

# Improving OSH through supply chains: market-based initiatives in the agri-food and construction industries

## Literature Review

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## Executive summary

This report presents the results of a literature review carried out as part of a project on market leverage of occupational safety and health (OSH) in supply chains (Lift-OSH<sup>1</sup>) commissioned by the European Agency for Safety and Health at Work (EU-OSHA). Researchers from a consortium of six research organisations in five European countries are responsible for the review.

Economic and technological developments have amplified the importance of the extended supplier networks of European companies. These developments are increasingly significant for OSH and working conditions; a wide array of public and private initiatives and instruments have evolved, aimed at control of OSH in the supply chain. This review focuses on market-based leverage practices and instruments which can help improve OSH and working conditions. We define market leverage as **instruments and practices applied in buyer-supplier relations through market signals, that encourage specific behaviour**. This review presents the available knowledge about the application of market leverage instruments and practices in two key European sectors: agri-food and construction.

### Types of supply chain leverage practices

Broadly speaking, there are two forms of leverage practice:

- **Contractual governance**, the various forms of formal tendering and contracting as well as formal auditing and monitoring of suppliers' actual work processes and performance;
- **Relational governance**, the various forms of informal engagement between buyers, suppliers and their employees, aimed at increasing competence or the quality of specific processes as well as improving OSH and working conditions.

Often the two are integrated in supply relationships, appearing as a **hybrid governance** form.

The concrete forms of leverage practices are further influenced by the institutional environment and market in which the involved companies are situated. Such contextual aspects include, but are not limited to:

- national legislation and regulation related to supply chains (for example, buyer or main contractor responsibility for suppliers and subcontractors, and requirements for due diligence or public reporting);
- international legislation, regulation and guidelines (for example, European Union (EU) directives, United Nations (UN) and other international standards and conventions, and public monitoring of such sustainability indices);
- collective agreements (for example, regulation of conditions for precarious work);
- public pressure (for example, the media and non-governmental organisations (NGOs));
- not least, the context of the specific sectors (distinct physical attributes, market structure and institutional norms).

### Leverage instruments in the agri-food sector

The agri-food sector comprises primary producers, processors, distributors and retailers. Additionally, traders, brokers and labour contractors play important roles in the business structure of the sector, even though they do not handle products directly. The OSH conditions are characterised by the following main issues:

- **Farming and fishing:** heavy lifting, high accident risk, dangerous substances such as pesticides and organic solvents, biological agents and long working days with unhealthy rosters. Additionally, the widespread use of seasonal workers increases the risks related to precarious work.
- **Processors:** repetitive work, awkward work postures, heavy lifting and high accident risk.
- **Distributors:** atypical working times and heavy lifting. Technology is helping reduce these risks, but often entails an increase in repetitive work and high work speed in packing. In addition, new problems have arisen, such as the strict surveillance of workers.

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<sup>1</sup> Leverage Instruments for Occupational Safety and Health.

- **Retailers:** accidents, heavy lifting, repetitive work, long working hours and high psychosocial risks caused by elevated pressure, stress and monotony (especially in hotels and restaurants).

The sector is subject to extensive regulation, particularly regarding consumer food safety and the environment. There are many multi-stakeholder partnerships associated with these issues that influence the supply chain relationships. The regulation of OSH and working conditions is less extensive, but the literature describes several contractual leverage practices which influence OSH:

- **Sustainable procurement practices.** These are most often initiated in areas other than OSH such as food safety, climate or the environment, but increasingly, social sustainability including OSH for workers is also being covered by procurement practices, especially in the form of the Buyer Code of Conduct, which buyers require suppliers to follow. The result of this development is that buyers are considering sustainability as a factor in their purchasing decisions alongside customary factors like price, quality and delivery. In concrete terms, sustainable purchasing practices normally include various instruments (such as certifications, questionnaires, supplier assessments and audits) to gauge the sustainability performance of the potential supplier.
- **Audit and certification schemes** specifically aimed at the agri-food sector. These set out a standard which forms the basis for certification and a third-party audit scheme. They build on international conventions such as the Universal Declaration of Human Rights, the United Nations Guiding Principles on Business and Human Rights (UNGPs), the International Labour Organisation (ILO) conventions and national laws. They are concerned with topics such as child labour, forced labour, discrimination, freedom of association, the right to collective bargaining and OSH. Some of the most important schemes are:
  - the Amfori Business Social Compliance Initiative (BSCI);
  - the Global Good Agriculture Practices (GlobalGAP), whose branch for social compliance is the Risk Assessment on Social Practices (GRASP);
  - Social Accountability 8000 (the SA8000);
  - a special audit standard developed by the Supplier Ethical Data Exchange (SEDEX), known as the SEDEX Members Ethical Trade Audit (SMETA).

