

A critical comparison of conventional, certified, and community management of tropical forests for timber in terms of environmental, economic, and social variables

Supporting Online Material

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February 10, 2016

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1 Supporting methods

1.1 Literature review

To carry out the qualitative literature review, we followed the search protocol recommended for systematic reviews (Pullin & Stewart 2006). The goal was to compare forest variables under two different management regimes, or before and after management implementation. To find relevant publications, we used the literature search engine Google Scholar (<https://scholar.google.com/>, search performed in April and May 2015) with the following search terms: *community* OR *joint* OR *open access* OR *certification* OR *Forest stewardship council* AND *forest management* AND *tropical* OR *Africa* OR *Asia* OR *South America* AND *impact* OR *effect* AND *social* OR *economic* OR *environment*.

This search returned 38,100 results that we first sorted by relevance, and then scanned the 1,000 most relevant titles, after which the relevance of search results became too low to justify further processing. Next, for the titles identified as potentially relevant, we read the abstracts and identified studies that measured one or more specific forest value under one of the following management regime combinations: *i*) FSC-certified industrial *vs.* conventional industrial; *ii*) community managed *vs.* open access (no specific management); *iii*) FSC-certified industrial *vs.* FSC-certified community managed; *iv*) FSC-certified community managed *vs.* community managed).

We excluded purely theoretical and modeling studies and studies based solely on Corrective Action Requests (CARs) by forest certification bodies, if they did not verify on the ground whether the CARs were fulfilled. We included meta-analyses and systematic reviews if they calculated overall effect size, and highlighted them as such, and did not further include the individual studies on which the reviews were based. We did not include reviews without an overall effect size, but we did use the individual case studies on which these reviews were based. We included only studies from natural tropical and subtropical forests, excluding Australia.

From each study, we extracted the following information: *i*) variable group (environmental, social, economic); *ii*) variable (e.g. animal biodiversity, health and safety of logging crews, or harvest costs; Table 1 in main text); *iii*) management regimes compared; *iv*) continent and country and; *v*) outcome of the comparison. We went through all selected studies three times: first time listing all potentially extractable variables, with short descriptions, and the outcomes of the comparisons. We then drew a final list of variables (Table 1 in the main text), which grouped the existing variables into more general categories, and went through the studies again, to verify whether their results fitted to the new categories. During the writing process, and consultation workshop with representatives from the industry (Precious Woods, A.G.), the Forest Stewardship Council, and Non-Governmental Organizations, several new studies were incorporated into the study, which warranted a third, final check of all included studies. The extraction of information from studies was carried out by ZB and FH, and all studies were cross-checked by both ZB and FH.

We were only able to extract information on whether one management regime was better, same, or worse for a particular variable, but not by how much, as many studies did not quantify the outcomes. Therefore, our review is only qualitative, because we cannot tell whether an improvement reported by one study is equivalent to an improvement in the same variable in a different study. We also emphasize that not all the individual comparisons used are independent, as some studies contributed multiple comparisons. Also, the studies are geographically clustered and were carried out with different degrees of rigor and therefore do not deserve the same weight.

1.2 Variables and stakeholders

For forests leased by companies as concessions from the state or a community, the main stakeholder with respect to the economic variables is the logging company, which we presume aims to maximize profits. For forests managed directly by communities, the main stakeholder in terms of economic variables is usually a community enterprise (Humphries et al. 2012). For community enterprises, profit maximization may not be the principal goal – job creation or social capital building might be equally important. Community enterprises may therefore be judged successful even if no profits are generated (McDaniel 2003; Humphries et al. 2012).

Another issue that we do not consider is that some profits from private companies and community enterprises percolate upwards and contribute to national incomes through taxes, royalties, or increased investments (not quantified by any study). Similarly, some corporate profits may benefit local inhabitants through direct payments or general welfare subsidies such as schools, roads, or health services.

The core social value can be described as the welfare of local communities. No study captures all aspects of welfare: the definition and measurement of quality of life is considered a major challenge for scientists and policy makers alike. There are, however, several variables that are presumed to contribute to welfare (Table 1). In this study, we consider welfare to be the opposite of poverty (Hensbergen et al. 2011). The existing literature contains very few social variables that reach beyond local communities.

The environmental variables most often measured relate to carbon sequestration and biodiversity conservation (Table 1). These variables are interrelated and valued principally by the international community (Kuijk et al. 2009). Very few studies measure environmental variables valued specifically by local communities, and these indicators often fail to inform local decision making (Garcia and Lescuyer 2008) (Sheil et al. 2010).

2 Supporting data and reference

2.1 Full references of studies included in the analysis

Numbering corresponds to Figure 1 in the main text.

1. Medjibe VP, Putz FE, Romero C (2013) Certified and uncertified logging concessions compared in Gabon: Changes in stand structure, tree species, and biomass. *Environ Manage* 51:524–540.
2. Radachowsky J, Ramos VH, McNab R, Baur EH, Kazakov N (2012) Forest concessions in the Maya Biosphere Reserve, Guatemala: A decade later. *For Ecol Manage* 268:18–28.
3. Cerutti PO et al. (2014) Social impacts of the Forest Stewardship Council certification. An assessment in the Congo basin (Bogor, CIFOR).
4. Rasolofoson RA, Ferraro PJ, Jenkins CN, Jones JPG (2015) Effectiveness of Community Forest Management at reducing deforestation in Madagascar. *Biol Conserv* 184:271–277.
5. McDaniel JM (2003) Community-Based Forestry and Timber Certification in Southeast Bolivia. *Small-scale For Econ Manag Policy* 2:327–341.
6. Humphries S et al. (2012) Are community-based forest enterprises in the tropics financially viable? Case studies from the Brazilian Amazon. *Ecol Econ* 77:62–73.
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2.2 Database of comparisons of environmental, economic, and social outcomes for different tropical forest management regimes

Table S1: Details of comparisons obtained through a literature review of economic (ECON), environmental (ENV), and social (SOC) variables compared under conventional industrial logging (CL), Forest Stewardship Council certified industrial logging (FSC), community forest management (CFM), certified community forest management (FSC-CFM), and open access forests (OA). ID corresponds to Figure 1 in the main text and references in Section 2.1.

ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
1	Medjibe et al. 2013	Harvest efficiency	ECON	FSC	CL		More commercial timber wasted	Africa	Gabon	
1	Medjibe et al. 2013	Timber stock (sustainability of income)	ECON			FSC-CFM/CFM	Similar amount of damaged protected timber trees	Africa	Gabon	
1	Medjibe et al. 2013	Canopy loss, gap size	ENV			FSC/CL	Felling gap area per tree harvested	Africa	Gabon	
1	Medjibe et al. 2013	Ground disturbance	ENV	FSC	CL		AGB destroyed, expressed in various ways	Africa	Gabon	
1	Medjibe et al. 2013	Carbon stock, emissions	ENV	FSC	CL		Biomass converted to necromass (less under FSC)	Africa	Gabon	
1	Medjibe et al. 2013	Collateral damage	ENV	FSC	CL		Trees destroyed per tree harvested	Africa	Gabon	
1	Medjibe et al. 2013	Road and skid trail density	ENV	FSC	CL		Skid and road width, expressed in various ways	Africa	Gabon	
1	Medjibe et al. 2013	Tree diversity	ENV			FSC/CL	Before and after logging comparison of CL and FSC, both very little change	Africa	Gabon	
2	Radachowsky et al. 2012	Deforestation, fragmentation and burning	ENV	FSC	FSC-CFM		Burnt area annually (%), Resident immigrant community	Central America	Guatemala	Hughell and Butterfield 2008
2	Radachowsky et al. 2012	Deforestation, fragmentation and burning	ENV	FSC	FSC-CFM		Burnt area annually (%), Resident community, small difference	Central America	Guatemala	Hughell and Butterfield 2008

