

Investigating global supply chains for slave labour: Using external data for enhanced supply chain mapping

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Abstract

This paper presents empirical data of instances of slavery in Brazilian-UK beef and timber supply chains. We use this analysis, coupled with data related to the changes to supply chain practices reported by UK importers under the UK Modern Slavery Act, to evaluate the likely effectiveness of these initiatives in the eradication of slavery. Our findings suggest that slavery may be endemic within Brazilian-UK beef and timber supply chains and that UK companies' current initiatives are both too narrow in scope and too restricted in geography to effect substantive change.

Keywords: Modern slavery, Brazilian beef and timber, global supply chain mapping

Introduction

The challenge of modern slavery in global supply chains has already been recognised (Gold et al., 2015; Nolan and Boot, 2018). Recent UK legislation in the form of the Modern Slavery Act (MSA) requires companies operating in the UK with a turnover greater than £36 million to publish, on their website where they have one, an annual 'transparency in supply chains' statement. Companies are required to report the steps they have taken to eradicate modern slavery from their supply chains or, to state that they have taken no such steps. The relationship between modern slavery reporting and shareholder wealth (Cousins et al., 2017) and detection, remediation and disclosure practices in the clothing and textiles sector have already been examined (Stevenson and Cole, 2018). Our

study adopts a supply chain lens to evaluate the effectiveness of changes in supply chain practice to the eradication of slavery in reporting companies' global supply chains.

This paper makes an empirical contribution to the existing sustainable supply chain management literature related to modern slavery by mapping instances of slavery in Brazilian-UK beef and timber supply chains and, in so doing, allows assessment of the effectiveness of reported changes to supply chain practice by importing UK companies. We seek to address the following research questions: where, in Brazilian-UK beef and timber supply chains, have instances of slavery been identified and how effective are recent changes to supply chain practice reported by UK companies likely to be in eradicating these types of labour exploitation? While there have already been several efforts to map Brazilian supply chains in the beef sector (see, for example, Braunz et al., 2013; Knoll et al., 2017; Francelino-Goncalves-Dias and Mendonca, 2011; Rammolan and Lee, 2017 and Walker et al., 2013) only one of these studies considers slavery (Francelino-Goncalves-Dias and Mendonca, 2011) and none consider individual supply chains.

The rest of this paper is organized as follows. First the significant characteristics of Brazilian-UK beef and timber supply chains and the problems of slavery within them are described. Our research methods, of supply chain mapping and statement analysis, are detailed in the second section. The third section introduces our research findings, which are then discussed. Finally, we conclude our paper.

Slavery in Brazilian-UK beef and timber supply chains

Brazilian beef supply chains are split broadly into two: upstream a highly fragmented spot market of cattle ranchers and downstream an increasingly consolidated and verticalized industrial meat processing operations dominated by a small number of international and global brands. Upstream supply chains consist of consecutive breeding, rearing and fattening operations (MICA, 2018). Some cattle ranchers carry out all three operations, but more often cattle are moved between farms. This situation creates an active pre-slaughter cattle market. Breeders and rearers may supply other rural producers, while fattening ranchers in addition frequently buy cattle from other areas.

Historically, livestock production relied heavily on slave labour with forced labour a long-standing problem for nineteenth century colonisers (Trindade Maranhao Costa, 2009). Debt slavery and conditions analogous to slavery persist, with workers becoming perpetually indebted to estate owners for transportation, food and basic household items (Phillips and Sakamoto, 2011; Trindade Maranhao Costa, 2009). Consolidated figures of Ministry of Labour raids between 1995 and 2017 show that the cattle industry accounts for the highest number of cases and the largest single number of people released from contemporary slavery in Brazil (MPT/OIT 2018). Slavery is often found in peripheral activities such as pasture cleaning (Phillips, 2011). Those rescued are mainly domestic migrants who leave their homes in search of new opportunities afforded by agricultural expansion or are lured by the false promise of work by Brazilian labour recruiters known as 'cats' (Rezende Figueira and Esterici, 2017). Many of these workers find themselves isolated and faced with poor lodging and working conditions.