Various relational governance practices prevail in the agri-food sector. Many focus on the development of personal relations and a trust-based culture, which are considered important for relations as well as OSH and working conditions. Thanks to a high degree of trust, suppliers are less likely to hide challenges and risks and more likely to cooperate with buyers to solve problems. The most prevalent practices include:

- **Supplier support.** Supportive relationships with suppliers upstream in the supply chains (for example, from larger processors to farmers) can take the form of advanced payments and economic development support. These relationships are found to improve suppliers' sustainability practices.
- **Visits and dialogue.** These can be used to develop mutual understanding between buyers and suppliers as well as reduce uncertainties for suppliers and buyers seeking to promote social sustainability priorities.
- **Supplier development.** Practices such as awareness-raising workshops or training courses aimed at suppliers and sub-suppliers, to increase their awareness and/or competence to act in a sustainable manner.

### Leverage instruments in the construction sector

The business structure in the construction sector involves the client, the main contractor, various subcontractors, manufacturers of construction materials, labour agencies, engineering consultancies, architectural firms and many other actors. The sector is characterised by the main supply chain actors working simultaneously on the same construction site, which again leads to increased complexity in terms of supply chain governance and the use of leverage instruments.

The main OSH issues in the construction sector are:

- **High accident risk.** The sector has one of the highest occurrences of fatal and non-fatal accidents.
- **Musculoskeletal disorders (MSDs).** Construction is one of the three sectors in which workers are most likely to report MSDs.
- **Precarious work.** The sector relies heavily on migrant labour, and migrant workers are often in precarious positions with poor working conditions.

In the construction sector, we found the following examples of contractual leverage instruments:

- **Tendering and contracting.** Clients select main contractors and subcontractors according to their OSH capabilities, competency and track record including key performance indicators (KPIs) on issues such as safety training, accident statistics and assessment records.
- **Monitoring and auditing.** Contractors are often contractually bound to be audited by representatives from the client organisation, or to set up various forms of monitoring systems to document safety performance.
- **Client or main contractor representatives on building sites.** Professional clients or main contractor OSH staff are permanently stationed at the building site to assist in safety efforts and ensure that the safety brief of the client is met.

The third-party audit and certification schemes are:

- **OSH management certificates.** Many contractors hold ISO 45001/OHSAS 18001 certification to prove the capability of the OSH management system. However, it was not possible to identify any specific studies of such certificates in construction.
- **National voluntary initiatives for certification and auditing.** Several audits and certifications targeting construction companies exist in European countries (for example, the Safety Checklist for Contractors (Veiligheid Checklist Aannemers or VCA) in Belgium and the Netherlands, and the Safety Certificate Contractors (Sicherheits-Certifikat-Contractoren or SCC) in Austria, Germany and Switzerland).
- **Safety passports.** Only workers with the required documented OSH competence can access the work sites. Often, these individual safety passports are incorporated into the company-centred certification and auditing schemes.

Relational practices in construction are focused on developing a trust-based culture. Trust between contractors and clients is important for the selection of leverage mechanisms and the likelihood of their success. Trust may be lost in large-scale complex projects or when actors in the supplier relationship have not cooperated before. Factors that tend to increase trust include companies sharing a close geographical vicinity, and the existence of personal bonds between key individuals in each actor in the supply. Development of trust can facilitate a culture of cooperation and knowledge-sharing, which is an efficient way to increase safety and health knowledge in the supply chain. Examples of relational leverage practices in the construction sector include:

- **Supplier development.** Various forms of supplier development activities are efficient in developing suppliers' OSH competence. Examples are workshops, awareness programmes and training courses. Research shows that activities of this type can foster trust between actors in the supply chain.
- **Professional resources.** Research shows that companies with more OSH professionals are better at managing and transferring OSH knowledge to contractors and subcontractors.
- **Transparent communication.** Sharing information about construction progress and ongoing tasks at joint workshops across contractors and subcontractors.

