planting time and the planting stock could similarly influence this phase.

Regulatory frameworks within which tree planting schemes operate can influence this phase, especially when these are inflexible, and their regulators are geared to a different paradigm. For example, according to Gregorio et al. (2020), tree planting projects in the Philippines failed due to the incompatible *legal instruments* for the management and sharing of benefits, resulting from a lack of social preparation to develop and implement local instruments. On the other hand, changes in any relevant related policies and strategies sometimes strongly influence the governance of this phase (Guerrero et al., 2017). The other element limiting this phase are tenure security and access rights to scheme *resources* that are specifically important for local stakeholders to engage, especially during the maintenance of the scheme outputs (Nagendra, 2007; McLain et al., 2021). This has been observed in Ethiopia, Vietnam and Costa Rica, where scheme stakeholders are called out to participate in the phaseout stage (Mansourian et al. 2020).

5.4. Monitoring and evaluation phase

Monitoring and evaluation should be integral to each tree planting scheme so the scheme can be documented, reports produced and communicated and schemes can be modified when challenges or new experiences arise (Ostrom and Nagendra, 2007). In addition, monitoring and evaluation are needed to measure short- and long-term outputs from interventions, determine when a change is required, if at all, and identify unexpected outcomes that compromise the sustainability of a scheme (Brancalion et al., 2013a, 2013b). Monitoring and evaluation are also used to determine which governance approaches are practical by establishing clear baselines, measuring progress, and informing current and future *legal instruments*. The effectiveness of monitoring and evaluation often relies on an explicit theory of change (developed during the planning stage) and appropriate elements that help track the cause-and-effect relationship (Edwards and Meagher, 2020; Kerzner, 2010).

In most tree planting schemes, monitoring and evaluation is a task that follows a top-down structure that involves *actors* such as donors and government decision-makers down to village-level communities (Stanturf et al., 2020). In Bangladesh, for instance, a tree planting scheme was monitored by the IUCN as a donor to assess the overall governance and performance, while community groups and representatives monitored the survival of tree seedlings and the quality of growing trees at the village level (Department of Environment, 2015). In some circumstances, public monitoring involves the participation of the general public. For example, in Talagena, India, school children were instituted as green brigades for monitoring planted tree growth and performance (Stanturf et al., 2020).

As in many of the framework's phases, one of the primary *resource* elements affecting this is the financial limitation, especially for monitoring activities. Another element for this phase is the skill and labour power to undertake monitoring and evaluation activities to improve the performance of tree planting schemes (Kerzner, 2010; Nagendra and Ostrom, 2011; Suding, 2011). Tools and technologies also facilitate effective long-term monitoring and evaluation. For instance, in Ghana, remote sensing and GIS tools facilitated the monitoring and evaluation of a scheme (Kusters et al., 2018).

One of the elements for this phase is *knowledge* of the proper documentation and reporting tasks. This avoids vague data collection plans and responsibilities, inaccurate measurements, and irrelevant data analysis, which could negatively affect this phase's performance (Yao et al., 2019). Furthermore, lessons learned through these activities cannot fully benefit future schemes unless adequately documented and communicated between *actors*. The accessibility of monitoring and evaluation outcomes is another governance limitation (Lemenih and Habtemariam, 2014; de Roque et al., 2018). In practice, the majority of the monitoring and evaluation of schemes are usually implemented during the intervention phase, which misses the information that might modify the scheme from the initiation or planning phase (Williams, 2011).

In recent years, several countries have made substantial advances in developing and operationalising monitoring and evaluation activities to comply with their national and multilateral *legal instruments*. For instance, in 2020, the Honduras forestry sector developed a legal, institutional matrix to assist in monitoring and evaluation (FAO, 2021). However, monitoring and evaluation outcomes impact *legal instruments*. For instance, the United Nations Forum on Forests focal countries bases their legislative decision on monitoring and evaluation outputs from

different tree planting schemes (Joshi, 2019).

5.5. Sustainability phase

The sustainability phase maintains and improves a tree planting scheme's overall biophysical, socioeconomic, and environmental outputs beyond its lifetime (Goh and Yanosky, 2016; Rahman et al., 2017; Phan et al., 2018). The sustainability assessment is based on specific elements and standards set during the planning phase and implemented during the intervention phase to be sustained beyond the scheme's lifetime (Löfqvist and Ghazoul, 2019). In the past, tree planting *actors* sometimes did not fully consider the sustainability of their schemes. However, sustainability has become an increasingly central consideration for tree planting scheme *actors* and stakeholders (Cirella and Zerbe, 2014; Cochard et al., 2020; Veról et al., 2020).

The involvement of local *actors* influences this phase, as these groups are closer to the tree planting scheme landscape and the beneficiary communities (Hodge and Adams, 2016). Several studies show that local communities in countries like Ethiopia have suffered from schemes that have failed to engage them in the process and have subsequently never been given the experience of long-term benefits (Barr and Sayer, 2012; Mansourian et al., 2020; Romijn et al., 2019). In the case of Bhutan and Colombia, establishing specific agencies that support schemes' sustainability in all landscapes is seen to bring better sustainability of outputs (Mansourian and Vallauri, 2020). Private companies can also sustain tree planting schemes by providing longer-term funding, especially when the schemes attract investors (Mansourian and Vallauri, 2020).

Although international and domestic financial instruments are available for tree planting schemes, these *resources* have hardly been for the sustainability phase (Clark et al., 2018). However, as applied in Costa Rica and Vietnam, tools like payments for ecosystem services (PES) enable schemes' sustainability (Calvet-Mir et al., 2015). Alternative mechanisms for long-term funding, like in the Caucasus, bring together donors to support different phases of a scheme (Barr and Sayer, 2012; Mansourian et al., 2020; Romijn et al., 2019).

Sustaining the outputs of tree planting schemes is challenging because of a lack of *knowledge* about long-term maintenance and change over time (Jasiulewicz-Kaczmarek, 2013). At the same time, the quantification and marketing of sustainable benefits of schemes may be impaired due to limited *knowledge* (Mansourian and Vallauri, 2020). Therefore, tried and tested local *knowledge* and the consultation of new modern technologies are additional elements governing sustainability in tree planting schemes (Spanidis et al., 2020).

The confluence of supporting *legal instruments* is a particularly conducive element for the sustainability of tree planting schemes. Many countries have policies and legislation that provide opportunities for sustainable tree planting schemes.For example Costa Rica, legislated to develop schemes that improve biodiversity and livelihood resilience (Parrotta and Mansourian, 2018) and, Kenya aligned its constitutional commitment to sustain at least 10% of its land covered with trees (Springer et al., 2021).

5.6. Practical application and strategic implications for decision-makers

The framework in Fig. 2. can be applied entirely or partially. For example, users can use all or just some of the five structural phases, depending on the type and purpose of the tree planting scheme, e.g., focusing on selected structural phases like monitoring and evaluation. Similarly, the list of governance elements can be used selectively by picking a few or adding some more depending on the context of a tree planting scheme. However, all four influencing factors must be addressed for the framework to be useful in practice.