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
2	Radachowsky et al. 2012	Deforestation, fragmentation and burning	ENV	FSC	FSC-CFM		Burnt area annually (%), Non-resident community	Central America	Guatemala	Hughell and Butterfield 2008
2	Radachowsky et al. 2012	Deforestation, fragmentation and burning	ENV	FSC	FSC-CFM		Fragmentation, resident community with forest-based history	Central America	Guatemala	Hughell and Butterfield 2008
2	Radachowsky et al. 2012	Deforestation, fragmentation and burning	ENV	FSC	FSC-CFM		Fragmentation, resident immigrant community	Central America	Guatemala	Hughell and Butterfield 2008
2	Radachowsky et al. 2012	Deforestation, fragmentation and burning	ENV	FSC	FSC-CFM	FSC/FSC-CFM	Fragmentation, non-resident community	Central America	Guatemala	Hughell and Butterfield 2008
2	Radachowsky et al. 2012	Deforestation, fragmentation and burning	ENV	FSC	FSC-CFM		Annual deforestation (%), Resident immigrant community	Central America	Guatemala	Hughell and Butterfield 2008
2	Radachowsky et al. 2012	Deforestation, fragmentation and burning	ENV	FSC	FSC-CFM	FSC-CFM/FSC	Annual deforestation (%), Non-resident community	Central America	Guatemala	Hughell and Butterfield 2008
2	Radachowsky et al. 2012	Deforestation, fragmentation and burning	ENV	FSC	FSC-CFM	FSC-CFM	Annual deforestation (%), Resident community with forest-based history	Central America	Guatemala	Hughell and Butterfield 2008
2	Radachowsky et al. 2012	Environmental crime	ENV	FSC	FSC-CFM		Resident community with forest-based history	Central America	Guatemala	Hughell and Butterfield 2008

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
2	Radachowsky et al. 2012	Environmental crime	ENV	FSC	FSC-CFM		Resident immigrant community	Central America	Guatemala	Hughell and Butterfield 2008
2	Radachowsky et al. 2012	Environmental crime	ENV	FSC-CFM	FSC		Non-resident community	Central America	Guatemala	Hughell and Butterfield 2008
2	Radachowsky et al. 2012	Road and skid trail density	ENV	FSC	FSC-CFM		Distance from roads, non-resident community	Central America	Guatemala	Hughell and Butterfield 2008
2	Radachowsky et al. 2012	Road and skid trail density	ENV	FSC-CFM	FSC		Distance from roads, resident community with forest-based history	Central America	Guatemala	Hughell and Butterfield 2008
2	Radachowsky et al. 2012	Road and skid trail density	ENV	FSC-CFM	FSC		Distance from roads, resident immigrant community	Central America	Guatemala	Hughell and Butterfield 2008
2	Radachowsky et al. 2012	Internal conflict	SOC	FSC	FSC-CFM		Resident community with forest-based history	Central America	Guatemala	Hughell and Butterfield 2008
2	Radachowsky et al. 2012	Internal conflict	SOC	FSC	FSC-CFM		Resident immigrant community	Central America	Guatemala	Hughell and Butterfield 2008
2	Radachowsky et al. 2012	Internal conflict	SOC			FSC/FSC-CFM	Non-resident community	Central America	Guatemala	Hughell and Butterfield 2008

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
2	Radachowsky et al. 2012	Land grabbing, land tenure	SOC	FSC	FSC-CFM		Resident community with forest-based history	Central America	Guatemala	Hughell and Butterfield 2008
2	Radachowsky et al. 2012	Land grabbing, land tenure	SOC	FSC	FSC-CFM		Resident immigrant community	Central America	Guatemala	Hughell and Butterfield 2008
2	Radachowsky et al. 2012	Land grabbing, land tenure	SOC	FSC-CFM	FSC		Non-resident community	Central America	Guatemala	Hughell and Butterfield 2008
3	Cerutti et al. 2014	Deforestation, fragmentation and burning	ENV			FSC/CL	Shifting agriculture inside FMU ¹	Africa	Cameroon, Gabon, Congo Rep.	
3	Cerutti et al. 2014	Hunting	ENV			FSC/CL	Occurred everywhere ¹	Africa	Cameroon, Gabon, Congo Rep.	
3	Cerutti et al. 2014	Access to resources	SOC			FSC/CL	NTFP gathering ¹	Africa	Cameroon, Gabon, Congo Rep.	
3	Cerutti et al. 2014	Access to resources	SOC			FSC/CL	Hunting ¹	Africa	Cameroon, Gabon, Congo Rep.	
3	Cerutti et al. 2014	Awareness, empowerment, participation	SOC			FSC/CL	Knowledge of FMU status ¹	Africa	Cameroon, Gabon, Congo Rep.	
3	Cerutti et al. 2014	Direct econ. benefits to community	SOC	FSC	CL		Redistribution of benefits to villages, private benefitsharing mechanisms ¹	Africa	Cameroon, Gabon, Congo Rep.	
3	Cerutti et al. 2014	Infrastructure and Institutions	SOC	FSC	CL		Existing and active institutions ¹	Africa	Cameroon, Gabon, Congo Rep.	

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
3	Cerutti et al. 2014	Infrastructure and Institutions	SOC			FSC/CL	Education opportunities ¹	Africa	Cameroon, Gabon, Congo Rep.	
3	Cerutti et al. 2014	Infrastructure and Institutions	SOC			FSC/CL	Road construction ¹	Africa	Cameroon, Gabon, Congo Rep.	
3	Cerutti et al. 2014	Living and working conditions of employees	SOC	FSC	CL		Unions, insurance ¹	Africa	Cameroon, Gabon, Congo Rep.	
3	Cerutti et al. 2014	Living and working conditions of employees	SOC	FSC	CL		Provision and procedures for safety equipment use ¹	Africa	Cameroon, Gabon, Congo Rep.	
3	Cerutti et al. 2014	Living and working conditions of employees	SOC	FSC	CL		Sanitation in employee houses ¹	Africa	Cameroon, Gabon, Congo Rep.	
3	Cerutti et al. 2014	Living and working conditions of employees	SOC	FSC	CL		Medical facilities, injury procedures ¹	Africa	Cameroon, Gabon, Congo Rep.	
3	Cerutti et al. 2014	Living and working conditions of employees	SOC	FSC	CL		Damage compensation ¹	Africa	Cameroon, Gabon, Congo Rep.	
3	Cerutti et al. 2014	Living and working conditions of employees	SOC			FSC/CL	Living conditions (shop, house quality) ¹	Africa	Cameroon, Gabon, Congo Rep.	
3	Cerutti et al. 2014	Living and working conditions of employees	SOC			FSC/CL	Potable water ¹	Africa	Cameroon, Gabon, Congo Rep.	