### Policy pointers

Research in market leverage of OSH in the agri-food and construction supply chain is sparse, limiting the potential to identify evidence-based policy pointers. However, there is scope for some suggestions:

- 1 The prioritisation of social sustainability including OSH as a systematic element in procurement and tendering is growing; policy-makers and other stakeholders can support this development by:
  - integrating OSH and working conditions requirements in procurement by public sector actors;
  - developing standards and guidelines for procurement with integrated OSH to be applied on a broader scale in the private sector too, thereby expanding the application and creating a more level playing ground for competition;
  - developing complete and workable criteria for OSH themes in procurement and tendering, including process and outcome criteria.
- 2 A wide variety of standards exists in both sectors: suppliers and subcontractors often have to comply with several co-existing standards simultaneously, resulting in audit fatigue. There is therefore a need for policy-makers and stakeholders to:
  - merge existing standards or develop a new standard encompassing the different systems, so that suppliers and subcontractors only have to comply with one standard;
  - make the certification and audit schemes transparent, to allow stakeholders and end consumers to gain insight into outcomes and so make informed choices in their purchase of goods and services.
- 3 Relational governance is a new subject of interest, with limited evidence for specific practices; however, it is evident that trustful relations and fair treatment support good OSH and working conditions. Policy-makers and stakeholders can support this development by:
  - developing guidelines for day-to-day relational procurement practices where examples already exist in agri-food;
  - developing training schemes for procurement officers on social sustainability, as they have daily contact with suppliers.
- 4 A key outcome of the review highlights the limited research in market leverage of OSH and working conditions in supply chains on the one hand, and the promising examples of existing measures prioritising OSH in supply chain relations, on the other. There is therefore a need for policy-makers and stakeholders to:
  - Initiate further research of market leverage of OSH in supply chains. The research should cover quantitative studies of the effects on OSH and working conditions of market leverage as well as qualitative case studies of the mechanisms, showing how the wide variety of instruments and practices work.

## Foreword

EU-OSHA has commissioned the LIFT-OSH consortium of six partners in five European countries<sup>2</sup> to carry out a study seeking new knowledge about the potential to improve OSH and working conditions through leverage in market-based instruments and practices in the supply chain. The study is limited to two specific sectors: agri-food and construction.

The initial part of the study is this literature review of existing knowledge documented in the literature on how market leverage of OSH works in supply chains in the two sectors. This review report follows an early publication from EU-OSHA (2012). EU-OSHA advanced the understanding of the relations between regulation and supply chains with this overarching literature review of regulation (EU-OSHA 2021). We follow this line of reviews, advancing our understanding by closely examining two sectors with very distinct and different contexts.

A field study of OSH market leverage in practice constitutes a key part of the Lift-OSH project. The objective of the field study is to identify formal and informal market leverage practices and subsequently assess their applicability in a broader European context. The field study will follow this review, and results will be published in 2023.

The LIFT-OSH consortium takes this opportunity to thank EU-OSHA focal points and stakeholders for their valuable support in providing information and reflections on market leverage of OSH and working conditions in supply chains. The project managers from EU-OSHA also provided valuable support to the review.

The review report starts by introducing the rationale for looking into market leverage in supply chains, which leads to the research questions for the report. The methodology for the review is briefly outlined in Chapter 2. Chapter 3 develops the key theoretical framework for the study of market leverage in supply chains. The framework is used in Chapters 4 and 5 to analyse the available literature in agri-food and construction, concentrating on what is now known about market leverage practices impacting OSH and working conditions. We end the review in Chapter 6 by discussing what is known and what is subject to further research, and provide a conclusion for the review overall, with a number of suggestions for further application of market leverage to improve OSH.

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# 1 Introduction

Previous decades have seen a growing expansion of supply chains, increasing societies' as well as individual businesses' dependency on efficient and smooth-running chains. This development is now challenged by disruptions from Covid-19, wars and the climate crisis, with new trends of shortening supply chains and onshoring emerging in response to these challenges. Nevertheless, European countries will be dependent on supply chains in the future, even if they become a bit shorter – all businesses need to buy both raw material and finished goods from suppliers, and efficient supply chains will still be crucial for business success.