Slave labour is also found in activities linked to logging and deforestation in the Brazilian timber industry (CDVDH/CB and CPT, 2017). Brazil is one of the most extensively forested countries in the world, with over 463 million hectares of forest (Wellesley, 2014). The vast majority is natural forest, with plantations accounting for less than 2%. 70% of this forested area lies within the Amazon Basin, with the remaining 30% in the cerrado savannah, mountains, alluvial and pine forests. 37 million hectares is

farmed for production. Brazil has developed its large-scale industrial forest plantations to provide a sustainable supply of timber. Such forest plantations cover 7.42 million hectares and are principally of eucalyptus and pine (TFT, 2013). Most of Brazil’s log production comes from these plantations, which account for nearly all the country’s exports (Wellesley, 2014).

Federal government information suggests instances of slavery in the timber sector are scattered across states, with most rescue operations occurring in plantation cutting and processing in planted forests (Reporter Brasil, 2018). This bias is explained, at least in part, by the relative ease with which Government inspectors can identify cases in formal plantations when compared with investigations in native forest. As in the cattle sector, workers find themselves geographically isolated. They may face violence and intimidation; be paid on a piecework basis and may never be formally hired. Slave labour is also frequently related to illegal logging (Bales, 2016), with workers reluctant to report abuse to the authorities for fear of criminal prosecution.

Research methods

Supply chain mapping

Analysis of the beef supply chains included two sets of cases: firstly, instances of slavery identified on cattle farms and included in the ‘transparency list’ and the ‘dirty list’ between 2015 and 2017 and secondly, pasture areas at which slave labour was found by the Ministry of Labour between 2016 and 2017. For timber, details of slavery cases between 2010 and 2016 were examined. These cases of slavery were cross-checked with a number of interlocking sources to identify matches. The ‘trase’ system (trase.earth); private customs databases; forest guides and other documents from the system of Brazilian Government trade and transportation of forest products documents in the Brazilian state of Para (SISFLORA-PA) were used to map supply chain relationships between identified companies; their customers and suppliers, for corned beef and timber exports to the UK.

These analyses were used to produce maps of the supply chains of 3 Brazilian beef processing firms and 7 Brazilian timber processors. Each supply chain was constructed from the perspective of a focal firm: that of the Brazilian meat processor for beef and the timber processor in the case of timber. Details of firms not publicly available on the dirty list have been anonymised. Simplified supply chain maps were created to depict corporate ownership; and the number of discrete locations in Brazil at which these companies’ primary operations were conducted (Figures 1 and 2).

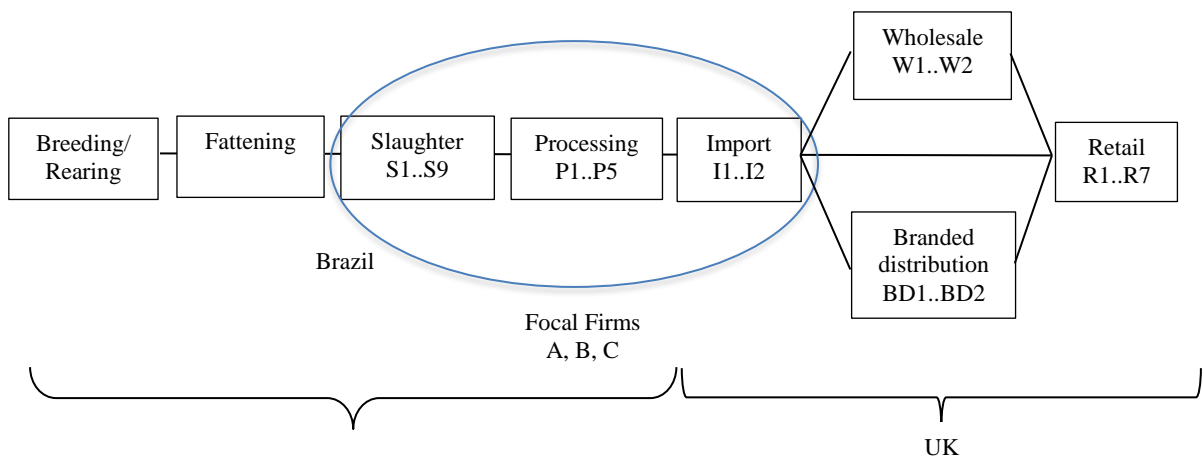


Figure 1: A map of the Brazilian- UK corned beef supply chain

For beef supply chains, operational sites include breeding and rearing farms, fattening farms, cattle slaughter houses (S1..S9) and meat processing units (P1..P5). The main meat processing companies exhibited the same ownership structure which encompassed slaughtering, processing and UK import operations.