The framework can also be applied to study and evaluate the governance of tree planting schemes and formulate tree planting schemes to be implemented in any landscape. In order to study tree planting schemes, the framework can portray governance in different contexts, facilitating comparison. It will help researchers weigh the applicability of the various governance approaches to their context while identifying changes in governance and comparing trends. This assessment identifies the governance characteristics, patterns, and specific phase issues that need attention. Furthermore, the assessment can analyse the context and the influencing factors causing potential problems under each phase. Thus, applying this framework to such studies entails choosing the affected structural governance phase and diagnosing the factors driving the concerns in detail. Users of the framework would likely pursue details about the governance issues, focusing on phases associated with the tree planting scheme.

When formulating a tree planting scheme, the framework helps design the organisation of the actors to undertake its activities using the resources available, obtaining the relevant information and backing by legal instruments. The availability of these factors finally appropriates the deliverables or the desired outcomes. Therefore, formulating a tree planting scheme is a multi-scalar stakeholder process. Selecting the structural phases to focus upon and fulfilling the factors determining goal achievement is crucial. Considering practical considerations, the stakeholders could also pre-select the structural phases and elements.

Different stakeholders can apply the framework to create a transparent and shared vision of the tree planting scheme's goals, governance processes and achievements. Specifically, donors or financiers can apply the framework to improve the value for money of tree planting schemes by overseeing the process and evaluating the outcomes. Alternatively, implementers, e.g., national governments and NGOs, can use this framework in governing their process, checking its progress and sustainability. From the practitioners' perspective, the framework can facilitate effective monitoring and evaluation, a mechanism for studying schemes and proposing to scale up successful ones. Stakeholders can also use the framework as a platform where multiple functions, levels, jurisdictions, and sectors can integrate science, policy, and practice. Moreover, stakeholders can apply this framework as a benchmark to identify issues of national priority, strengths and weaknesses that require reform to govern tree planting schemes.

6. Conclusion

The recent heated political attention on tree planting has primarily focused on biological and technical dimensions. In practice, however, tree planting schemes involve social, political, economic, technical, and biological dimensions. Accordingly, this systematic review demonstrated how these dimensions could be considered in the governance of tree planting schemes. For this purpose, integrating five structural phases, four influencing factors, and a list of governance elements can demonstrate the consideration of different dimensions. Furthermore, the five structural phases encompass the governance process from beginning to end for most tree planting schemes, although the specific approach of different schemes may vary with context.

In contrast, the overarching structural phases remain the same. The four influencing factors are recognised in different contexts, for diverse issues and at a range of scales, thus increasing a tree planting scheme's performance if they are implemented. These influencing factors are also correlated with one another. For instance, a legal instrument could influence the actors, the resources available or the accessibility of information in a structural phase of a tree planting scheme. This indicates how omitting one influencing factor in governing a tree planting scheme's structural phases could compromise the overall scheme performance (Baruah, 2017; Bennett and Satterfield, 2018; Djenontin et al., 2018; Le et al., 2014). The elements are, in practice, contextual to a tree planting scheme that may or may not be comparable across the structural phases but not for the influencing factors.

Several scholars have demonstrated a relative scarcity of adaptable and comprehensive guidance to frame the governance processes of different tree-planting schemes (Brancalion et al., 2016; Mansourian, 2017; Chazdon et al., 2020; Pandit et al., 2020). However, based on the

systematic review, we present a framework that considers the commonalities in the governance of the different tree planting schemes. The framework distinctly integrates the structural phases and influencing factors, which most users can adapt to different tree planting scheme contexts, linking governance inputs and processes. This conforms with our initial aim to develop a straightforward, adaptable, and comprehensive framework. Consequently, this framework allows scheme governance to be effective, equitable, responsive, and robust across the different elements. Some framework elements that help to achieve effectiveness include information, direction, and capacity. Those elements assisting equitability include inclusiveness, participation, and fairness. In comparison, responsiveness elements include learning or adaptation, information production, and sharing opportunities. Finally, robustness elements include legitimacy, polycentricity, and nestedness. These, we believe, are elements that are delivered through the use of our flexible and adaptable framework.

The scope of our review is limited to obtaining conceptual and theoretical contents from a diverse set of literature which has hindered the possibility of including empirical outputs. Moreover, our dataset only included studies written in English. Despite these limitations, our resulting framework has considerable value to the stakeholders of tree planting schemes. This is because our framework has been developed by innovatively combining insights from different empirical, conceptual and theoretical tools and frameworks in the literature. Furthermore, our framework is designed to be flexible enough that it can be complemented with important features from emerging literature. Therefore, we believe that applying this framework will improve tree planting schemes. Furthermore, in presenting this framework, we hope to improve the governance approaches of different principal actors involved with tree planting schemes.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

No data was used for the research described in the article.

Acknowledgement

This work is supported by a Global Challenges Research Fund (GCRF) PhD studentship from Coventry University, Centre for Agroecology, Water and Resilience (CAWR). JW thanks the South African Department of Forestry, Fisheries and the Environment (DFFE) for funding, noting that this publication does not necessarily represent the views or opinions of DFFE or its employees. The authors are thankful to Carlos Ferriera for his constructive comments to improve the quality of the paper. We are particularly grateful to the reviewers for the positive feedback and helpful comments.

Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.forpol.2023.102980.

References

Adger, W.N., Brown, K., Fairbrass, J., Jordan, A., Paavola, J., Rosendo, S., Seyfang, G., 2003. Governance for Sustainability: Towards a 'Thick' Analysis of Environmental Decisionmaking. Environment and Planning A: Economy and Space 35 (6), 1095–1110. https://doi.org/10.1068/a35289.

Anguelovski, I., Carmin, J., 2011. Something borrowed, everything new: innovation and institutionalization in urban climate governance. Curr. Opin. Environ. Sustain. 3, 169–175. https://doi.org/10.1016/j.cosust.2010.12.017.

Arts, B., van Bommel, S., Ros-Tonen, M., Verschoor, G. (Eds.), 2012. Forest-People Interfaces: Understanding Community Forestry and Biocultural Diversity. Wageningen Academic Publishers, The Netherlands. https://doi.org/10.3920/978-90-8686-749-3.

Ball, A.A., Gouzerh, A., Brancalion, P.H., 2014. Multi-scalar governance for restoring the Brazilian Atlantic Forest: a case study on small landholdings in protected areas of sustainable development. Forests 5, 599–619.

Barr, C.M., Sayer, J.A., 2012. The political economy of reforestation and forest restoration in Asia-Pacific: critical issues for REDD+. Biol. Conserv. 154, 9–19. https://doi.org/10.1016/j.biocon.2012.03.020.

Baruah, M., 2017. Facipulation and elite formation: community resource management in Southwestern Ghana. Conserv. Soc. 15, 371–383. https://doi.org/10.4103/cs.cs_16_108.

Bastin, J.-F., Finegold, Y., Garcia, C., Mollicone, D., Rezende, M., Routh, D., Zohner, C. M., Crowther, T.W., 2019. The global tree restoration potential. Science 365, 76–79. https://doi.org/10.1126/science.aax0848.

Begum, M.M., 2020. Environmental degradation and governance: exploring the connections. Int. J. Polit. Sci. Develop. 8, 82–87. https://doi.org/10.14662/IJPSD2020.055.

Bennett, N.J., Satterfield, T., 2018. Environmental governance: a practical framework to guide design, evaluation, and analysis. Conserv. Lett. 11, e12600 https://doi.org/10.1111/conl.12600.