Yet the traditional parameters of price, quality and delivery are not sufficient to ensure business success. Rising customer demands for sustainability and ethical behaviour mean that buying companies increasingly have to ensure that suppliers and subcontractors have ethical and sustainable practices (Walters & James, 2011). Cases of large-scale accidents or very poor working conditions in supply chains have been publicised frequently in the media in the past decade. Examples include the Rana Plaza building collapse in the garment industry in Bangladesh, and the working conditions of fruit and vegetable pickers in Spain and Italy, of subcontracted meat packers in Germany and of subcontracted labour on construction sites all over Europe.

The reaction from regulators and stakeholders to these events has been to expand regulatory innovations and market-based instruments and practices aimed at control of OSH and working conditions. Some market-based measures are applied in the direct relations between buyers and suppliers in the supply chain, while others are mediated by multiple-stakeholder arrangements such as certification schemes and audits; others still are implemented via national or international regulation of business-to-business relations.

## 1.1 Identifying key features of market-based leverage instruments and practices

Developments in business and production in recent decades have caused an enormous expansion of supply chains and their importance. A contemporary example is the discussion around national and EU production of Covid-19 vaccines. The production of any vaccine depends on numerous suppliers delivering from many different EU and non-EU countries: this increases the complexity of the supply chain and the vulnerability for disruptions (Osoimehin & Popov, 2020). New technological and societal developments like digitalisation (for example, increased dominance of digital platforms), reconfiguration to accommodate new sources of uncertainty (like political turmoil, pandemics and trade wars) as well as new emerging stakeholder demands stressing sustainability and business ethics have forced companies to change the way they manage their supply chains.

Extended supply chains that cross multiple regulatory and institutional systems can hamper traditional national OSH regulation (Amengual & Kuruvilla, 2020; Voronov & Vince, 2012; Walters & James, 2011). Individual companies are influenced by conditions and requirements from upstream suppliers and downstream customers. It is therefore difficult for companies to fully control OSH at their subsidiaries and at suppliers' shopfloors. The consequences include large-scale accidents like the Rana Plaza Fire in Bangladesh (Bird et al., 2019) and health scandals like the Covid-19 epidemics in the German meatpacking industry. Such examples spotlight the growing need for stronger control of OSH and working conditions across supply chains.

These developments have drawn attention to issues in supply chain relationships. Regulators and other stakeholders are responding by developing a wide array of initiatives and instruments to improve OSH and working conditions in supply chains. A recent example is national chain responsibility in the meat packing industry (Eurofound, 2021). However, as these instruments are relatively novel, research on how they work and how they interact with each other in the supply chain is limited. By comparison, there is extensive research on tools, methods and approaches that individual companies can apply to mitigate OSH risks and improve working conditions in their own workplaces. See, for example, the overarching literature review of regulation presented by EU-OSHA (2021), which also points to the need for supply chains to improve compliance with OSH regulation and to motivate more business-to-business improvements of OSH and working conditions.

Construction and agri-food are two sectors with very distinct supply chains. They both use broad leverage instruments such as economic incentives, corporate social responsibility (CSR) reporting and audits to guide and coordinate fragmented and geographically dispersed supply chains. Yet these are applied in different contexts and different ways. More importantly, these sectors also apply specific instruments such as safety passes in construction and consumer labels in agri-food.

Below, we present a tentative typology for understanding the variety of potential leverage instruments and practices across the two sectors. The examples used in the framework are by no means an exhaustive list of all potential types of market instruments and practices, but we believe they can serve as a starting point for the study at hand, with the expectation that further empirical research will uncover additional leverage instruments and practices.

## 1.2 Classification of leverage practices

The overarching review that precedes this report (EU-OSHA 2021), uses the Parker and Nielsen (2017) framework for analysis of OSH regulation. The framework suggests two overall types of instruments that can make companies comply with regulation. The first, the 'spontaneous' instruments, constitute all leverage practices that originate inside companies. These can stem from economic, social or normative motives and assumptions held by owners, managers or other organisational actors. The second type of practices, the 'enforced', represent external influences such as labour inspection services, social partners, OSH standards and standard-setting bodies. The Parker and Nielsen framework helps us understand leverage from a legal perspective, and especially the relations between the voluntary spontaneous regulation, where pure market instruments encounter limitations (Fridell & Walker, 2019) which make enforced regulation necessary. However, it is not well suited for studying how the market leverage of OSH is perceived and implemented in practice by a company in a supply chain, and how it is communicated to other companies who have a supplier relationship with the focal buying firm.