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
3	Cerutti et al. 2014	Living and working conditions of employees	SOC			FSC/CL	Electricity and water in employee housing ¹	Africa	Cameroon, Gabon, Congo Rep.	
3	Cerutti et al. 2014	Living and working conditions of employees	SOC			FSC/CL	Permanent contracts and salary ¹	Africa	Cameroon, Gabon, Congo Rep.	
3	Cerutti et al. 2014	Conflict with company and government	SOC			FSC/CL	FMU perceived as a constraint to shifting cultivation, hunting, and NTFP collection ¹	Africa	Cameroon, Gabon, Congo Rep.	
3	Cerutti et al. 2014	Conflict with company and government	SOC			FSC/CL	Sacred site preservation, not well treated anywhere ¹	Africa	Cameroon, Gabon, Congo Rep.	
3	Cerutti et al. 2014	Equality, less marginalization	SOC			FSC/CL	Women as a percentage of staff ¹	Africa	Cameroon, Gabon, Congo Rep.	
4	Rasolofson et al. 2015	Deforestation, fragmentation and burning	ENV	CFM	OA		Deforestation rate, non-commercial CFM	Africa	Cameroon, Madagascar	
4	Rasolofson et al. 2015	Deforestation, fragmentation and burning	ENV			OA/CFM	Commercial CFM have higher deforestation rate than OA, but not significantly	Africa	Madagascar	
5	McDaniel 2003	Price premium	ECON	FSC-CFM	CFM		not clear whether the higher price is just because of Price premium	South America	Bolivia	
6	Humphries et al. 2012	Price premium	ECON	FSC-CFM	CFM		Certification positively influences price	South America	Brazil	
7	Imai et al. 2009	Animal diversity	ENV	FSC	CL		Higher species richness of large bodied mammals	Asia	Malaysia	

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
7	Imai et al. 2009	Carbon stock, emissions	ENV	FSC	CL		Can be attributed to SFM in certified concession	Asia	Malaysia	
7	Imai et al. 2009	Set asides and buffer zones	ENV	FSC	CL		Conservation areas established in certified concessions	Asia	Malaysia	
8	Blomley et al. 2009	Timber stock (sustainability of income)	ECON	CFM	OA		Basal area, volume, trees per ha. Conclusion based on contrasting temporal trends rather than direct comparison.	Africa	Tanzania	
9	Klooster and Masera 2000	Timber stock (sustainability of income)	ECON	CFM after	CFM before		Production of seedlings, not clearly attributable to CFM	Central America	Mexico	Moreno and Salinas 1998
9	Klooster and Masera 2000	Deforestation, fragmentation and burning	ENV	CFM after	CFM before		Afforestation, not clearly attributable to CFM	Central America	Mexico	Moreno and Salinas 1998
9	Klooster and Masera 2000	Set asides and buffer zones	ENV	CFM after	CFM before		New protected areas established within the managed forest, not clearly attributable to CFM	Central America	Mexico	Moreno and Salinas 1998
9	Klooster and Masera 2000	Infrastructure and Institutions	SOC	CFM after	CFM before		More shops, public transport, recreational facility, not clearly attributable to CFM	Central America	Mexico	Moreno and Salinas 1998
9	Klooster and Masera 2000	Jobs	SOC	CFM after	CFM before		More full time and part time jobs, not clearly attributable to CFM	Central America	Mexico	Moreno and Salinas 1998
10	Damette and Delacote 2011	Deforestation, fragmentation and burning	ENV	FSC	CL		Including both tropical and temperate forests	Global	Global	Meta-analysis
11	Asner et al. 2004	Canopy loss, gap size	ENV	RIL	CL		Lower canopy damage per tree	South America	Brazil	Asner et al. 2004b

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
11	Asner et al. 2004	Road and skid trail density	ENV	RIL	CL		Lower average % road, deck, and skid area in RIL harvest blocks	South America	Brazil	Asner et al. 2004b
12	Davis 2000	Animal diversity	ENV	RIL	CL		Total dung beetle species richness	Asia	Malaysia	
12	Davis 2000	Animal diversity	ENV	RIL	CL		Number of dung beetle forest specialist species	Asia	Malaysia	
13	Bertault and Sist 1997	Collateral damage	ENV	RIL	CL		Tree injury, adjusted for logging intensity	Asia	Indonesia	Sist et al. 1998
13	Bertault and Sist 1997	Road and skid trail density	ENV	RIL	CL		Skidding damage, adjusted for logging intensity	Asia	Indonesia	Sist et al. 1998
14	Feldpausch et al. 2005	Road and skid trail density	ENV	FSC	CL		Even when logging intensity is taken into account; some certified, some RIL	South America	South America	Meta-analysis
15	de Lima et al. 2008	Deforestation, fragmentation and burning	ENV	FSC-CFM	CFM		The ratio of burning in primary versus secondary forests	South America	Brazil	
15	de Lima et al. 2008	Deforestation, fragmentation and burning	ENV			CFM/FSC-CFM	Incidence of forest fires	South America	Brazil	
15	de Lima et al. 2008	Environmental crime	ENV	FSC-CFM	CFM		Not less environmental crime, but more frequently exposed	South America	Brazil	
15	de Lima et al. 2008	Hunting	ENV	FSC-CFM	CFM		Use measures to mitigate effect of hunting	South America	Brazil	
15	de Lima et al. 2008	Hunting	ENV			CFM/FSC-CFM	Hunting practiced in all communities	South America	Brazil	
15	de Lima et al. 2008	Set asides and buffer zones	ENV			CFM/FSC-CFM	No difference in knowledge of existence of protected areas	South America	Brazil	

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
15	de Lima et al. 2008	Awareness, empowerment, participation	SOC	FSC- CFM	CFM		Level of awareness that management plan is collective.	South America	Brazil	
15	de Lima et al. 2008	Awareness, empowerment, participation	SOC			FSC- CFM/CFM	78% and 77% were aware of a management plan and fire use	South America	Brazil	
15	de Lima et al. 2008	Awareness, empowerment, participation	SOC			FSC- CFM/CFM	Participation in association meetings and management activities	South America	Brazil	
15	de Lima et al. 2008	Infrastructure and Institutions	SOC			FSC- CFM/CFM	Coverage and quality of technical assistance (both reasonable standard)	South America	Brazil	
15	de Lima et al. 2008	Internal conflict	SOC			FSC- CFM/CFM	Same level of agreement and disagreement on association decisions	South America	Brazil	
15	de Lima et al. 2008	Land grabbing, land tenure	SOC			FSC- CFM/CFM	Presence of land right confrontation	South America	Brazil	
15	de Lima et al. 2008	Living and working conditions of employees	SOC	FSC- CFM	CFM		Health and safety courses participation	South America	Brazil	
15	de Lima et al. 2008	Living and working conditions of employees	SOC			FSC- CFM/CFM	Use of safety equipment by workers	South America	Brazil	
15	de Lima et al. 2008	Community wellbeing and livelihoods	SOC	FSC- CFM	CFM		Garbage disposal, before after comparison	South America	Brazil	
15	de Lima et al. 2008	Community wellbeing and livelihoods	SOC			FSC- CFM/CFM	Capacity building and CFM training	South America	Brazil	
15	de Lima et al. 2008	Compliance with harvest regulations	SOC	FSC- CFM	CFM		Better compliance with regulation	South America	Brazil	