Bettles, J., Battisti, D.S., Cook-Patton, S.C., Kroeger, T., Spector, J.T., Wolff, N.H., Masuda, Y.J., 2021. Agroforestry and non-state actors: a review. For. Policy Econ. 130, 102538 https://doi.org/10.1016/j.forpol.2021.102538.

Bingham, L.B., Nabatchi, T., O'Leary, R., 2005. The new governance: practices and processes for stakeholder and citizen participation in the work of government. Public Adm. Rev. 65, 547–558. https://doi.org/10.1111/j.1540-6210.2005.00482.x.

Bond, W.J., Stevens, N., Midgley, G.F., Lehmann, C.E.R., 2019. The trouble with trees: afforestation plans for Africa. Trends Ecol. Evol. 34, 963–965. https://doi.org/10.1016/j.tree.2019.08.003.

Borrini-Feyerabend, G., Hill, R., 2015. Governance for the conservation of nature. In: Protected Area Governance and Management. ANU Press, pp. 170–205. https://doi.org/10.22459/PAGM.04.2015.07.

Brancalion, P.H.S., Holl, K.D., 2020. Guidance for successful tree planting initiatives. J. Appl. Ecol. 57, 2349–2361. https://doi.org/10.1111/1365-2664.13725.

Brancalion, P., Melo, F., Tabarelli, M., Rodrigues, R., 2013a. Restoration reserves as biodiversity safeguards in human-modified landscapes. Nat. Conserv. 11, 186–190. https://doi.org/10.4322/natcon.2013.029.

Brancalion, P.H.S., Viani, R.A.G., Calmon, M., Carrascosa, H., Rodrigues, R.R., 2013b. How to organize a large-scale ecological restoration program? The framework developed by the Atlantic Forest restoration pact in Brazil. J. Sustain. For. 32, 728–744. https://doi.org/10.1080/10549811.2013.817339.

Brancalion, P., Pinto, S., Pugliese, L., Padovezi, A., Rodrigues, R., Calmon, M., Carrascosa, H., Castro, P., Mesquita, B., 2016. Governance innovations from a multi-stakeholder coalition to implement large-scale forest restoration in Brazil. World Dev. Perspect. 3, 15–17. https://doi.org/10.1016/j.wdp.2016.11.003.

Cadman, T., Maraseni, T., Ma, H.O., Lopez-Casero, F., 2017. Five years of REDD+ governance: the use of market mechanisms as a response to anthropogenic climate change. In: For. Policy Econ., Forest governance in the Anthropocene: a challenge for theory and practice, 79, pp. 8–16. https://doi.org/10.1016/j.forpol.2016.03.008.

Calvet-Mir, L., Corbera, E., Martin, A., Fisher, J., Gross-Camp, N., 2015. Payments for ecosystem services in the tropics: a closer look at effectiveness and equity. Curr. Opin. Environ. Sustain., Open Issue 14, 150–162. https://doi.org/10.1016/j.cosust.2015.06.001.

Campbell, L.K., 2014. Constructing New York City's urban forest. The politics and governance of the MillionTreesNYC campaign. In: Sandberg Anders Bardekjian Adrina butt Sadia Eds urban for. In: Trees greenspace policy Perspect. N. Y. NY Routledge, pp. 242–260 chapter 16. https://doi.org/10.4324/9781315882901.chapter 16.

Cardinael, R., Mao, Z., Chenu, C., Hinsinger, P., 2020. Belowground functioning of agroforestry systems: recent advances and perspectives. Plant Soil 453, 1–13. https://doi.org/10.1007/s11104-020-04633-x.

Chazdon, R.L., Guariguata, M.R., 2016. Natural regeneration as a tool for large-scale forest restoration in the tropics: prospects and challenges. Biotropica 48, 716–730. https://doi.org/10.1111/btp.12381.

Chazdon, R.L., Bodin, B., Guariguata, M.R., Lamb, D., Walder, B., Chokkalingam, U., Shono, K., 2017a. Partnering with Nature: The Case for Natural Regeneration in Forest and Landscape Restoration (Policy Brief). Forest Ecosystem Restoration Initiative, Montreal, Canada.

Chazdon, Robin L., Brancalion, P.H.S., Lamb, D., Laestadius, L., Calmon, M., Kumar, C., 2017b. A policy-driven knowledge agenda for global Forest and landscape restoration. Conserv. Lett. 10, 125–132. https://doi.org/10.1111/conl.12220.

Chazdon, Robin L., Gutierrez, V., Brancalion, P.H.S., Laestadius, L., Guariguata, M.R., 2020. Co-creating conceptual and working frameworks for implementing Forest and landscape restoration based on Core principles. Forests 11, 706. https://doi.org/10.3390/f11060706.

Chen, G., 2020. An investigation of paper mill sustainable development in thailand-a case study of double a public company limited. In: IOP Conf. Ser. Earth Environ. Sci. IOP Publishing Ltd. https://doi.org/10.1088/1755-1315/576/1/012031.

Chen, Q., Yu, H., Wang, Y., 2021. Research on modern marine environmental governance in China: subject identification, structural characteristics, and operational mechanisms. Int. J. Environ. Res. Public Health 18, 4485. https://doi.org/10.3390/ijerph18094485.