In the review, we focus on direct buyer-supplier relations, and therefore define market-based leverage as **instruments and practices that are applied in buyer-supplier relations through market signals and encourage specific behaviour.**

Building on the supply chain management literature (Cao & Lumineau, 2015; Koberg & Longoni, 2019; Tachizawa & Wong, 2014) we further classify the market-based leverage instruments and practices into two different types of regulating activities:

- **contractual governance**, which is the various forms of formal tendering and contracting as well as formal audit and monitoring of suppliers' actual work processes and performance influencing OSH and working conditions;
- **relational governance**, which is the various forms of informal engagement between buyers and suppliers and their employees, aimed at increasing competence or the quality of specific processes as well as improving OSH and working conditions.

In practice, the two governance forms are often integrated into hybrid forms with elements of both types, making it difficult to classify a practice as either contractual or relational.

- In addition, activities of external stakeholders create an institutional context which influences supply chain governance (indirect market leverage). The main types of institutional context include:
  - national legislation and regulation related to supply chains (for example, buyer or main contractor responsibility for suppliers and subcontractors, and requirements for due diligence or public reporting);
  - international legislation and regulations (for example, EU directives, international standards and conventions, or public monitoring such as sustainability indices);
  - collective agreements (for example, regulating conditions for precarious work);
  - public attention and pressure (for example, the media and NGOs).

The current literature review only includes the institutional context with a direct influence on dyadic buyer-supplier relations.

The governance practices are located at the intersections between the parties in the supply chain relationships. We are therefore looking for leverage instruments that regulate dyadic (buyer-supplier relationship) or multi-party relationships in a supply chain (such as the client, main contractor and subcontractor in construction), and not only individual companies. Thus, the current review covers the collection and analysis of the existing knowledge in the literature about:

- the supply chain relationships and the contextual elements in the sectors of agri-food and construction;
- the leverage governance practices used in these sectors, and their efficacy and implementation.

## 2 Methodology

Reviewing the literature on market leverage instruments and practices aimed at control of OSH and working conditions is subject to severe constraints. First, market leverage as a concept is not used and studied in research, and it is therefore necessary to cover a wide range of concepts which may have a bearing on OSH and working conditions. Next, research in the field relates predominantly to studies of conditions in emerging and developing economies – studies of OSH and working conditions issues in supply chains in industrialised countries are limited. Finally, the two focus sectors – agri-food and construction – use very different concepts and vocabulary, making it difficult to carry out a uniform literature search across sectors. There may be relevant leverage instruments and practices applied in other industries, but this review focuses solely on available knowledge from the two sectors, although general information about market leverage is included where it is known to cover both sectors. More general knowledge about market leverage can be found in two studies published by EU-OSHA (2012, 2021).

The consequence of these constraints is that while we have carried out a systematic literature search subject to these limitations, the analysis constitutes a scoping review, which presents the available knowledge and the need for further research (Grant & Booth, 2009; Yazdani et al., 2015).

The methodology for the scoping review covers three methods: 1) a standard systematic literature search; 2) the snowballing approach, using references or citations to identify leads in the literature to additional topics and concepts; and 3) a search through networks and stakeholders, in particular the social partners and sector stakeholders affiliated with EU-OSHA's network of national focal points.

### 2.1 Systematic literature search

In order to concentrate the review, a number of analytical choices were made prior to the systematic search (Pawson, 2006). We decided to limit our search to peer-reviewed articles to ensure academic rigour. In principle, language restrictions were not applied, as the project group covered several European languages; however, the systematic search produced only English-language sources, whereas other languages appeared using the supplementary search methods. Likewise, we did not limit the years of publication, as during the iterative process, we became aware that articles focusing on our research questions would be rather scarce.

The project group discussed the protocol for the review at several meetings and developed the specific content in consultation with an experienced research librarian from the University of Southern Denmark, who has content expertise in OSH, based on a PhD degree in ergonomics.

The selected databases include:

- Scopus
- Embase
- Business Source Premier
- ProQuest database host.

The databases cover both medical and organisational focuses. Additionally, Google Scholar and GreyLit.org were used to cover grey literature.