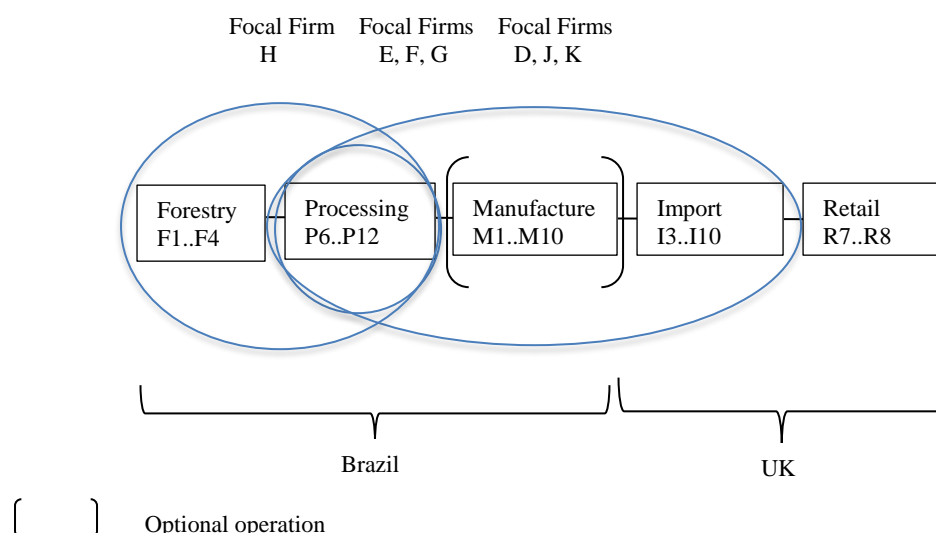


Figure 2- A map of the Brazilian- UK timber supply chain

For timber, forests (F1.. F4) and timber processing units (P6..P12) are illustrated. Here, ownership structures differed. The supply chain of one company (H) included ownership of both forestry and processing operations. Another 3 companies (E, F and G) focussed their activities solely on processing operations, while the span of control of companies D, J and K included both processing and import operations. These supply chain maps also depict the UK companies engaged in import management (I1;I10), manufacture (M1..M10); wholesale (W1;W2), branded distribution (BD1;BD2) and retail operations (R1..R7).

Modern slavery annual statement analysis

Analysis was carried out in November 2018. The annual sales turnover of each identified UK company was obtained from the UK Government’s Companies House website. Twenty-seven companies who were required to publish an annual statement were identified. The most recent (which was in some cases the first) annual statement of each identified UK manufacturer, importer; branded distributor, wholesaler and retailer were downloaded from the respective company’s websites for analysis. Two statements were unavailable. Statements were open-coded independently by two members of the research team. Axial coding was then used to identify specific changes to supply chain practice companies reported.

Research findings

Beef

Ministry of Labour reports describe instances of slavery in the upstream cattle breeding, rearing and fattening operations of all 3 Brazilian Processors (denoted A, B and C), though only two of these meat processing companies (A and B) exported corned beef to

the UK (Table 1). Corned beef supply chains are complicated by the fact that beef from any slaughterhouse may be processed at any processing unit. In addition, the complexity of supply chain interrelationships between ranches, with cattle movements commonplace

Table 1- Selected instances of slavery uncovered by the Brazilian Ministry of Labour linked to Brazilian Beef Processors exporting to the United Kingdom

Firm	Site	Tier	Date	Rancher/ Farm	Operations	Number Rescued	Form of slavery
A	1	1*	Aug 2011	Delfino Franciso Kelhrnvalt/ Agua Limpa	Cowboy/ Pasture cleaning-breeding and rearing	4	Degrading conditions and debt bondage
		4	Sep 2013	Antonio Calixto dos Santos/ Grapia	Cowboy/ labourer - rearing	1	Degrading conditions
	2	2	Sep 2013	Antonio Calixto dos Santos / Grapia	Cowboy/ labourer - rearing	1	Degrading conditions
			May 2012	Antonio Luiz Sanches Felipe / Leandra	Fence building – fattening	2	Degrading conditions
			May 2011	Manoel Alves de Sousa/ Maria de Jesus	Pasture cleaning and fence building – breeding and rearing	5	Degrading conditions
			Nov 2014	Vanderson Ayres da Silva/ Serra Dourada	Breeding and rearing	11	Degrading conditions
	4	1*	Aug 2011	Delfino Franciso Kelhrnvalt/ Agua Limpa	Cowboy/ Pasture cleaning-breeding and rearing	4	Degrading conditions and debt bondage
	6	1	Apr 2017	Joaquim Henrique Elias Soares/ Pontal*	Not given	3	Not given
			May 2016	Sebastiao Ferreira Cuhna/ JK	Fattening	4	Not given
			Mar 2016	Rafael Saldanha Junior/ Guapore*	Not given	12	Not given
	7	1	Mar 2016	Sinval Batista dos Santos/ Serra Verde	Not given	2	Not given
			Jun 2017	Sinval Batista dos Santos/ Serra Verde	Not given	1	Not given
	B	8	3	Sep 2013	Antonio Calixto dos Santos/ Grapia	Cowboy/ labourer - rearing	1
Nov 2014				Vanderson Ayres da Silva/ Serra Dourada	Breeding and rearing	11	Degrading conditions