Cirella, G., Zerbe, S., 2014. Sustainable Water Management and Wetland Restoration Strategies in Northern China. © 2014 by Bozen-Bolzano. University Press. http://DOI.org/10.13124/9788860461094.
Clark, R., Reed, J., Sunderland, T., 2018. Bridging funding gaps for climate and sustainable development: pitfalls, progress and potential of private finance. Land Use Policy 71, 335–346. https://doi.org/10.1016/j.landusepol.2017.12.013.
Clement, F., 2010. Analysing decentralised natural resource governance: proposition for a "politicised" institutional analysis and development framework. Policy. Sci. 43, 129–156. https://doi.org/10.1007/s11077-009-9100-8.
Cochard, R., Nguyen, V.H.T., Ngo, D.T., Kull, C.A., 2020. Vietnam's forest cover changes 2005–2016: veering from transition to (yet more) transaction? World Dev. 135 https://doi.org/10.1016/j.worlddev.2020.105051.
Coffey, B., Bush, J., Mumaw, L., de Kleyn, L., Furlong, C., Cretney, R., 2020. Towards good governance of urban greening: insights from four initiatives in Melbourne, Australia. Aust. Geogr. 51, 189–204. https://doi.org/10.1080/00049182.2019.1708552.
Collaboration for Environmental Evidence, 2018. Guidelines and Standards for Evidence Synthesis in Environmental Management VERSION 5.0. URL. https://environmentalevidence.org/information-for-authors/ (accessed 5.26.21).
Collins, A.M., Coughlin, D., Miller, J., Kirk, S., 2015. The Production of Quick Scoping Reviews and Rapid Evidence Assessments A How to Guide Joint Water Evidence Group [WWW Document]. https://www.researchgate.net/publication/337832357_The_Production_of_Quick_Scoping_Reviews_and_Rapid_Evidence_Assessments_A_How_to_Guide_Joint_Water_Evidence_Group (accessed 5.26.21).
Coppus, R., Romijn, J.E., Méndez-Toribio, M., Murcia, C., Thomas, E., Guariguata, M.R., Herold, M., Verchot, L., 2019. What is out there? A typology of land restoration projects in Latin America and the Caribbean. Environ. Res. Commun. 1, 041004 https://doi.org/10.1088/2515-7620/ab2102.
Crouzeilles, R., Santiami, E., Rosa, M., Pugliese, L., Brancalion, P.H.S., Rodrigues, R.R., Metzger, J.P., Calmon, M., de Scaramuzza, C.A.M., Matsumoto, M.H., Padovezi, A., de Benini, R.M., Chaves, R.B., Metzker, T., Fernandes, R.B., Scarano, F.R., Schmitt, J., Lui, G., Christ, P., Vieira, R.M., Senta, M.M.D., Malaguti, G.A., Strassburg, B.B.N., Pinto, S., 2019. There is hope for achieving ambitious Atlantic Forest restoration commitments. Perspect. Ecol. Conserv. 17, 80–83. https://doi.org/10.1016/j.pecon.2019.04.003.
Dawson, L., Elbakidze, M., Angelstam, P., Gordon, J., 2017. Governance and management dynamics of landscape restoration at multiple scales: learning from successful environmental managers in Sweden. J. Environ. Manag. 197, 24–40. https://doi.org/10.1016/j.jenvman.2017.03.019.
De Groot, R.S., Blignaut, J., Van Der Ploeg, S., Aronson, J., Elmqvist, T., Farley, J., 2013. Benefits of investing in ecosystem restoration. Conserv. Biol. 27, 1286–1293. https://doi.org/10.1111/cobi.12158.
De la De la Mora-De la Mora, G., 2022. Conceptual and analytical diversity of environmental governance in Latin America: a systematic review. Environ. Manag. https://doi.org/10.1007/s00267-022-01739-z.
de Roque, F.O., Uehara-Prado, M., Valente-Neto, F., Quintero, J.M.O., Ribeiro, K.T., Martins, M.B., de Lima, M.G., Souza, F.L., Fischer, E., da Silva, U.L., Ishida, F.Y., Gray-Spence, A., Pinto, J.O.P., Ribeiro, D.B., de Martins, C.A., Renaud, P.C., Pays, O., Magnusson, W.E., 2018. A network of monitoring networks for evaluating biodiversity conservation effectiveness in Brazilian protected areas. Perspect. Ecol. Conserv. 16, 177–185. https://doi.org/10.1016/j.pecon.2018.10.003.
de Vente, J., Reed, M., Stringer, L., Valente, S., Newig, J., 2016. How does the context and design of participatory decision making processes affect their outcomes? Evidence from sustainable land management in global drylands. Ecol. Soc. 21 https://doi.org/10.5751/ES-08053-210224.
Department of Environment. Community Based Ecosystem Conservation and Adaptation in Ecologically Critical Areas of Bangladesh: Responding to Nature and Changing Climate. Ministry of Forests and Environment, Dhaka, Bangladesh. https://portals.iucn.org/library/sites/library/files/documents/2015-053.pdf.
Djenontin, I.N.S., Zulu, L.C., 2021. The quest for context-relevant governance of agro-forest landscape restoration in Central Malawi: insights from local processes. For. Policy Econ. 131, 102555 https://doi.org/10.1016/j.forpol.2021.102555.
Djenontin, I.N.S., Foli, S., Zulu, L.C., 2018. Revisiting the factors shaping outcomes for forest and landscape restoration in sub-Saharan Africa: a way forward for policy, practice and research. Sustainability 10, 906. https://doi.org/10.3390/su10040906.
Dobbins, M.. Steps for Conducting a Rapid Review. https://www.nccmt.ca/uploads/media/media/0001/02/800fe34eaedbad09edf80ad5081b9291acf1c0c2.pdf.
Duguma, L.A., Minang, P.A., Aynekulu, B.E., Carsan, S., Nzyoka, J., Bah, A., Jamnadass, R.. From Tree Planting to Tree Growing: Rethinking Ecosystem Restoration through Trees. ICRAF Working Paper. https://doi.org/10.5716/WP20001.PDF.
Durieux, L., Fayl, G., 1998. The scheme used for evaluating the European research and technological development programmes. In: Policy Evaluation in Innovation and Technology: Towards Best Practices. OECD Washington Center [Distributor], Paris: Washington, D.C. http://pi.lib.uchicago.edu/1001/cat/bib/3148635..
Dzebo, A., 2019. Effective governance of transnational adaptation initiatives. Int. Environ. Agreem. Polit. Law Econ. 19, 447–466. https://doi.org/10.1007/s10784-019-09445-8.
Edwards, D.M., Meagher, L.R., 2020. A framework to evaluate the impacts of research on policy and practice: a forestry pilot study. For. Policy Econ. 114, 101975. https://doi.org/10.1016/j.forpol.2019.101975. Advanced approaches for a better understanding of scientific knowledge transfer in forest and forest-related policy.