Table 1: The keywords in the search strings

Supply chain terms	Industry terms	OSH terms	Governance terms
'Supply chain management'	Agri-food	Safety	Compliance
'Supply chain*'	'Food Industry'	'Health and Safety'	Monitoring
'Supply chain relation'	'Food processing industry'	Health	'Code of Conduct'
'Supply chain network'	Vegetable	'Occupational Health and Safety'	Incentiv*
	Fruit	Risk	Standards
	Meat	'Work Environment'	Audit*
	Dairy	'Working Environment'	Regulation
	Construction	Ergonom*	Certification
	'Construction Industr*'	MSD	'Due diligence'
		'Musculoskeletal Disorders'	Tendering
		Sustainab*	Training
		'Social Sustainability'	Governance
		'Sustainable work'	
		'Sustainable production'	

We developed the search string in an iterative process between the project group and the research librarian. As 'market leverage instruments' do not exist as a concept in academia, alternative search terms had to be composed to secure a relevant scope. The researchers started by brainstorming a comprehensive list of terms and synonyms relevant to the focus of the review. Then we started the search process. Table 1 shows how we categorised the relevant terms into four different focus areas: 1) supply chain terms, 2) the two sectors (agri-food and construction), 3) descriptions and synonyms of OSH-related concepts and issues, and 4) different governance terms. Based on this, the research

librarian subsequently compiled the search terms into two Boolean search strings<sup>3</sup> with 'AND' between the four headings and 'OR' for the synonyms. Specific searches covered each of the two sectors. We ran pilot searches to ensure that the search results covered key articles for each sector already identified. This search resulted in 2,186 initial hits.

To ensure we had identified all relevant literature, we ran a focused search in the key journals shown in Table 2.

**Table 2: Hits in key journals**

Selected journals	Number of hits
<i>Safety Science</i>	14
<i>Journal of Supply Chain Management</i>	21
<i>Journal of Operations Management</i>	20
<i>International Journal of Operations and Production Management</i>	45
<i>Journal of Business Ethics</i>	32
<i>Journal of Cleaner Production</i>	524
Total	656

The 2,186 articles from the systematic search and the 656 articles from the key journal search totalled 2,842 references. After checking for duplicates with the reference manager, we removed 977 duplicate references, leaving 1,865 articles for title and abstract screening and subsequent full-text screening.

The project group discussed and pilot-tested screening criteria for inclusion and exclusion.

Articles were included if they fulfilled at least one of the following inclusion criteria:

- 1 contributed with relevant knowledge on social compliance and OSH practices through market-based governance practices in the supply chain of the agri-food and construction industry;
- 2 gave insights into specific mechanisms of market leverage in the agri-food or construction industry;
- 3 provided theoretical insights into the use of market-based governance practices in supply chains to support compliance, where the primary focus could be beyond OSH or the two sectors.

Articles were excluded if they fulfilled at least one of the following exclusion criteria:

- 4 solely focused on developing countries;
- 5 had no supply chain perspective, for example, were exclusively focused on issues related to general regulation or OSH and working conditions.

Next, all sources were evaluated by two researchers in a stepwise process. All references were uploaded to Covidence, a software tool developed for systematic reviews. Covidence allows screening of the included publications in three steps: 1) title and abstract screening (which led to the exclusion of 1,757 articles); 2) full text screening, where each text was individually assessed and disagreements or uncertainties were resolved by consensus through discussion (this led to the exclusion of 67 articles); and 3) data extraction, conducted in a flow chart with reasons for inclusion (the result of this search procedure was 41 articles).

<sup>3</sup> A systematic search process using Boolean operators of words like AND, OR, and NOT.

### Supplementary literature tracing

In addition to the systematic search, we applied a snowballing identification process, tracking citations and references as well as other hints to relevant literature when we received leads pointing to relevant research. Most leads resulted from reading the selected papers, for example, where we followed citations from some of the most cited theoretical supply chain literature in a search for sector-relevant studies with instruments and practices described with terms not identified before. Suggestions from EU-OSHA project managers, network interviews and national focal points helped identify further relevant literature, which we also followed up with additional citation searches. Altogether, we have included 24 papers as references identified in this manner.

## 2.2 Stakeholder and network search

### EU-OSHA focal point survey

An important method for collection of information about market leverage in the two sectors was a survey sent to EU-OSHA national focal points. The survey sought suggestions for relevant literature and for potential cases in the construction and agri-food sectors for further empirical studies. We mailed a short survey with open-ended questions with text boxes to all EU-OSHA national focal points. Our aim was exploratory, as we wanted to gauge as much information as possible on the sector-specific OSH contexts in each of the EU-27 Member States, and to receive suggestions for good cases from the construction or agri-food sectors. We developed the survey in cooperation with EU-OSHA project managers, and presented the draft questionnaire and attached letter to the Danish focal point to ensure that both the survey and our letter used the appropriate terminology for focal points and would be readily understood by the recipients.