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
16	Boltz et al. 2001	Profit	ECON	RIL	CL		RIL vs CL harvest, when all regulations are fulfilled, in the 1st harvest cycle	South America	Brazil	Study collected in a review by Boltz 2003 Study
17	Winkler 1997	Worker productivity	ECON	RIL	CL		Brazil-W	South America	Brazil	collected in a review by Boltz 2003 Study
17	Winkler 1997	Pre-logging costs	ECON	CL	RIL		Brazil-W, planning and infrastructure costs	South America	Brazil	collected in a review by Boltz 2003 Study
17	Winkler 1997	Skidding cost	ECON	CL	RIL		Brazil-W, productivity of RIL skidding	South America	Brazil	collected in a review by Boltz 2003 Study
17	Winkler 1997	Canopy loss, gap size	ENV	CL	RIL		Brazil-W, gap size	South America	Brazil	collected in a review by Boltz 2003 Study
17	Winkler 1997	Canopy loss, gap size	ENV	RIL	CL		Brazil-W, canopy loss	South America	Brazil	collected in a review by Boltz 2003 Study
17	Winkler 1997	Ground disturbance	ENV	RIL	CL		Brazil-W, ground area disturbed	South America	Brazil	collected in a review by Boltz 2003 Study
17	Winkler 1997	Collateral damage	ENV	CL	RIL		Brazil-W, damaged trees	South America	Brazil	collected in a review by Boltz 2003 Study
18	Pereira et al. 2002	Canopy loss, gap size	ENV	RIL	CL		Taking the number of trees felled into account	South America	Brazil	collected in a review by Boltz 2003 Study
18	Pereira et al. 2002	Ground disturbance	ENV	RIL	CL		Taking the number of trees felled into account	South America	Brazil	collected in a review by Boltz 2003 Study

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
19	Nebel et al. 2005	Price premium	ECON	CL	FSC		<i>Amburana cearensis</i>	South America	Bolivia	
19	Nebel et al. 2005	Price premium	ECON	CL	FSC		<i>Phyllostylon rhamnoides</i>	South America	Bolivia	
19	Nebel et al. 2005	Price premium	ECON	FSC	CL		<i>Amburana cearensis</i> sawn wood	South America	Bolivia	
19	Nebel et al. 2005	Price premium	ECON	FSC	CL		<i>Vochysia haenkeana</i>	South America	Bolivia	
19	Nebel et al. 2005	Price premium	ECON	FSC	CL		<i>Ficus</i> spp	South America	Bolivia	
19	Nebel et al. 2005	Price premium	ECON	FSC	CL		<i>Vochysia haenkeana</i> boards	South America	Bolivia	
19	Nebel et al. 2005	Price premium	ECON	FSC	CL		<i>Ficus</i> spp doors	South America	Bolivia	
19	Nebel et al. 2005	Price premium	ECON	FSC	CL		<i>Cariniana</i> sp doors	South America	Bolivia	
19	Nebel et al. 2005	Price premium	ECON	FSC	CL		<i>Vochysia haenkeana</i> doors	South America	Bolivia	
19	Nebel et al. 2005	Price premium	ECON	FSC	CL		<i>Hura crepitans</i> doors	South America	Bolivia	
19	Nebel et al. 2005	Price premium	ECON			FSC/CL	<i>Hymenea courbaril</i>	South America	Bolivia	
19	Nebel et al. 2005	Price premium	ECON			FSC/CL	<i>Cariniana</i> sp	South America	Bolivia	
19	Nebel et al. 2005	Price premium	ECON			FSC/CL	<i>Hura crepitans</i>	South America	Bolivia	
20	Sist et al. 2003	Canopy loss, gap size	ENV	RIL	CL		Canopy damage, harvest intensity controlled for	Asia	Indonesia	
20	Sist et al. 2003	Collateral damage	ENV	RIL	CL		Trees destroyed, harvest intensity controlled for	Asia	Indonesia	

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
20	Sist et al. 2003	Collateral damage	ENV			RIL/CL	Trees injured, harvest intensity controlled for	Asia	Indonesia	
20	Sist et al. 2003	Collateral damage	ENV			RIL/CL	Under higher logging intensities	Asia	Indonesia	
20	Sist et al. 2003	Road and skid trail density	ENV	RIL	CL		Damage due to skidding, harvest intensity controlled for	Asia	Indonesia	
21	Parren and Bongers 2001	Collateral damage	ENV			RIL/CL	Collateral damage	Africa	Cameroon	
22	Pinard and Putz 1996	Carbon stock, emissions	ENV	RIL	CL		Percentage of biomass loss	Asia	Malaysia	
22	Pinard and Putz 1996	Collateral damage	ENV	RIL	CL		Controlling for logging intensity	Asia	Malaysia	
23	Pinard et al. 2000	Total cost of logging operations	ECON	CL	RIL		Direct operation costs	Asia	Malaysia	
23	Pinard et al. 2000	Worker productivity	ECON	CL	RIL		Time efficiency in skidding and felling	Asia	Malaysia	
23	Pinard et al. 2000	Ground disturbance	ENV	RIL	CL		Area of soil damaged, disturbance to top soils	Asia	Malaysia	
23	Pinard et al. 2000	Collateral damage	ENV	RIL	CL		Proportion of basal area killed relative to extracted, controlled for logging intensity	Asia	Malaysia	
23	Pinard et al. 2000	Collateral damage	ENV	RIL	CL		Percentage of uprooted and crushed trees, snapped crowns	Asia	Malaysia	
24	Schreckenberg and Luttrell 2009	Profit	ECON	CFM	OA		Due to increased cash flow (enterprise economy)	Africa	Kenya	McDermott et al. 2009

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
24	Schreckenberg and Luttrell 2009	Deforestation, fragmentation and burning	ENV	CFM	OA		Improvement in forest condition	Africa	Tanzania	McDermott et al. 2009
24	Schreckenberg and Luttrell 2009	Deforestation, fragmentation and burning	ENV	OA	CFM		Neighbouring forests now exploited (leakage)	Africa	Tanzania	McDermott et al. 2009
24	Schreckenberg and Luttrell 2009	Environmental crime	ENV	CFM	OA		less illegal harvest	Africa	Kenya	McDermott et al. 2009
24	Schreckenberg and Luttrell 2009	Environmental crime	ENV	CFM	OA		less illegal harvest	Africa	Tanzania	McDermott et al. 2009
24	Schreckenberg and Luttrell 2009	Access to resources	SOC	OA	CFM		Less fallback option for the poorest	Africa	Tanzania	McDermott et al. 2009
24	Schreckenberg and Luttrell 2009	Access to resources	SOC	OA	CFM		due to stricted harvesting restrictions	Africa	Kenya	McDermott et al. 2009
24	Schreckenberg and Luttrell 2009	Access to resources	SOC	OA	CFM		due to stricted harvesting restrictions	Africa	Tanzania	McDermott et al. 2009
24	Schreckenberg and Luttrell 2009	Access to resources	SOC			OA/CFM	Overall contribution of forest products to household income (Kenya, Tanzania)	Africa	Kenya	McDermott et al. 2009
24	Schreckenberg and Luttrell 2009	Access to resources	SOC			OA/CFM	Overall contribution of forest products to household income (Kenya, Tanzania)	Africa	Tanzania	McDermott et al. 2009
24	Schreckenberg and Luttrell 2009	Access to resources	SOC			OA/CFM	Food security and short-age	Africa	Kenya	McDermott et al. 2009