Eisenman, T.S., Flanders, T., Harper, R.W., Hauer, R.J., Lieberknecht, K., 2021. Traits of a bloom: a nationwide survey of U.S. urban tree planting initiatives (TPIs). Urban For. Urban Green. 61, 127006 https://doi.org/10.1016/j.ufug.2021.127006.
Ellili, N.O.D., 2022. Bibliometric analysis and systematic review of environmental, social, and governance disclosure papers: current topics and recommendations for future research. Environ. Res. Commun. 4, 092001 https://doi.org/10.1088/2515-7620/ac8b67.
FAO, 2012. State of the world's Forests, 2012. Food and Agriculture Organization of the United Nations, Rome. https://www.fao.org/3/i3010e/i3010e.pdf.
FAO, 2021. Institutionalisation of Forest Data: Establishing Legal Frameworks for Sustainable Forest Monitoring in REDD+ Countries. FAO, Rome, Italy. https://doi.org/10.4060/cb3525en.
Filoso, S., Bezerra, M.O., Weiss, K.C.B., Palmer, M.A., 2017. Impacts of forest restoration on water yield: a systematic review. PLoS One 12. https://doi.org/10.1371/journal.pone.0183210.
Fleischman, F.D., 2014. Why do foresters plant trees? Testing theories of bureaucratic decision-making in Central India. World Dev. 62, 62–74. https://doi.org/10.1016/j.worlddev.2014.05.008.
Fleischman, F., Basant, S., Chhatre, A., Coleman, E.A., Fischer, H.W., Gupta, D., Güneralp, B., Kashwan, P., Khatri, D., Muscarella, R., 2020. Pitfalls of tree planting show why we need people-centered natural climate solutions. BioScience 70, 947–950. https://doi.org/10.1093/biosci/biaa094.
Flook, Z., 2020. The Meaning of Tree Planting (MSc Thesis). Swedish University of Agricultural, Sciences, SLU, uppsala. https://stud.epsilon.slu.se/15709/1/flook_z_200626.pdf.
Foundjem-Tita, D., Tchoundjeu, Z., Speelman, S., D'Haese, M., Degrande, A., Asaah, E., Van Huylenbroeck, G., Van Damme, P., Ndoye, O., 2013. Policy and legal frameworks governing trees: incentives or disincentives for smallholder tree planting decisions in Cameroon? Small-Scale For 12, 489–505. https://doi.org/10.1007/s11842-012-9225-z.
Gann, G., Mcdonald, T., Walder, B., Aronson, J., Nelson, C., Johnson, J., Hallett, J., Eisenberg, C., Guariguata, M., Liu, J., Hua, F., Echeverria, C., Gonzales, E., Shaw, N., Decleer, K., Dixon, K., 2019. International principles and standards for the practice of ecological restoration. Restor. Ecol. 27, S1–S46. https://doi.org/10.1111/rec.13035.
Garmestani, A., Benson, M., 2013. A framework for resilience-based governance of social-ecological systems. Ecol. Soc. 18 https://doi.org/10.5751/ES-05180-180109.
Garritty, C., Gartlehner, G., Nussbaumer-Streit, B., King, V.J., Hamel, C., Kamel, C., Affengruber, L., Stevens, A., 2021. Cochrane rapid reviews methods group offers evidence-informed guidance to conduct rapid reviews. J. Clin. Epidemiol. 130, 13–22. https://doi.org/10.1016/j.jclinepi.2020.10.007.
Gatwaza, O.C., Wang, X., 2021. Mapping of biodiversity hubs and key ecosystem services as a tool for shaping optimal areas for conservation. PLoS One 16, e0253151. https://doi.org/10.1371/journal.pone.0253151.
Goh, T.Y., Yanosky, A., 2016. Payment for ecosystem services works, but not exactly in the way it was designed. Glob. Ecol. Conserv. 5, 71–87. https://doi.org/10.1016/j.gecco.2015.11.005.
Gregorio, N., Herbohn, J., Tripoli, R., Pasa, A., 2020. A local initiative to achieve global forest and landscape restoration challenge—lessons learned from a community-based forest restoration project in Biliran Province, Philippines. Forests 11, 475. https://doi.org/10.3390/f11040475.
Guariguata, M.R., Brancalion, P.H.S., 2014. Current challenges and perspectives for governing forest restoration. Forests 5, 3022–3030. https://doi.org/10.3390/f5123022.
Guerrero, A.M., Shoo, L., Iacona, G., Standish, R.J., Catterall, C.P., Rumpff, L., de Bie, K., White, Z., Matzek, V., Wilson, K.A., 2017. Using structured decision-making to set restoration objectives when multiple values and preferences exist. Restor. Ecol. 25, 858–865. https://doi.org/10.1111/rec.12591.
Gusenbauer, M., Haddaway, N.R., 2020. Which academic search systems are suitable for systematic reviews or meta-analyses? Evaluating retrieval qualities of Google scholar, PubMed, and 26 other resources. Res. Synth. Methods 11, 181–217. https://doi.org/10.1002/jrsm.1378.
Hilger, T., Keil, A., Lippe, M., Panomtaranichagul, M., Saint-Macary, C., Zeller, M., Pansak, W., Vu Dinh, T., Cadisch, G., 2013. Soil conservation on sloping land: technical options and adoption constraints. In: Fröhlich, H.L., Schreinemachers, P., Stahr, K., Clemens, G. (Eds.), Sustainable Land Use and Rural Development in Southeast Asia: Innovations and Policies for Mountainous Areas. Springer Environmental Science and Engineering. Springer, Berlin, Heidelberg, pp. 229–279. https://doi.org/10.1007/978-3-642-33377-4_7.
Hodge, I., Adams, W.M., 2016. Short-term projects versus adaptive governance: conflicting demands in the management of ecological restoration. Land 5, 39. https://doi.org/10.3390/land5040039.
Höhl, M., Ahimbisibwe, V., Stanturf, J.A., Elsasser, P., Kleine, M., Bolte, A., 2020. Forest landscape restoration—what generates failure and success? Forests 11, 938. https://doi.org/10.3390/f11090938.
Holl, K., Brancalion, P., 2020. Tree planting is not a simple solution. Science 368, 580–581. https://doi.org/10.1126/science.aba8232.
Ingason, H.T., Fridgeirsson, T.V., Gunnlaugsdottir, S.M., Stefansdottir, E., 2022. A cross-national comparison of the project governance frameworks in two Nordic countries. Proj. Leadersh. Soc. 3, 100075 https://doi.org/10.1016/j.plas.2022.100075.
IUCN and WRI,, 2014. A guide to the Restoration Opportunities Assessment Methodology (ROAM) : Assessing forest landscape restoration opportunities at the national or sub-national level | AFR100. IUCN, Gland, Switzerland. https://portals.iucn.org/library/sites/library/files/documents/2014-030.pdf.
Jasiulewicz-Kaczmarek, M., 2013. Sustainability: Orientation in Maintenance Management—Theoretical Background, pp. 117–134. https://doi.org/10.1007/978-3-642-23553-5_8.

