



PROTOCOL TO REVIEW FSC EFFECT-RELATED STUDIES

Supplementary material #1 for users of the FSC research portal

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BACKGROUND AND AIMS

The purpose of this document is to inform users of the FSC Research Portal about the process by which literature reporting on the effects of the Forest Stewardship Council (FSC effect-related studies) is reviewed. For this reason, we detail below the methodological steps followed, which are based on "[Guidelines for Systematic Review in Environmental Management](#)" (Pullin and Stewart, 2007).

PROTOCOL

Stage 1: Planning the review.

The first step was to plan the literature review by defining both the research questions and the key concepts associated with them.

Research questions.

The objectives of reviewing FSC effect-related studies are various. We seek both to communicate to our stakeholders about expected effects that have been achieved and to inform decision-makers, such as standard developers, about expected effects that have not yet been achieved. Moreover, we also aim to inform academics about the knowledge gaps that exist in research on FSC effects. Therefore, the following three questions guide our review:

- 1) *What are the effects of FSC reported in the academic and grey literature?*
- 2) *What methods and data are used in publications reporting on FSC effects?*
- 3) *What are the knowledge gaps - in terms of geographic, socio-ecological, and thematic scope - that exist in the literature reporting on FSC effects?*

Concepts and definitions

To achieve our aims, we defined three key concepts - FSC effects, outcomes, and impacts - as follows.

- **FSC effects** are intended and unintended outcomes and impacts resulted from FSC certification (based on [Polo-Villanueva et al., 2023](#)).
- **FSC outcomes** are medium-term and report on behavioural changes induced by FSC certification. E.g., the outcome of a policy that increases taxes in cigarettes is the change in smoking behaviour (based on [Knill and Tosun, 2020](#))
- **FSC impacts** are long term and report on the extent to which FSC certification addresses problems in expected and unexpected thematic areas E.g., The impact of increasing taxes on cigarettes is the reduction of smoking-related diseases (based on [Knill and Tosun, 2020](#))

Stage 2: Conducting the review.

After defining the objective and concepts of the review we proceeded to conduct the review following three steps: data search, data selection, and data extraction. These three steps are explained in more detail below.

Searching for literature

To identify the literature reporting on FSC effects we relied on both academic databases and our networks of researchers and stakeholders.

First, we mapped scientific literature annually and mainly using two academic databases: Web of Science and Scopus. We use the search string TITLE-ABS-KEY ("Forest Stewardship Council*" OR "FSC certification") to identify potential studies. Such terms were selected to obtain the widest possible population of articles addressing FSC regardless of its mention in the title, abstract, or keywords. In addition, we complement this search by including those publications resulting from google scholar alerts by using the following keywords: "Forest Stewardship", "Forest Certification" OR "FSC".

Second, to map grey literature, we relied on our network of researchers and stakeholders. This network is coordinated by FSC's Senior Research Relations Manager. The manager sends us, the Monitoring and Evaluation Team, all relevant publications on FSC effects monthly, and we proceed to review and incorporate them to the research portal once per year.

Selection of relevant literature

Once we have extracted the literature that potentially reports on FSC effects, we proceed to filter it to analyse only the most relevant. For this we make use of the two filters described below.

- **Filter 1 (Titles and abstracts):** all titles and abstract were reviewed having as an only inclusion criterion that they must (1) *mention the Forest Stewardship Council (FSC)*

Once the first filtering has been completed, we proceed to an intermediate step: the search for full texts. To do this we proceeded to download all available texts online. When the text was not available, we proceeded to send an email to the main authors of the publications to request for them. If it was still not possible to find the full text, we took note of this and continued with the second filter.

- **Filter 2 (Full texts):** all full texts were reviewed in search of two inclusion criteria: studies must be (2) *method guided empirical studies that (3) report on outcomes and/or impacts of FSC certification*. Such criteria led to the exclusion of purely theoretical, opinion and modelling studies. When the articles were not in English, we used the google translator.

Data extraction

General information

Metadata	Brief description
Title	The title of the publication
Authors	The authors of the publication
Year	The year the study was published
Publication type	The type of publication on which the study was published. It could be a book chapter, journal article, etc.
Source	Name of the source on which the study was published. It could be the journal or book name, etc.
Permanent Resource Identifier	URL or DOI of the study.

Methods

Metadata	Brief description
Evidence category	Category of link between the scope of the publication at the work of FSC. For this case, all studies are FSC effect related.
Evidence type	The study design on which rely the findings of the publications. They could be case studies, comparative studies, etc.
Evidence subtype	A subcategory of study design on which rely de findings of the publications.
Data type	Data on which rely the findings of the publications. They could be interviews or surveys, remote sensing, etc.

Geographical and socio-ecological scope

Metadata	Brief description
Forest zone	Forest biome on which study area of the publication is located. They could be tropical temperate or boreal.
Region(s)	Region(s) on which study area of the publication is located. They could be Europe, Africa, Asia, South America, Central America, North America, or Oceania.
Country(es)	Country(ies) on which study area of the publication is located.
Forest type	Type(s) of forest on which the findings of the publication report. They could be natural forests, plantations, or mixed forests.
Tenure ownership	Type of ownership over the forest on which the findings of the publication report. It could be public, private, etc.
Tenure management	Type of management over the forest on which the findings of the publication report. It could be public, private, etc.

Thematic scope

There are three sets of metadata reporting on the thematic scope: sustainability dimension(s), which indicates which sustainability pillar the findings of the study report on; topics, which indicates which topics within each sustainability pillar each study focuses on; and subtopics, which reports on which subcategories of topics the findings of the publications report on. Below are all the possible values that these three metadata fields can take.

Sustainability Dimensions	Topics	Subtopics
Economic	Management efficiency	Management costs
		Growing stock
	Utilization efficiency	Logging and transport costs
		Processing costs
		Volume utilized
	Resilience	Diversity of products
	Market	Supply
		Demand
		Price premium
	Profitability	Income
		Expenses
	Environmental	Forest cover
Forest loss		
Forest degradation		Canopy cover
		(Collateral) Tree damage
		Water quality
		Soil quality
		Alien species and GMOs
		Use of agrochemicals
		Disturbances
Climate		Carbon
Compositional diversity		Animal diversity
		Plant diversity
Structural diversity		Deadwood
		Protected areas
Functional diversity		Seed dispersal
		Tree regeneration
Social	Workers	Employment conditions
		Infrastructure
		Representation
		Occupational health

		Training and education
		Gender issues
	Local populations and Indigenous peoples	Consultation and participation
		Communal infrastructure
		Jobs
		Health
		Access to land
		Conflicts
	Governance	Accountability
		Illegal activities
		Transparency
		Institutional capacity
		Legal compliance

FSC effects

Metadata	Brief description
Quotes	Sentences that report on the main findings of the study regarding the effects of FSC.
Notes	Summarise the relevance of the study for FSC staff and stakeholders.

Data synthesis

FSC effect will be categorized in: **Consensual** (medium to high agreement among numerous studies including high quality studies); **Probable** (medium to high agreement among few studies); **Controversial** (low agreement among numerous studies); and **Gap of knowledge** (low agreement or disagreement among few studies).

Stage 3: Reporting and dissemination of results.

All reviewed studies and their metadata are stored in the [FSC Research Portal](#). In addition, the [FSC impact dashboard](#) shows in a simple way what evidence exists on FSC effects as well as the knowledge gaps that are still to be addressed by scholars.



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