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
24	Schreckenberg and Luttrell 2009	Awareness, empowerment, participation	SOC	CFM	OA		Capacity to engage with outsiders, improved participations in meetings	Africa	Kenya	McDermott et al. 2009
24	Schreckenberg and Luttrell 2009	Direct econ. benefits to community	SOC	CFM	OA		From fees, commercial use allowed	Africa	Tanzania	McDermott et al. 2009
24	Schreckenberg and Luttrell 2009	Direct econ. benefits to community	SOC			OA/CFM	From ecotourism, no commercial use allowed	Africa	Tanzania	McDermott et al. 2009
24	Schreckenberg and Luttrell 2009	Human-wildlife conflict	SOC	CFM	OA		Elephant fence reduced crop damage	Africa	Kenya	McDermott et al. 2009
24	Schreckenberg and Luttrell 2009	Human-wildlife conflict	SOC	OA	CFM		Wildlife damage to crops, affected the poorest the most	Africa	Tanzania	McDermott et al. 2009
24	Schreckenberg and Luttrell 2009	Infrastructure and Institutions	SOC	CFM	OA		More active committees, governance and social cohesion	Africa	Tanzania	McDermott et al. 2009
24	Schreckenberg and Luttrell 2009	Infrastructure and Institutions	SOC	CFM	OA		School and other infrastructure constructed from forest funds	Africa	Tanzania	McDermott et al. 2009
24	Schreckenberg and Luttrell 2009	Community wellbeing and livelihoods	SOC	CFM	OA		New income generating activities introduced	Africa	Kenya	McDermott et al. 2009
24	Schreckenberg and Luttrell 2009	Community wellbeing and livelihoods	SOC	CFM	OA		New income generating activities introduced	Africa	Tanzania	McDermott et al. 2009
24	Schreckenberg and Luttrell 2009	Community wellbeing and livelihoods	SOC	CFM	OA		Household assets	Africa	Kenya	McDermott et al. 2009

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
24	Schreckenberg and Luttrell 2009	Community wellbeing and livelihoods	SOC	CFM	OA		Medicinal plant abundance	Africa	Tanzania	McDermott et al. 2009
24	Schreckenberg and Luttrell 2009	Community wellbeing and livelihoods	SOC	CFM	OA		Alternative livelihoods brought income, but only to certain households	Africa	Kenya	McDermott et al. 2009
24	Schreckenberg and Luttrell 2009	Community wellbeing and livelihoods	SOC			OA/CFM	No perceived change in perceived wellbeing	Africa	Kenya	McDermott et al. 2009
24	Schreckenberg and Luttrell 2009	Community wellbeing and livelihoods	SOC			OA/CFM	Health status	Africa	Kenya	McDermott et al. 2009
24	Schreckenberg and Luttrell 2009	Community wellbeing and livelihoods	SOC			OA/CFM	No overall change in household assets, apart from roofs	Africa	Kenya	McDermott et al. 2009
24	Schreckenberg and Luttrell 2009	Community wellbeing and livelihoods	SOC			OA/CFM	Alternative livelihoods did not reach many people	Africa	Tanzania	McDermott et al. 2009
24	Schreckenberg and Luttrell 2009	Equality, less marginalization	SOC	OA	CFM		poor become poorer, equity in wealth, only the richest households benefit from alternative livelihoods	Africa	Kenya	McDermott et al. 2009
24	Schreckenberg and Luttrell 2009	Equality, less marginalization	SOC	OA	CFM		poor become poorer, equity in wealth, only the richest households benefit from alternative livelihoods	Africa	Tanzania	McDermott et al. 2009
24	Schreckenberg and Luttrell 2009	Equality, less marginalization	SOC			OA/CFM	Low or no representation of women, very poor, and young men, equality in decision making	Africa	Tanzania	McDermott et al. 2009

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
25	Palmer and Engel 2007	Water regulation	ENV			CFM/CL	Water quality and flooding equally bad before and after decentralization ²	Asia	Indonesia	
25	Palmer and Engel 2007	Hunting	ENV			CFM/CL	Hunting equally negatively impacted by logging before and after decentralization ²	Asia	Indonesia	
25	Palmer and Engel 2007	Access to resources	SOC	CFM	CL		Impact of logging on NTFP resources ²	Asia	Indonesia	
25	Palmer and Engel 2007	Access to resources	SOC	CFM	CL		Impact of logging on farming ²	Asia	Indonesia	
25	Palmer and Engel 2007	Awareness, empowerment, participation	SOC	CFM	CL		Empowerment, ability to negotiate ²	Asia	Indonesia	
25	Palmer and Engel 2007	Awareness, empowerment, participation	SOC	CFM	CL		Perception of forest ownership ²	Asia	Indonesia	
25	Palmer and Engel 2007	Direct econ. benefits to community	SOC	CFM	CL		Cash income to community, all communities received some financial benefit from logging firm ²	Asia	Indonesia	
25	Palmer and Engel 2007	Infrastructure and Institutions	SOC	CFM	CL		In-kind benefits (infrastructure) from logging firm ²	Asia	Indonesia	
25	Palmer and Engel 2007	Internal conflict	SOC	CL	CFM		Conflict between communities as a result of decentralization ²	Asia	Indonesia	
25	Palmer and Engel 2007	Conflict with company and government	SOC			CFM/CL	Company community conflict ²	Asia	Indonesia	

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
26	Pearce et al. 2003	Profit	ECON	CL	FSC		(Certified) sustainable forest management systematically less profitable than CL, based on Pearce et al. 2000, unpublished but available document	Meta-analysis	Brazil	Meta-analysis
27	Bacha and Rodriguez 2007	Access to resources	SOC	OA	RIL		Perceived decline in animal abundance for hunting (tapir, jaguar, deer) ³	South America	Brazil	
27	Bacha and Rodriguez 2007	Awareness, empowerment, participation	SOC	RIL	OA		All workers reported better and new skills ³	South America	Brazil	
27	Bacha and Rodriguez 2007	Direct econ. benefits to community	SOC			RIL/OA	Local level of investment in community, did not change with RIL ³	South America	Brazil	
27	Bacha and Rodriguez 2007	Infrastructure and Institutions	SOC	RIL	OA		Roads improved ³	South America	Brazil	
27	Bacha and Rodriguez 2007	Living and working conditions of employees	SOC	RIL	OA		Perceived welfare and pursuing power of workers employed by the project ³	South America	Brazil	
27	Bacha and Rodriguez 2007	Compliance with harvest regulations	SOC	RIL	OA		Labor law, harvest regulations ³	South America	Brazil	
28	Burivalova et al. 2015	Animal diversity	ENV	RIL	CL		Shifts in bird abundance lower	Pantropical	Pantropical	Meta-analysis
29	Bicknell et al. 2014	Animal diversity	ENV	RIL	CL		Smaller shifts in animal abundance under RIL	Pantropical	Pantropical	Meta-analysis
30	Putz and Pinard 1993	Carbon stock, emissions	ENV	RIL	CL		Above-ground biomass	Asia	Malaysia	Meta-analysis

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
30	Putz and Pinard 1993	Carbon stock, emissions	ENV	RIL	CL		Root biomass	Asia	Malaysia	Meta-analysis
30	Putz and Pinard 1993	Carbon stock, emissions	ENV	RIL	CL		Soil carbon	Asia	Malaysia	Meta-analysis
30	Putz and Pinard 1993	Carbon stock, emissions	ENV	RIL	CL		Necromass	Asia	Malaysia	Meta-analysis
31	Oyono 2005	Awareness, empowerment, participation	SOC	CFM	OA		More people are interested in management (especially young), this is interpreted as negative by the author	Africa	Cameroon	
31	Oyono 2005	Direct econ. benefits to community	SOC	CFM	OA		But interpreted negatively by author, as income was not used for useful activities	Africa	Cameroon	
31	Oyono 2005	Internal conflict	SOC	OA	CFM		Challenges to traditional governance and institutions	Africa	Cameroon	
31	Oyono 2005	Internal conflict	SOC	OA	CFM		Committee members misusing funds	Africa	Cameroon	
32	Kollert and Lagan 2007	Price premium	ECON	FSC	CL		17% to 24% price difference on average, but highest for expensive species groups	Asia	Malaysia	
33	Araujo et al. 2009	Price premium	ECON			FSC/CL	No price premium, only market access	South America	Brazil	
33	Araujo et al. 2009	Management and administration	ECON	FSC	CL		Management systems and performance, and forest management practices	South America	Brazil	