Jones, H.P., 2013. Impact of ecological restoration on ecosystem services. In: Levin, S.A. (Ed.), Encyclopedia of Biodiversity, Second edition. Academic Press, Waltham, pp. 199–208. https://doi.org/10.1016/B978-0-12-384719-5.00326-9.
Jones, T.A., 2017. Ecosystem restoration: recent advances in theory and practice. Rangel. J. 39, 417–430. https://doi.org/10.1071/RJ17024.
Joshi, M., 2019. Monitoring Progress towards Sustainable Forest Management (Consultancy No, 10. United Nations Forum on Forests (UNFF, New York, USA. https://www.un.org/esa/forests/wp-content/uploads/2020/08/MAR-EvaluationReport_24Dec2019.pdf.
Kersten, G.E., Meister, D.B., Mekonnen, G., 1994. Representation and support of reforestation processes. In: Proceedings of IEEE International Conference on Systems, Man and Cybernetics. Presented at the Proceedings of IEEE International Conference on Systems, Man and Cybernetics, vol.2, pp. 1228–1233. https://doi.org/10.1109/ICSMC.1994.400013.
Kerzner, H., 2010. Project Management Best Practices: Achieving Global Excellence, 2nd ed. John Wiley & Sons ; International Institute for Learning, Hoboken, N.J. : New York. http://DOI.org/10.1002/9781118835531.
Klakegg, O.J., Williams, T., Magnussen, O.M., Glasspool, H., 2008. Governance frameworks for public project development and estimation. Proj. Manag. J. 39, S27–S42. https://doi.org/10.1002/pmj.20058.
Kozar, R., Buck, L.E., Barrow, E.G., Sunderland, T.C.H., Catacutan, D.E., Planicka, C., Hart, A.K., Willemen, L., 2014. Toward Viable Landscape Governance Systems: What Works? [WWW Document]. CIFOR. URL. https://www.cifor.org/knowledge/publication/4814/. URL(accessed 3.11.21).
Krippendorff, K., 2018. Content Analysis: An Introduction to its Methodology, 4th ed 472. SAGE Publications, Inc, Thousand Oaks, CA, USA https://us.sagepub.com/en-us/nam/content-analysis/book258450.
Kusters, K., Buck, L., de Graaf, M., Minang, P., van Oosten, C., Zagt, R., 2018. Participatory planning, monitoring and evaluation of multi-stakeholder platforms in integrated landscape initiatives. Environ. Manag. 62, 170–181. https://doi.org/10.1007/s00267-017-0847-y.
Laestadius, L., Buckingham, K., Maginnis, S., Saint-Laurent, C., 2015. Before Bonn and beyond: the history and future of forest landscape restoration. Unasylva 66, 11–18. http://www.fao.org/3/a-i5212e.pdf.
Lake, F., Parrotta, J., Giardina, C., Davidson-Hunt, I., Uprety, Y., 2018. Integration of traditional and Western knowledge in forest landscape restoration. In: Forest Landscape Restoration: Integrated Approaches to Support Effective Implementation, pp. 198–226. https://doi.org/10.4324/9781315111872-12.
Lamb, D., 2013. Reforestation. In: Levin, S.A. (Ed.), Encyclopedia of Biodiversity, Second edition. Academic Press, Waltham, pp. 370–379. https://doi.org/10.1016/B978-0-12-384719-5.00121-0.
Laska, M.S., Ireland, A.W., 2019. A conceptual planning framework to improve integration of reclamation with site remediation. Ecol. Restor. 37, 263–272. https://doi.org/10.3368/er.37.4.263.
Le, H.D., Smith, C., Herbohn, J., Harrison, S., 2012. More than just trees: assessing reforestation success in tropical developing countries. J. Rural. Stud. 28, 5–19. https://doi.org/10.1016/j.jrurstud.2011.07.006.
Le, H.D., Smith, C., Herbohn, J., 2014. What drives the success of reforestation projects in tropical developing countries? The case of the Philippines. Glob. Environ. Chang. 24, 334–348. https://doi.org/10.1016/j.gloenvcha.2013.09.010.
Le, Hai Dinh, Smith, C., Herbohn, J., 2015. Identifying interactions among reforestation success drivers: a case study from the Philippines. Ecol. Model. 316, 62–77. https://doi.org/10.1016/j.ecolmodel.2015.08.005.
Lemenih, M., Habtemariam, K., 2014. Re-greening ethiopia: history, challenges and lessons. Forests 5, 1896–1909. https://doi.org/10.3390/f5081896.
Liu, W., Yao, S., Wang, J., Liu, M., 2019. Trends and features of agroforestry research based on bibliometric analysis. Sustainability 11, 3473. https://doi.org/10.3390/su11123473.
Lockwood, M., Davidson, J., Curtis, A., Stratford, E., Griffith, R., 2010. Governance principles for natural resource management. Soc. Nat. Resour. 23, 986–1001. https://doi.org/10.1080/08941920802178214.
Löfqvist, S., Ghazoul, J., 2019. Private funding is essential to leverage forest and landscape restoration at global scales. Nat. Ecol. Evol. 3, 1612–1615. https://doi.org/10.1038/s41559-019-1031-y.
LoSchiavo, A.J., Best, R.G., Burns, R.E., Gray, S., Harwell, M.C., Hines, E.B., McLean, A. R., St. Clair, T., Traxler, S., Vearil, J.W., 2013. Lessons learned from the first decade of adaptive management in comprehensive everglades restoration. Ecol. Soc. 18 (4), 70. https://doi.org/10.5751/ES-06065-180470.
Mansourian, S., 2016. Understanding the relationship between governance and Forest landscape restoration. Conserv. Soc. 14, 267–278. https://doi.org/10.4103/0972-4923.186830.
Mansourian, S., 2017. Governance and forest landscape restoration: a framework to support decision-making. J. Nat. Conserv. 37, 21–30. https://doi.org/10.1016/j.jnc.2017.02.010.
Mansourian, S., Parrotta, J., 2019. From addressing symptoms to tackling the illness: reversing forest loss and degradation. Environ. Sci. Pol. 101, 262–265. https://doi.org/10.1016/j.envsci.2019.08.007.
Mansourian, S., Vallauri, D., 2020. How to learn lessons from field experience in forest landscape restoration: a tentative framework. Environ. Manag. 66, 941–951. https://doi.org/10.1007/s00267-020-01295-4.
Mansourian, S.. Enabling Factors to Scale up Forest Landscape Restoration: The Roles of Governance and Economics Full Report with Case Studies. https://wwfint.awsassets.panda.org/downloads/2020_11_20_wwf_flr_policy_study_210x297_final_201119.pdf.
Mansourian, S., Dudley, N., Vallauri, D., 2017. Forest landscape restoration: Progress in the last decade and remaining challenges. Ecol. Restor. 35, 281–288. https://doi.org/10.3368/er.35.4.281.