*Potential links to slavery via shared ownership

within and across the organizational tiers involved in rearing and fattening, means the same farm might appear as an upstream supplier in more than one tier. The closest tier to the focal firm in which cases of slavery were identified is indicated in the table.

The complex network of ranches within which the breeding, rearing and fattening activities of the supplied cattle take place, means that a single instance of slavery may ‘appear’ in the supply chains of numerous focal firms. This is evidenced in the cases of slavery identified on the Grapia, Serra Dourada and Agua Limpa farms, owned by Antonio Calixto dos Santos, Vanderson Ayres da Silva and Delfino Franciso Kelhrnvalt respectively. These instances of slavery were traced downstream to slaughterhouses S1, S2 and S4 of Company A and S8 of Company B.

In the Leandra farm case, Ministry of Labour reports describe strong indications of the existence of joint management and the deliberate mixing of cattle across farm properties to create, what is in effect, a single economic group. Despite recognition of these tactics by ranchers, in a separate investigation into the Agua Limpa farm, inspectors concluded that it was administratively impossible to hold each of the three owners jointly accountable and, so, prosecuted only the owner with the single largest number of cattle heads on the farm. Consequently, he was the only one of the three ranchers to appear on the blacklist. Ranchers may make cattle transfers between ‘dirty’ and ‘clean’ ranches under the same ownership. Evidence of this was found in the case of Rafael Saldanha Junior, where analysis identified movements between the Guapore and Primavera ranches in the supply chain of S6, Company A.

The results of recent inspections in 2016 and 2017 have yet to be finalized. Examples of such cases include those against Joaquim Henrique Elias Soares; Sebastiao Ferreira Cunha; Sinval Batista dos Santos and Rafael Saldanha Junior. Given the lengthy time of appeal built into the administrative process a case of slavery cannot be conclusively filed until two years after the inspection date. Up until this point the name of the ranch owner does not appear on the Ministry’s blacklist and cattle from their farms may be traded without restriction.

In the most sophisticated reports of changes to supply chain management practice, UK corned beef retailers, branded distributors and wholesalers describe their commitment to the eradication of modern slavery. Brazilian supply chains themselves receive scant attention. Only two companies (BD1 and R7) explicitly mention Brazil as a priority country, with either no mention made of the product categories of interest (BD1) or other categories highlighted (R7). Where direct suppliers of ‘protein’ are specifically mentioned (R1), it is unclear whether this refers to domestic UK suppliers or global supply chain players such as those located in Brazil. Change projects are predominantly targeted at direct suppliers of other ‘high risk’ products in other geographies. There is little evidence to show that these reported changes to practice are extended more widely across the companies’ supplier portfolios or, in the case of direct-supplier initiatives, cascaded upstream to the areas in which, as our study reveals, instances of slavery have come to light.

Timber

In the timber sector, Ministry of Labour inspection reports describe instances of slavery in native forest mapping, native and plantation extraction, and timber processing, transportation and related activities (Table 2). In two instances convictions were brought against the focal firms (Companies F and H) whose supply chains we mapped. In each supply chain instances of slavery occurred upstream in the extended supply chain relationships – beyond UK retailers’ direct Brazilian suppliers.