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
33	Araujo et al. 2009	Management and administration	ECON			FSC/CL	Expectation of simplified regulation wasn't fulfilled	South America	Brazil	
33	Araujo et al. 2009	Market access	ECON	FSC	CL		Gained or retained market access	South America	Brazil	
33	Araujo et al. 2009	Profit	ECON			FSC/CL	Profitability	South America	Brazil	
33	Araujo et al. 2009	Conflict with company and government	SOC	FSC	CL		Public confidence, communication with landowners	South America	Brazil	
34	Carrera et al. 2004	Harvest efficiency	ECON			FSC-CFM/CFM	Was adequate even before ⁴	South America	Guatemala	
34	Carrera et al. 2004	Price premium	ECON			FSC-CFM/CFM	Only a very temporary increase ⁴	South America	Guatemala	
34	Carrera et al. 2004	Management and administration	ECON			FSC-CFM/CFM	Administration and management of operations ⁴	South America	Guatemala	
34	Carrera et al. 2004	Market access	ECON			FSC-CFM/CFM	Most timber sold at normal market with no preference for certified products ⁴	South America	Guatemala	
34	Carrera et al. 2004	Timber stock (sustainability of income)	ECON	FSC-CFM	CFM		More sustainable logging intensities ⁴	South America	Guatemala	
34	Carrera et al. 2004	Timber stock (sustainability of income)	ECON	FSC-CFM	CFM		Creation of longer-term management plans, avoiding immediate harvest of all available trees ⁴	South America	Guatemala	
34	Carrera et al. 2004	Deforestation, fragmentation and burning	ENV	FSC-CFM	CFM		Better organization of a fire prevention plan ⁴	South America	Guatemala	Radachowski et al. 2012
34	Carrera et al. 2004	Set asides and buffer zones	ENV			FSC-CFM/CFM	Creation of protected zones, water bodies ⁴	South America	Guatemala	

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
34	Carrera et al. 2004	Tree diversity	ENV			FSC-CFM/CFM	Seed tree protection, threatened species protection ⁴	South America	Guatemala	
34	Carrera et al. 2004	Awareness, empowerment, participation	SOC	FSC-CFM	CFM		Transparency in forest management activities ⁴	South America	Guatemala	
34	Carrera et al. 2004	Awareness, empowerment, participation	SOC	FSC-CFM	CFM		Creation of various committees ⁴	South America	Guatemala	
34	Carrera et al. 2004	Awareness, empowerment, participation	SOC			FSC-CFM/CFM	Awareness of sustainable forest management, protected species, etc. ⁴	South America	Guatemala	
34	Carrera et al. 2004	Awareness, empowerment, participation	SOC			FSC-CFM/CFM	Workers' skills and technical capacity ⁴	South America	Guatemala	
34	Carrera et al. 2004	Internal conflict	SOC	FSC-CFM	CFM		Clarity in the relationship between NTFP ex-tractors and community concession holders ⁴	South America	Guatemala	
34	Carrera et al. 2004	Internal conflict	SOC			FSC-CFM/CFM	Collaboration between communities ⁴	South America	Guatemala	
34	Carrera et al. 2004	Land grabbing, land tenure	SOC	FSC-CFM	CFM		Better mapping and clarity in tenure ⁴	South America	Guatemala	
34	Carrera et al. 2004	Living and working conditions of employees	SOC	FSC-CFM	CFM		Use of safety equipment by workers ⁴	South America	Guatemala	
34	Carrera et al. 2004	Living and working conditions of employees	SOC	FSC-CFM	CFM		First aid kit availability in logging camps ⁴	South America	Guatemala	
34	Carrera et al. 2004	Living and working conditions of employees	SOC	FSC-CFM	CFM		Life insurance (compliance with national law) ⁴	South America	Guatemala	

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
34	Carrera et al. 2004	Living and working conditions of employees	SOC	FSC-CFM	CFM	CFM	Logging camp conditions, waste management ⁴	South America	Guatemala	
34	Carrera et al. 2004	Living and working conditions of employees	SOC	FSC-CFM	CFM	CFM	Labour contracts ⁴	South America	Guatemala	
34	Carrera et al. 2004	Compliance with harvest regulations	SOC	FSC-CFM	CFM	CFM	Better measurements of stock, more realistic harvest intensity ⁴	South America	Guatemala	
35	Van Der Hout 1998	Total cost of logging operations	ECON	CL	RIL	RIL	Guyana-H, not waste adjusted	South America	Guyana	Study collected in a review by Boltz 2003 Study
35	Van Der Hout 1998	Total cost of logging operations	ECON	RIL	CL	CL	Brazil-H, waste adjusted	South America	Brazil	collected in a review by Boltz 2003 Study
35	Van Der Hout 1998	Worker productivity	ECON	CL	RIL	RIL	Guyana-H, RIL more time consuming	South America	Guyana	collected in a review by Boltz 2003 Study
35	Van Der Hout 1998	Pre-logging costs	ECON	CL	RIL	RIL	Guyana-H, planning and infrastructure costs	South America	Guyana	collected in a review by Boltz 2003 Study
35	Van Der Hout 1998	Profit	ECON	CL	RIL	RIL	Guyana-H profit margins	South America	Guyana	collected in a review by Boltz 2003 Study
35	Van Der Hout 1998	Skidding cost	ECON	RIL	CL	CL	Guyana-H, productivity of RIL skidding	South America	Guyana	collected in a review by Boltz 2003 Study

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
35	Van Hout 1998	Der Canopy loss, gap size	ENV	CL	RIL		Guyana-H, canopy loss	South America	Guyana	Study collected in a review by Boltz 2003
35	Van Hout 1998	Der Canopy loss, gap size	ENV	CL	RIL		Guyana-H, gap size	South America	Guyana	Study collected in a review by Boltz 2003
35	Van Hout 1998	Der Ground disturbance	ENV	RIL	CL		Guyana-H, ground area disturbed	South America	Guyana	Study collected in a review by Boltz 2003
35	Van Hout 1998	Der Collateral damage	ENV	RIL	CL		Guyana-H, damaged trees	South America	Guyana	Study collected in a review by Boltz 2003
36	Montenegro 1996	Total cost of logging operations	ECON	CL	RIL		Ecuador, not waste ed-justed	South America	Ecuador	Study collected in a review by Boltz 2003
36	Montenegro 1996	Worker productivity	ECON	CL	RIL		Ecuador, RIL more time consuming	South America	Ecuador	Study collected in a review by Boltz 2003
36	Montenegro 1996	Pre-logging costs	ECON	CL	RIL		Ecuador, planning and infrastructure costs	South America	Ecuador	Study collected in a review by Boltz 2003
36	Montenegro 1996	Skidding cost	ECON	CL	RIL		Ecuador, productivity of RIL skidding	South America	Ecuador	Study collected in a review by Boltz 2003
36	Montenegro 1996	Ground disturbance	ENV	RIL	CL		Ecuador, ground area disturbed	South America	Ecuador	Study collected in a review by Boltz 2003