Mansourian, S., Parrotta, J., Balaji, P., Bellwood-Howard, I., Bhasme, S., Bixler, R.P., Boedhihartono, A.K., Carmenta, R., Jedd, T., de Jong, W., Lake, F.K., Latawiec, A., Lippe, M., Rai, N.D., Sayer, J., Van Dexter, K., Vira, B., Visseren-Hamakers, I., Wyborn, C., Yang, A., 2020. Putting the pieces together: integration for forest landscape restoration implementation. Land Degrad. Dev. 31, 419–429. https://doi.org/10.1002/ldr.3448.
Mbeche, R., 2017. Climbing the ladder of participation: symbolic or substantive representation in preparing Uganda for REDD+? Conserv. Soc. 15, 426–438. https://doi.org/10.4103/cs.cs_16_100.
McLain, R., Lawry, S., Guariguata, M.R., Reed, J., 2021. Toward a tenure-responsive approach to forest landscape restoration: a proposed tenure diagnostic for assessing restoration opportunities. Land Use Policy 104, 103748. https://doi.org/10.1016/j.landusepol.2018.11.053.
Miller, B.P., Sinclair, E.A., Menz, M.H.M., Elliott, C.P., Bunn, E., Commander, L.E., Dalziell, E., David, E., Davis, B., Erickson, T.E., Golos, P.J., Krauss, S.L., Lewandrowski, W., Mayence, C.E., Merino-Martín, L., Merritt, D.J., Nevill, P.G., Phillips, R.D., Ritchie, A.L., Ruoss, S., Stevens, J.C., 2017. A framework for the practical science necessary to restore sustainable, resilient, and biodiverse ecosystems. Restor. Ecol. 25, 605–617. https://doi.org/10.1111/rec.12475.
Moeliono, M., Brockhaus, M., Gallemore, C., Dwisatrio, B., Maharani, C.D., Muharrom, E., Pham, T.T., 2020. REDD+ in Indonesia: a new mode of governance or just another project? For. Policy Econ. 121, 102316 https://doi.org/10.1016/j.forpol.2020.102316.
Mohan, M., Richardson, G., Gopan, G., Aghai, M.M., Bajaj, S., Galgamuwa, G.A.P., Vastaranta, M., Arachchige, P.S.P., Amorós, L., Corte, A.P.D., de Miguel, S., Leite, R. V., Kganyago, M., Broadbent, E.N., Doaemo, W., Shorab, M.A.B., Cardil, A., 2021. UAV-supported forest regeneration: current trends, challenges and implications. Remote Sens. 13, 2596. https://doi.org/10.3390/rs13132596.
Mohanty, B., Sahu, G., 2012. An empirical study on elements of forest governance: A study of JFM implementation models in Odisha. In: Procedia - Soc. Behav. Sci., the International Conference on Emerging Economies - Prospects and Challenges (ICEE-2012), 12–13 January 2012 37, pp. 314–323. https://doi.org/10.1016/j.sbspro.2012.03.297.
Morgan, D.L., 2014. Integrating Qualitative and Quantitative Methods: A Pragmatic Approach. SAGE Publications, Inc, 1 Oliver's Yard, 55 City Road London EC1Y 1SP. https://doi.org/10.4135/9781544304533.
Mulyani, M., Jepson, P., 2013. REDD+ and forest governance in Indonesia: a multistakeholder study of perceived challenges and opportunities. J. Environ. Dev. 22, 261–283. https://doi.org/10.1177/1070496513494203.
Muro, M., Jeffrey, P., 2008. A critical review of the theory and application of social learning in participatory natural resource management processes. J. Environ. Plan. Manag. 51, 325–344. https://doi.org/10.1080/09640560801977190.
Nagendra, H., 2007. Drivers of reforestation in human-dominated forests. Proc. Natl. Acad. Sci. U. S. A. 104, 15218–15223. https://doi.org/10.1073/pnas.0702319104.
Nagendra, H., Ostrom, E., 2011. The challenge of Forest diagnostics. Ecol. Soc. 16 https://doi.org/10.5751/ES-04189-160220.
Navarro, L.M., Marques, A., Proença, V., Ceauşu, S., Gonçalves, B., Capinha, C., Fernandez, M., Geldmann, J., Pereira, H.M., 2017. Restoring degraded land: contributing to Aichi targets 14, 15, and beyond. Curr. Opin. Environ. Sustain. 29, 207–214. https://doi.org/10.1016/j.cosust.2018.03.014.
Ngwube, A., 2013. Determinant factors for success of corporate governance in an organization. Singaporean J. Bus. Econ. Manag. Stud. 1, 18–24. https://doi.org/10.12816/0003809.
Nilsson, C., Aradottir, A., Hagen, D., Halldórsson, G., Høegh, K., Mitchell, R., Raulund-Rasmussen, K., Svavarsdóttir, K., Tolvanen, A., Wilson, S., 2016. Evaluating the process of ecological restoration. Ecol. Soc. 21 https://doi.org/10.5751/ES-08289-210141.
Nowell, L.S., Norris, J.M., White, D.E., Moules, N.J., 2017. Thematic analysis: striving to meet the trustworthiness criteria -, Norris, White, Moules, 2017. Int J Qual Methods 16. https://doi.org/10.1177/1609406917733847.
Osei, E., 2014. A WINNING GOVERNANCE STRUCTURE: Basic components of a corporate governance structure that supports a winning corporate strategy and enterprise value enhancement. International Journal of Advancements in Research & Technology - IJOART Volume 3, Issue 8, 100–105.
Ostrom, E., 2010. Institutional analysis and development: elements of the framework in historical perspective. Hist. Dev. Theor. Approach. Sociol. Vol II, 261–288.
Ostrom, E., Nagendra, H., 2007. Tenure alone is not sufficient: monitoring is essential. Environ. Econ. Policy Stud. 8, 175–199. https://doi.org/10.1007/BF03353956.
Pandit, R., Parrotta, J.A., Chaudhary, A.K., Karlen, D.L., Vieira, D.L.M., Anker, Y., Chen, R., Morris, J., Harris, J., Ntshotsho, P., 2020. A framework to evaluate land degradation and restoration responses for improved planning and decision-making. Ecosyst. People 16, 1–18. https://doi.org/10.1080/26395916.2019.1697756.
Paré, G., Kitsiou, S., 2017. Chapter 9 methods for literature reviews. In: Handbook of eHealth Evaluation: An Evidence-Based Approach [Internet]. University of Victoria. https://www.ncbi.nlm.nih.gov/books/NBK481583/.
Parrotta, J., Mansourian, S.. Putting the pieces together: integration for forest landscape restoration implementation. In: Forest Landscape Restoration: Integrated Approaches to Support Effective Implementation. https://doi.org/10.4324/9781315111872.
Partelow, S., Schlüter, A., Armitage, D., Bavinck, M., Carlisle, K., Gruby, R., Hornidge, A.-K., Le Tissier, M., Pittman, J., Song, A., Sousa, L., Väidianu, N., Van Assche, K., 2020. Environmental governance theories: a review and application to coastal systems. Ecol. Soc. 25 https://doi.org/10.5751/ES-12067-250419.
Phan, T.-H.D., Brouwer, R., Hoang, L.P., Davidson, M.D., 2018. Do payments for forest ecosystem services generate double dividends? An integrated impact assessment of