Table 2- Selected instances of slavery uncovered by the Brazilian Ministry of Labour linked to Brazilian Timber Processors exporting to the United Kingdom

Firm	Site	Tier	Date	Owner	Operations	Number rescued	Form of slavery
D	1	1	Oct 2012	Bonardi da Amazonia	Hardwood extraction - Sawmill	9	Degrading conditions
			Oct 2016	Manuel Araugo de Sousa	Timber logging - Native forest	5	Degrading conditions
			Oct 2016	Eudemberto Sampaio de Sousa	Timber extraction - Native forest	7	Degrading conditions
E	1	1	Oct 2016	Eudemberto Sampaio de Sousa	Timber extraction - Native forest	7	Degrading conditions
			Oct 2012	Franciso Eugenis de Oliveira Gondim*	Mapping - Native forest	11	Degrading conditions
		2	Apr 2013	Decio Jose Barroso Nunes	Timber processing and cooking -Sawmill	Group including 6 cooks	Exhaustive workday

*Acquitted of the crime practices analogous to slavery at his first trial, the case was being re-tried at the time of analysis

Our analysis shows that instances of slavery occur in the Brazilian-UK supply chains of a heterogenous range of timber products including: hardwood utensils, wood panels; pulp, paper and products for which timber forms a constituent raw material.

While the supply chain downstream from the focal firms may be more fragmented and diverse than that depicted in the corned beef supply chains analyzed, the instances of slavery identified in timber all occurred close to the operations of the focal firm: either within the span of control of the focal firm itself, or within the companies directly supplying it.

As was evident in the beef supply chains, one reported instance of slavery may affect more than one supply chain. This is illustrated by the case of Eudemberto Sampaio de Sousa, who enslaved 7 people within the BT Industria de Madeira company, who supplied both Company D and Company E and who, in turn, supplied the UK importers I3 and I4. Also, of interest in this case was his failure to declare himself as the registered owner of the sawmill he controlled. Similarly, it is convictions for debilitating work that have occurred most frequently.

Proving slavery conclusively through the Brazilian courts may take a long time, as the case of Franciso Eugenis de Oliveira Gondim shows. He was accused of subjecting 11 workers to degrading working conditions and the records analyzed show that the Ministry of Labour was seeking a retrial to convict him of practices analogous to slavery.

Analysis of company statements show disagreement about the slavery risks related to Brazilian timber. Two UK companies identify supplies of Brazilian timber as an area of risk (I3 and M7) while another (I7) rates the country risk as a 'low'. UK timber importers and retailers report reliance on existing private governance scheme such as the Forest Stewardship Council (FSC) and Programme for the Endorsement of Forest Certification

(PEFC). Few changes to practice are reported. The statements provide limited transparency of the realities of slavery. Two retail importers (I5 and I8) state that they have not found any instances of slavery within their supply chains –statements which our findings contradict.

Discussion

Our findings show recent instances of slavery in the form of degrading conditions in both Brazilian-UK beef and timber supply chains. The scope of the legal definition of slavery in Brazil, which includes practices analogous to slavery such as work in degrading conditions, is wider than that enshrined in recent UK law. Yet according to the ILO core conventions all Brazilian and UK companies are required to ensure that labour practices adhere to nationally laws.

Beef

Some of these instances occurred in the first, or ‘direct’, tier of suppliers to Brazilian meat processing companies exporting to the UK. These instances are only one step removed from the direct, downstream suppliers of some of the UKs leading corned beef wholesalers, branded distributors and retailers. Yet where they exist, the annual statements published by these companies tend to report a focus only on the operations of their direct suppliers. There is evidence of one retailer cascading legal responsibility for the eradication of modern slavery further upstream (R3) and one branded distributor specifically identifies a high risk of modern slavery in its Brazilian products and has therefore stated that it intends to carry out further investigations (BD1).

The mixing of cattle is viewed by the inspectors, and others within the industry, as a deliberate ruse, often perpetrated by ranchers within the same family, to avoid trade restrictions such as blacklisting (DNL-GL, 2016). The ‘spot market’ nature of supplier relationships between processors and ranchers, mean each processor may buy cattle from any number of the same direct suppliers. Should one of these communal suppliers have instances of slavery discovered at their farm, or in the farms of their upstream breeding, rearing or fattening operations, this instance of slavery may affect the supply chain of more than one of the focal, meat processing firms.

Timber

Although little detail is given, at a minimum most UK timber retailers refer to the existence of private auditing regimes in the assessment of suppliers’ due diligence. Yet even where audits are reportedly carried out, instances of slavery persist. Four of the Brazilian processors with instances of slave labour in their supply chains (Companies D, F, G and H) held FSC certification at the time of the investigations. These companies held the FSC mixed seal which allows raw material from certified forests to be mixed with timber from other, non-certified sources. The development of ‘mixed’ labelling further weakens a social auditing system, at a time when the efficacy of similar systems to improve social standards has already been questioned (Bloomfield and Le Baron, 2018). Such an approach seems to increase, rather than reduce, the risk of labour and human rights violations, such as slavery, in certified products.