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
37	Holmes et al. 2002	Worker productivity	ECON	CL	RIL		Brazil-H, RIL more time consuming	South America	Brazil	Study collected in a review by Boltz 2003
37	Holmes et al. 2002	Pre-logging costs	ECON	CL	RIL		Brazil-H, planning and infrastructure costs	South America	Brazil	Study collected in a review by Boltz 2003
37	Holmes et al. 2002	Profit	ECON	RIL	CL		Brazil-H profit margins	South America	Brazil	Study collected in a review by Boltz 2003
37	Holmes et al. 2002	Skidding cost	ECON	RIL	CL		Brazil-H	South America	Brazil	Study collected in a review by Boltz 2003
37	Holmes et al. 2002	Canopy loss, gap size	ENV	RIL	CL		Brazil-H, canopy loss	South America	Brazil	Study collected in a review by Boltz 2003
37	Holmes et al. 2002	Canopy loss, gap size	ENV			RIL/CL	Brazil-H, gap size	South America	Brazil	Study collected in a review by Boltz 2003
37	Holmes et al. 2002	Ground disturbance	ENV	RIL	CL		Brazil-H, ground area disturbed	South America	Brazil	Study collected in a review by Boltz 2003
37	Holmes et al. 2002	Collateral damage	ENV			RIL/CL	Brazil-H, damaged trees	South America	Brazil	Study collected in a review by Boltz 2003
38	Baretto et al. 1998	Total cost of logging operations	ECON	RIL	CL		Brazil-Bb, waste adjusted	South America	Brazil	Study collected in a review by Boltz 2003

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
38	Baretto et al. 1998	Total cost of logging operations	ECON	RIL	CL		Brazil-Bs, waste adjusted	South America	Brazil	Study collected in a review by Boltz 2003
38	Baretto et al. 1998	Worker productivity	ECON	CL	RIL		Brazil-Bb, RIL more time consuming	South America	Brazil	Study collected in a review by Boltz 2003
38	Baretto et al. 1998	Worker productivity	ECON	RIL	CL		Brazil-Bs	South America	Brazil	Study collected in a review by Boltz 2003
38	Baretto et al. 1998	Pre-logging costs	ECON	CL	RIL		Brazil-Bb, planning and infrastructure costs	South America	Brazil	Study collected in a review by Boltz 2003
38	Baretto et al. 1998	Pre-logging costs	ECON	CL	RIL		Brazil-Bs, planning and infrastructure costs	South America	Brazil	Study collected in a review by Boltz 2003
38	Baretto et al. 1998	Profit	ECON	RIL	CL		Brazil-Bb profit margins	South America	Brazil	Study collected in a review by Boltz 2003
38	Baretto et al. 1998	Profit	ECON	RIL	CL		Brazil-Bs profit margins	South America	Brazil	Study collected in a review by Boltz 2003
38	Baretto et al. 1998	Skidding cost	ECON	RIL	CL		Brazil-Bb	South America	Brazil	Study collected in a review by Boltz 2003
38	Baretto et al. 1998	Skidding cost	ECON	RIL	CL		Brazil-Bs	South America	Brazil	Study collected in a review by Boltz 2003

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
38	Baretto et al. 1998	Canopy loss, gap size	ENV	RIL	CL		Brazil-Bb, canopy loss	South America	Brazil	Study collected in a review by Boltz 2003
38	Baretto et al. 1998	Canopy loss, gap size	ENV	RIL	CL		Brazil-Bs, canopy loss	South America	Brazil	Study collected in a review by Boltz 2003
38	Baretto et al. 1998	Canopy loss, gap size	ENV	RIL	CL		Brazil-Bb, gap size	South America	Brazil	Study collected in a review by Boltz 2003
38	Baretto et al. 1998	Canopy loss, gap size	ENV	RIL	CL		Brazil-Bs, gap size	South America	Brazil	Study collected in a review by Boltz 2003
38	Baretto et al. 1998	Ground disturbance	ENV	RIL	CL		Brazil-Bb, ground area disturbed	South America	Brazil	Study collected in a review by Boltz 2003
38	Baretto et al. 1998	Ground disturbance	ENV	RIL	CL		Brazil-Bs, ground area disturbed	South America	Brazil	Study collected in a review by Boltz 2003
38	Baretto et al. 1998	Collateral damage	ENV	RIL	CL		Brazil-Bb, damaged trees	South America	Brazil	Study collected in a review by Boltz 2003
38	Baretto et al. 1998	Collateral damage	ENV	RIL	CL		Brazil-Bs, damaged trees	South America	Brazil	Study collected in a review by Boltz 2003
39	Armstrong 2000	Total cost of logging operations	ECON	RIL	CL		Exceptional, because these cost do not include felling	South America	Guyana	Study collected in a review by Boltz 2003

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
39	Armstrong 2000	Pre-logging costs	ECON	RIL	CL		Exceptional, because typically skid trails are not planned in CL	South America	Guyana	Study collected in a review by Boltz 2003
39	Armstrong 2000	Skidding cost	ECON	RIL	CL		RIL Skidding more productive	South America	Guyana	Study collected in a review by Boltz 2003
40	Martin et al. 2015	Carbon stock, emissions	ENV			RIL/CL	Effect of RIL on above ground biomass not discernible, mostly due to logging intensity	Pantropical	Pantropical	Meta-analysis
40	Martin et al. 2015	Collateral damage	ENV	RIL	CL		Residual tree damage	Pantropical	Pantropical	Meta-analysis
40	Martin et al. 2015	Tree diversity	ENV			RIL/CL	Richness only impacted by logging intensity	Pantropical	Pantropical	Meta-analysis
41	De Pourcq et al. 2009	Price premium	ECON			CFM/FSC-CFM	No price premium achieved	South America	Bolivia	
41	De Pourcq et al. 2009	Profit	ECON	CFM	FSC-CFM		Price premium did not make up for the high direct and indirect cost of certification	South America	Bolivia	
42	Simula et al. 2004	Price premium	ECON	FSC	CL		Price increased by 30%, but production volume decreased	South America	Brazil	
42	Simula et al. 2004	Price premium	ECON			FSC/CL	No price premium achieved (KPKKT)	Asia	Malaysia	
42	Simula et al. 2004	Management and administration	ECON	FSC	CL		Reduction of intermediaries in export, which lead to reduced cost (DRT)	Asia	Indonesia	

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
42	Simula et al. 2004	Market access	ECON	FSC	CL		Main driver of certification in this case is market access (KPKKT)	Asia	Malaysia	
42	Simula et al. 2004	Profit	ECON	CL	FSC		Negative NPV under all scenarios (Cikel)	South America	Brazil	
42	Simula et al. 2004	Profit	ECON	CL	FSC		Negative NPV under all scenarios (KPKKT)	Asia	Malaysia	
42	Simula et al. 2004	Profit	ECON	CL	FSC		Negative NPV under all scenarios (PTTC)	Asia	Malaysia	
42	Simula et al. 2004	Profit	ECON	FSC	CL		Positive NPV under all scenarios (DRT)	Asia	Indonesia	
42	Simula et al. 2004	Skidding costs	ECON	FSC	CL		Lower skidding and road construction costs	South America	Brazil	
42	Simula et al. 2004	Canopy loss, gap size	ENV	FSC	CL		Smaller canopy loss, less damage (DRT)	Asia	Indonesia	
42	Simula et al. 2004	Jobs	SOC	FSC	CL		Despite lower production, more jobs were created (Cikel)	South America	Brazil	
42	Simula et al. 2004	Jobs	SOC	FSC	CL		More jobs were created (DRT)	Asia	Indonesia	
42	Simula et al. 2004	Jobs	SOC			FSC/CL	Only marginal effect (KPKKT)	Asia	Malaysia	
43	Miteva et al. 2015	Deforestation, fragmentation and burning	ENV	FSC	CL		4.97% less deforestation in certified villages	Asia	Indonesia	
43	Miteva et al. 2015	Deforestation, fragmentation and burning	ENV			FSC/CL	Forest fire occurrence	Asia	Indonesia	
43	Miteva et al. 2015	Access to resources	SOC	FSC	CL		Malnourished people	Asia	Indonesia	
43	Miteva et al. 2015	Access to resources	SOC	FSC	CL		Private funding available	Asia	Indonesia	