Vietnam's PES program. PLoS One 13, e0200881. https://doi.org/10.1371/journal.pone.0200881.
Pinto, S.R., Melo, F., Tabarelli, M., Padovesi, A., Mesquita, C.A., De Mattos Scaramuzza, C.A., Castro, P., Carrascosa, H., Calmon, M., Rodrigues, R., César, R.G., Brancalion, P.H.S., 2014. Governing and delivering a biome-wide restoration initiative: the case of Atlantic Forest restoration pact in Brazil. Forests 5, 2212–2229. https://doi.org/10.3390/f5092212.
Pistorius, T., Freiberg, H., 2014. From target to implementation: perspectives for the international governance of Forest landscape restoration. Forests 5, 482–497. https://doi.org/10.3390/f5030482.
Plummer, R., Dzyundzyak, A., Baird, J., Bodin, Ö., Armitage, D., Schultz, L., 2017. How do environmental governance processes shape evaluation of outcomes by stakeholders? A causal pathways approach. PLoS One 12, e0185375. https://doi.org/10.1371/journal.pone.0185375.
Pullin, A., Stewart, G., 2007. Guidelines for systematic review in environmental management. Conserv. Biol. J. Soc. Conserv. Biol. 20, 1647–1656. https://doi.org/10.1111/j.1523-1739.2006.00485.x.
Rahman, M., Mahmud, M., Ahmed, F., Deb, R., 2017. Developing alternative income generation activities reduces forest dependency of the poor and enhances their livelihoods: the case of the Chunati Wildlife Sanctuary, Bangladesh. For. Trees Livelihoods 26, 1–15. https://doi.org/10.1080/14728028.2017.1320590.
Rana, P., Miller, D.C., 2021. Predicting the long-term social and ecological impacts of tree-planting programs: evidence from northern India. World Dev 140, 105367. https://doi.org/10.1016/j.worlddev.2020.105367.
Richardson, B.J., 2016. Resourcing ecological restoration: the legal context for commercial initiatives. Restor. Ecol. 24, 686–691. https://doi.org/10.1111/rec.12390.
Richardson, B.J., Lefroy, T., 2016. Restoration dialogues: improving the governance of ecological restoration. Restor. Ecol. 24, 668–673. https://doi.org/10.1111/rec.12391.
Romijn, E., Coppus, R., De Sy, V., Herold, M., Roman-Cuesta, R.M., Verchot, L., 2019. Land restoration in Latin America and the Caribbean: an overview of recent, ongoing and planned restoration initiatives and their potential for climate change mitigation. Forests 10, 510. https://doi.org/10.3390/f10060510.
Sapkota, R.P., Stahl, P.D., Rijal, K., 2018. Restoration governance: an integrated approach towards sustainably restoring degraded ecosystems. Environ. Dev. 27, 83–94. https://doi.org/10.1016/j.envdev.2018.07.001.
Schultz, C.A., Coelho, D.L., Beam, R.D., 2014. Design and governance of multiparty monitoring under the USDA forest service's collaborative forest landscape restoration program. J. For. 112, 198–206. https://doi.org/10.5849/jof.13-070.
Shono, K., Cadaweng, E.A., Durst, P.B., 2007. Application of assisted natural regeneration to restore degraded tropical forestlands. Restor. Ecol. 15, 620–626. https://doi.org/10.1111/j.1526-100X.2007.00274.x.
Sikor, T., Cầm, H., 2016. REDD+ on the rocks? Conflict over forest and politics of justice in Vietnam. Hum. Ecol. 44, 217–227. https://doi.org/10.1007/s10745-016-9821-1.
Spanidis, P.-M., Roumpos, C., Pavloudakis, F., 2020. A multi-criteria approach for the evaluation of low risk restoration projects in continuous surface lignite mines. Energies 13, 2179. https://doi.org/10.3390/en13092179.
Springer, J., Campese, J., Nakangu, B., 2021. The Natural Resource Governance Framework – Improving Governance for Equitable and Effective Conservation. IUCN, Gland, Switzerland. https://doi.org/10.2305/IUCN.CH.2021.16.en.
Stanturf, J.A., Mansourian, S., 2020. Forest landscape restoration: state of play. R. Soc. Open Sci. 7, 201218 https://doi.org/10.1098/rsos.201218.
Stanturf, J., Mansourian, S., Kleine, M., 2017. Implementing Forest Landscape Restoration-a Practitioner's Guide. https://www.srs.fs.usda.gov/pubs/books/2017/book_2017_stanturf_001.pdf.
Stanturf, J.A., Kleine, M., Mansourian, S., Parrotta, J., Madsen, P., Kant, P., Burns, J., Bolte, A., 2019. Implementing forest landscape restoration under the Bonn challenge: a systematic approach. Ann. For. Sci. 76, 50. https://doi.org/10.1007/s13595-019-0833-z.
Stanturf, J., Mansourian, S., Darabant, A., Kleine, M., Kant, P., Burns, J., Tanga, A., Batkhuu, N., Ferreira, J., Foli, E., Guerra, A., Miah, M., P, R., Sabogal, C., Addo-Danso, S., Badugu, S., Junior, S., Chandel, P., Chander, S., Verma, R., 2020. FOREST LANDSCAPE RESTORATION IMPLEMENTATION: lessons learned from selected landscapes in Africa, Asia and Latin America (occasional paper no. IUFRO, Vienna, Austria. https://www.iufro.org/uploads/media/op33.pdf.
Suding, K., 2011. Toward an era of restoration in ecology: successes, failures, and opportunities ahead. Annu. Rev. Ecol. Evol. Syst. 42, 465–487. https://doi.org/10.1146/annurev-ecolsys-102710-145115.
Tacconi, L., 2011. Developing environmental governance research: the example of forest cover change studies. Environ. Conserv. 38, 234–246. https://doi.org/10.1017/S0376892911000233.
Thomas, H., Wooster, S., 2009. Complete Planting Design Course: Plans and Styles for every Garden. Mitchell Beazley.. https://evergreen.lib.in.us/eg/opac/record/13423325
Thomas, J., Harden, A., Newman, M., 2012. Synthesis: Combining results systematically and appropriately. In: Gough, D., Oliver, S. (Eds.), Introducing Systematic Reviews. J. T. SAGE Publications, Inc, London, UK.
Tougiani, A., Guero, C., Rinaudo, T., 2009. Community mobilisation for improved livelihoods through tree crop management in Niger. GeoJournal 74, 377–389. https://doi.org/10.1007/s10708-008-9228-7.
Turner-Skoff, J.B., Cavender, N., 2019. The benefits of trees for livable and sustainable communities. Plants People Planet 1, 323–335. https://doi.org/10.1002/ppp3.39.
van Oosten, C., 2013. Restoring landscapes—governing place: a learning approach to forest landscape restoration. J. Sustain. For. 32, 659–676. https://doi.org/10.1080/10549811.2013.818551.
Van Oosten, C., Gunarso, P., Koesoetjahjo, I., Wiersum, F., 2014. Governing forest landscape restoration: cases from Indonesia. Forests 5, 1143–1162. https://doi.org/10.3390/f5061143.
Veról, A.P., Bigate Lourenço, I., Fraga, J.P.R., Battemarco, B.P., Linares Merlo, M., Canedo de Magalhães, P., Miguez, M.G., 2020. River restoration integrated with sustainable urban water Management for Resilient Cities. Sustainability 12, 4677. https://doi.org/10.3390/su12114677.
Viana, C., Coudel, E., Barlow, J., Ferreira, J., Gardner, T., Parry, L., 2016. How does hybrid governance emerge? Role of the elite in building a green municipality in the eastern Brazilian Amazon. Environ. Policy Gov. 26, 337–350. https://doi.org/10.1002/eet.1720.
Vogt, J., Abood, M., 2020. A transdisciplinary, mixed methods research agenda for evaluating the collective impact approach for tree planting: the CommuniTree initiative in Northwest Indiana. US. Urban For. Urban Green. 53, 126735. https://doi.org/10.1016/j.ufug.2020.126735.
Wiegant, D., van Oel, P., Dewulf, A., 2022. Scale-sensitive governance in forest and landscape restoration: a systematic review. Reg. Environ. Chang. 22, 25. https://doi.org/10.1007/s10113-022-01889-0.
Williams, B.K., 2011. Adaptive management of natural resources—framework and issues. J. Environ. Manag. 92, 1346–1353. https://doi.org/10.1016/j.jenvman.2010.10.041.
Worku, T., Tripathi, S.K., Khare, D., 2017. Household level tree planting and its implication for environmental conservation in the Beressa watershed of Ethiopia. Environ. Syst. Res. 6, 10. https://doi.org/10.1186/s40068-017-0087-4.
Wu, W., Akers, K., Hu, E., Sarkozy, A., Vinson, P., 2018. Digital Tools for Managing Different Steps of the Systematic Review Process. Libr. Sch. Publ 136. https://digitalcommons.wayne.edu/cgi/viewcontent.cgi?article=1140&context=libsp.
Wyborn, C., 2015. Connecting knowledge with action through coproductive capacities: adaptive governance and connectivity conservation. Ecol. Soc. 20 https://doi.org/10.5751/ES-06510-200111.
Yao, N., van den Bosch, C.C.K., Yang, J., Devisscher, T., Wirtz, Z., Jia, L., Duan, J., Ma, L., 2019. Beijing's 50 million new urban trees: strategic governance for large-scale urban afforestation. Urban For. Urban Green 44, 126392. https://doi.org/10.1016/j.ufug.2019.126392.
Yimer, S., Zhang, K., Xiao, W., Ahmad, B., Ogato, G.S., Geda, K., Yonas, T., Xiaodan, L., 2016. Does participatory forest management save the remnant forest in Ethiopia? Proc. Natl. Acad. Sci. India Sect. B Biol. Sci. 88 https://doi.org/10.1007/s40011-016-0712-4.
Yin, R., Yin, G., 2010. China's primary programs of terrestrial ecosystem restoration: initiation, implementation, and challenges. Environ. Manage. 45, 429–441. https://doi.org/10.1007/s00267-009-9373-x.
Zeitoun, M., Lankford, B., Krueger, T., Forsyth, T., Carter, R., Hoekstra, A.Y., Taylor, R., Varis, O., Cleaver, F., Boelens, R., Swatuk, L., Tickner, D., Scott, C.A., Mirumachi, N., Matthews, N., 2016. Reductionist and integrative research approaches to complex water security policy challenges. Glob. Environ. Chang. 39, 143–154. https://doi.org/10.1016/j.gloenvcha.2016.04.010.