Instances of slave labour occurred in the ‘indirect’ or extended supply chains of UK timber retailers. Without the extended mapping of these upstream supply chain relationships the Brazilian Governments’ ‘dirty list’ may prove of little use to international buyers. Similarly, attempts by individuals, such as Eudemberto Sampaio de Sousa to hide his legal ownership of the sawmill he controlled threaten to subvert the

purposes of the dirty list in allowing buyers to block supplies from the companies of blacklisted individuals. This type of behaviour is particularly common in the Amazonian timber industry, where slavery is frequently associated with illegal logging (Bales, 2016). In order to trade products from illegally deforested areas, employers mask the real origin of the logs through documentary fraud, or laundering, and ghost companies.

Limitations of this study

The mapping methods used in our study are subject to some limitations. In some instances the data allowed tracking of the destination of raw materials produced by the owners implicated in slavery. Other information relates to relationships between buyers and sellers before or after the rescue date. These relationships may cover a broad time-frame. These supply chain maps should not, therefore, be interpreted as proof that UK companies have purchased specific products made with slave labour. They do, however, show objectively that UK companies maintain direct or indirect relationships with processors who have a history of processing this type of raw material and hence there is the possibility of contamination.

Conclusion

Our mapping suggests that slavery may be endemic within the Brazilian beef and timber supply chains of UK companies. The structure of these industries means that one such instance may be found in the downstream supply chains of more than one company and, in the case of timber, in those of many different products. Unscrupulous upstream suppliers' act to circumvent existing 'blacklisting' processes and UK companies' reported change initiatives have a narrow focus, with attention paid primarily to direct suppliers or other, discrete geographical locations. They seem, at present, unlikely to remedy the types of situation described here. This paper raises questions, for academics and practitioners alike, related to the effectiveness of currently reported changes to supply chain practice in eradicating instances of slavery from global supply chains.

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References

- Alves-Pinto, H. N., Newton, P. and Fernando Guedes Pinto, L. (2013), "Certifying sustainability: opportunities and challenges for the cattle supply chain in Brazil", CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) <https://ccafs.cgiar.org/publications/certifying-sustainability-opportunities-and-challenges-cattle-supply-chain-brazil#.XD3IK1z7TIU> 15 January 2019.
- Bales, K. (2016), *Blood and earth: Modern slavery, ecocide, and the secret to saving the world*, Spiegel & Grau, New York.
- Bloomfield, M. and LeBaron, G. (2018), "The UK modern slavery act: Transparency through disclosure in global governance", *e-International Relations*, <https://www.e-ir.info/2018/09/21/the-uk-modern-slavery-act-transparency-through-disclosure-in-global-governance/> 14 January 2019.
- Braunz, A., Gonnella, C., Hill, L. and Holt, J. (2013), "Beef production in Brazil: A value chain approach to reducing deforestation", Masters Project Dissertation, Nicholson School of the Environment, Duke University, <https://dukespace.lib.duke.edu/dspace/handle/10161/6795> 17 January 2019.
- Cameron, B. (2017), "The drive to protect forests: Introducing sustainable cattle certification in Brazil, 2009-2016", *Global challenges certification: Innovations for successful societies* <https://successfulsocieties.princeton.edu/publications/drive-protect-forests-introducing-sustainable-cattle-certification-brazil-2009-2016> 15 January 2019.
- CDVDH/CB and CPT (2017), "Underneath the Amazon: Para's Amazon plundered by slave labour", <https://www.cptnacional.org.br/component/jdownloads/send/25-cartilhas/14037-por-debaixo-da-floresta-amazonia-paraense-saqueada-com-trabalho-escravo?Itemid=0> 15 January 2019.