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
43	Miteva et al. 2015	Infrastructure and Institutions Infrastructure and	SOC			FSC/CL	Street lighting	Asia	Indonesia	
43	Miteva et al. 2015	Institutions Infrastructure and	SOC			FSC/CL	Health centers	Asia	Indonesia	
43	Miteva et al. 2015	Institutions Community wellbeing and livelihoods	SOC	FSC	CL		Less air pollution	Asia	Indonesia	
43	Miteva et al. 2015	Community wellbeing and livelihoods	SOC	FSC	CL		Firewood dependence	Asia	Indonesia	
43	Miteva et al. 2015	Community wellbeing and livelihoods	SOC	FSC	CL		Disease from air pollution incidence	Asia	Indonesia	
43	Miteva et al. 2015	Community wellbeing and livelihoods	SOC			FSC/CL	Water pollution	Asia	Indonesia	
44	Tay et al. 2002	Total cost of logging operations	ECON	CL	RIL		18% difference	Asia	Malaysia	
44	Tay et al. 2002	Worker productivity	ECON	CL	RIL		Time to fell a tree	Asia	Malaysia	
44	Tay et al. 2002	Pre-logging costs	ECON	CL	RIL		Per cubic meter and per ha	Asia	Malaysia	
44	Tay et al. 2002	Profit	ECON	CL	RIL		Net Present Value	Asia	Malaysia	
44	Tay et al. 2002	Profit	ECON	CL	RIL		Per ha	Asia	Malaysia	
44	Tay et al. 2002	Timber stock (sustainability of income)	ECON	RIL	CL		Growing stock, 10% difference	Asia	Malaysia	
44	Tay et al. 2002	Collateral damage	ENV	RIL	CL		60 and 30%	Asia	Malaysia	

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
44	Tay et al. 2002	Road and skid trail density	ENV	RIL	CL		Skid trails, roads, landings	Asia	Malaysia	
44	Tay et al. 2002	Set asides and buffer zones	ENV	RIL	CL		Steep slopes, buffers	Asia	Malaysia	
44	Tay et al. 2002	Compliance with harvest regulations	SOC	RIL	CL		Steep slopes not all logged	Asia	Malaysia	
45	Dwiprabowo et al. 2002	Total cost of logging operations	ECON			RIL/CL	Cost per cubic meter	Asia	Indonesia	Medjibe and Putz 2012
45	Dwiprabowo et al. 2002	Profit	ECON	CL	RIL		Per ha	Asia	Indonesia	Medjibe and Putz 2012
46	Dagang et al. 2002	Total cost of logging operations	ECON	CL	RIL		Cost per cubic meter	Asia	Malaysia	Medjibe and Putz 2012
46	Dagang et al. 2002	Profit	ECON	CL	RIL		Per ha	Asia	Malaysia	Medjibe and Putz 2012
47	Medjibe and Putz 2012	Total cost of logging operations	ECON	CL	RIL		Cost per cubic meter	Africa	Gabon	
47	Medjibe and Putz 2012	Profit	ECON			RIL/CL	Per ha	Africa	Gabon	
48	Saharudin et al. 1999	Total cost of logging operations	ECON			RIL/CL	Cost per cubic meter	Asia	Malaysia	Medjibe and Putz 2012
48	Saharudin et al. 1999	Profit	ECON	CL	RIL		Per ha	Asia	Malaysia	Medjibe and Putz 2012

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
49	Mattson-Marn et al. 1981	Total cost of logging operations	ECON	RIL	CL		Cost per cubic meter	Asia	Malaysia	Medjibe and Putz 2012
49	Mattson-Marn et al. 1981	Profit	ECON			RIL/CL	Per ha	Asia	Malaysia	Medjibe and Putz 2012
50	Humphries and Kainer 2006	Price premium	ECON	FSC-CFM	CFM		Reported by both supporting organizations, Peixoto	South America	Brazil	
50	Humphries and Kainer 2006	Price premium	ECON	FSC-CFM	CFM		Reported by both supporting organizations, Porto Dias	South America	Brazil	
50	Humphries and Kainer 2006	Total cost of logging operations	ECON			FSC-CFM/CFM	Higher cost of certified wood production reported by 1 of 2 supporting organizations, Peixoto	South America	Brazil	
50	Humphries and Kainer 2006	Total cost of logging operations	ECON			FSC-CFM/CFM	Higher cost of certified wood production reported by none of the supporting organizations, Porto Dias	South America	Brazil	
50	Humphries and Kainer 2006	Management and administration	ECON			FSC-CFM/CFM	Improved management reported by 1 of 2 supporting organizations, Peixoto	South America	Brazil	
50	Humphries and Kainer 2006	Management and administration	ECON			FSC-CFM/CFM	No improvement in management reported	South America	Brazil	
50	Humphries and Kainer 2006	Market access	ECON	FSC-CFM	CFM		Reported by both supporting organizations, Peixoto	South America	Brazil	
50	Humphries and Kainer 2006	Market access	ECON	FSC-CFM	CFM		Reported by both supporting organizations, Porto Dias	South America	Brazil	

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ID	Author	Variable	Group	Better	Worse	Same	Notes	Continent	Country	Other studies on same case
50	Humphries and Kainer 2006	Collateral damage	ENV	FSC- CFM	CFM		Effort to reduce damage to the forest reported by both supporting organizations, Porto Dias	South America	Brazil	
50	Humphries and Kainer 2006	Collateral damage	ENV			FSC- CFM/CFM	Effort to reduce damage to the forest reported by 1 of 2 supporting organizations, Peixoto	South America	Brazil	
50	Humphries and Kainer 2006	Infrastructure and Institutions	SOC			FSC- CFM/CFM	Improvement in organization of association reported by 1 of 2 supporting organizations, Peixoto	South America	Brazil	
50	Humphries and Kainer 2006	Infrastructure and Institutions	SOC			FSC- CFM/CFM	No improvement in association reported, Porto Dias	South America	Brazil	
50	Humphries and Kainer 2006	Living and working conditions of employees	SOC	FSC- CFM	CFM		Use of safety equipment, reported by both supporting organizations, Peixoto	South America	Brazil	
50	Humphries and Kainer 2006	Living and working conditions of employees	SOC			FSC- CFM/CFM	Use of safety equipment, reported by one supporting organization, Porto Dias	South America	Brazil	
50	Humphries and Kainer 2006	Community wellbeing and livelihoods	SOC	FSC- CFM	CFM		Better waste management reported by both supporting organizations, Peixoto	South America	Brazil	
50	Humphries and Kainer 2006	Community wellbeing and livelihoods	SOC			FSC- CFM/CFM	No improvement in waste management reported, Porto Dias	South America	Brazil	

¹Change if significant difference reported

²Compares conventional industrial logging and community forest management, where the community uses a logging company for logging.

³Before and after comparison of Reduced Impact Logging project, not compared with a conventional logging operation. All variables pertain to the community, not to the logging company itself.

⁴Change if 2 point scoring difference