- Cousins, P., Dutordoir, M., Lawson, B. and Quariguasi Frota Nero, J. (2017), “The shareholder wealth effects of modern slavery reporting requirements”, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2995175 18 January 2019.
- Crane, A., Le Baron, G., Allain, J. and Behahani, L. (2017), “Governance gaps in eradicating forced labor: From global to domestic supply chains”, *Regulation and Governance*, <https://doi.org/10.1111/rego.12162> 14 January 2019.
- Francelino-Gonclaves-Dias, S.L. and Mendoca, P.M. (2011), “Deforestation and slave labour in the Amazon: contesting the sustainability of the cattle industry”, 7th International Critical Management Studies Conference, Naples, Italy, July 11-13th.
- Gold, S., Trodd, Z. and Trautrim, A. (2015), “Modern slavery challenges to supply chain management”, *Supply Chain Management: An International Journal*, Vol. 20, No. 5, pp. 485-494.
- Knoll, S., Sores Simon Marques, C., Lui, J., Zhong, F., Domingos Padula, A., and Otavio Jardim Barcellos, J. (2016), “The Sino-Brazilian beef supply chain: mapping and risk detection”, *British Food Journal*, Vol. 119, No. 1, pp.164-180.
- DNL-GL (2016), “Compliance assessment of Public Commitment on Amazon Cattle Ranching: Marfrig Global Foods SA”, <http://www.marfrig.com.br/Uploads/Arquivos/Report-Audit-Marfrig-Greepeace-Format-Greenpeace.pdf> 16 March 2018.
- MICA USA (2018), “2017 World beef trade major exporters”, www.micausa.org/2017-world-beef-trade-major-exporters accessed 21 May 2018.
- MPT/OIT (2018), “Observatorio digital do trabalho escravo no Brasil”, <https://observatorioescravo.mpt.mp.br/> 23 January 2019.
- Nolan, J. and Bott, G. (2018), “Global supply chains and human rights: spotlight on forced labour and modern slavery practices”, *Australian Journal of Human Rights*, doi:10.1080/1323238X.2018.1441610.
- Phillips, N. (2011), “Unfree labour and adverse incorporation in global production networks in Brazil and India”, Chronic Poverty Research Centre Working Paper No. 176 <https://www.files.ethz.ch/isn/133462/176%20Phillips.pdf> 15 January 2019.
- Phillips, N. and Sakamoto, L. (2011), “The dynamics of adverse incorporation in global production networks: Poverty, vulnerability and ‘slave labour’ in Brazil” Chronic Poverty Research Centre Working Paper No. 175 <https://www.gov.uk/dfid-research-outputs/the-dynamics-of-adverse-incorporation-in-global-production-networks-poverty-vulnerability-and-slave-labour-in-brazil-cprc-working-paper-no-175> 15 January 2019.
- Rammohan, S. and Lee, H. (2017), “Beef in Brazil: Shrinking deforestation while growing the industry”, Stanford Graduate School of Business Case GS-88.
- Reporter Brasil (2018), “Trabalho escravo no Brasil” <https://reporterbrasil.org.br/dados/trabalhoescravo/> 23 January 2019.
- Rezende Figueria, R. and Esterici, N. (2017), “Slavery in today’s Brazil”, *Latin American Perspectives*, Vol. 44, No. 217, pp.77-89.
- Stevenson, M., Cole, R. (2018), “Modern slavery in supply chains: a secondary data analysis of detection, remediation and disclosure”, *Supply Chain Management: An International Journal*, Vol. 23, No. 2, pp.81-99.
- TFT (2013), “Country Guide to Timber Legality: Brazil”, http://www.tft-earth.org/wp-content/uploads/2013/03/TTAP_Guide_to_Legality_Brazil_1.pdf 13 February 2018.
- Trindade Maranhao Costa, P. (2009), “Fighting forced labour: The example of Brazil”, Special action programme to combat forced labour, Geneva, International Labour Organisation 8-9, 34 http://hrbportal.org/wp-concent/files/Brazil_Forced_Labour.pdf 23 November 2017.
- Walker, N.F., Patel, S.A. and Kalif, K.A.B. (2013), “From Amazon pasture to the high street: deforestation and the Brazilian cattle product supply chain”, *Tropical Conservation Science*, Special Issue Vol. 6, No.3, pp.446-467.
- Wellesley, L. (2014), “Illegal logging and related trade: The response in Brazil”, Chatham House assessment research paper, https://www.chathamhouse.org/sites/files/chathamhouse/publications/research/20141029illegalloggin_gBrazilWellesleyFinal.pdf 11 May 2018.
- US Department of State, (2018), “Brazil”, 2018 Trafficking in Persons Report, <https://www.state.gov/j/tip/rls/tiprpt/countries/2018/282619.htm> 15 January 2019.