The survey included four open-ended questions for focal points. The questionnaire was designed to make it easy for the focal point coordinator to forward some questions to their partner organisations from the national tripartite systems (that is, the national trade unions, employer association and regulatory bodies). We also asked the coordinators to engage their partner networks so as to get as many suggestions and answers as possible as well as in-depth knowledge of the regulatory contexts and any collective bargaining agreements between the social parties that might influence market leverage of OSH. The themes and the four open-ended questions are shown in Table 3 below.

The survey was accompanied by an explanatory letter to the focal points, which explained our purpose and what the answers would be used for. The letter and the attached surveys were emailed by EU-OSHA through their focal point network, to underline that the project and survey were run jointly by the consortium and EU-OSHA.

The letter and questionnaire were mailed to the 27 EU Member States. We sent the focal points 2 reminders about the questionnaire, and finally received responses from 10 national focal points.<sup>4</sup> The responses from the focal points included useful references to literature, with leads for the tracing of additional literature mentioned above.

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<sup>4</sup> DK (Denmark), FI (Finland), NL (the Netherlands), IT (Italy) CZ (Czechia), AUT (Austria), POR (Portugal), LAT (Latvia intended?), HU (Hungary), FR (France).

**Table 3: Themes and explanations forwarded to focal points**

Theme	Question	Additional remarks
Regulation	Please give us names and other information about specific legislations or other regulations that impose responsibility on one node in supply chains for OSH in other nodes in the supply chain (for example, a law that imposes the legal responsibility on the constructor for the OSH of all subcontractors on a construction project).	NB: Please give as many examples as you can. (If you run out of answer boxes below, please just use Ctrl+C and Ctrl+V to copy and paste an empty box below the three already in the questionnaire.)
Collective bargaining results	Please give us names and other information about bargaining results, tripartite agreements or other agreements between the social parties that impose responsibility on one node in supply chains for OSH in other nodes in the supply chain (for example, an agreement that imposes legal responsibility on the constructor for the OSH of all subcontractors on a construction project).	NB: Please give as many examples as you can. (If you run out of answer boxes below, please just use Ctrl+C and Ctrl+V to copy and paste an empty box below the three already in the questionnaire.)
Cases	Please give us any examples you might have of companies with specific focus or activities that aim to develop OHS and working conditions in their supply chain.	NB: Please give as many examples as you can. (If you run out of answer boxes below, please just use Ctrl+C and Ctrl+V to copy and paste an empty box below the five already in the questionnaire.)

### Stakeholder and network interviews

Besides the survey to the national focal points, we interviewed representatives from several stakeholder organisations which were all campaign partners<sup>5</sup> for EU-OSHA's campaign Healthy Workplaces 2020-2022: Lighten the Load. These campaign partners included large companies, professional associations, trade unions and employer associations.

We created a list from the campaign partners of organisations that would potentially have in-depth knowledge of supply chains and OSH, particularly in agri-foods and construction. Stakeholders likely to have valuable insights into European supply chains and market-based leverage instruments beyond the two sectors were also included. The shortlist and potential companies were prepared in cooperation with EU-OSHA. We emailed interview requests to all 13 organisations on the shortlist, and ended up conducting interviews with representatives from seven organisations.

We prepared guides for semi-qualitative interviews fitting the position of each interview person. The main themes covered were:

- background of the interviewee,

<sup>5</sup> See a full list of partners here: <https://healthy-workplaces.eu/en/campaign-partners/official-campaign-partners>.

- introduction to the organisation,
- specific experiences with market-based leverage instruments,
- mechanisms,
- contexts,
- examples or cases.

**Table 4: List of interviewees**

Organisation	Role or position of interviewee	Sector
Siemens	Senior role in health and safety management	Construction
European Federation of Building and Woodworkers (EFBWW)	Two senior policy consultants (group interview)	Construction
International Safety and Health Construction Co-ordinators Organisation (Ishcco)	Board member	Construction
Association of Specialists in Prevention and Occupational Health (Aepsal)	Board member	Generic
Danish Food and Allied Workers' Union (NNF)	Union consultant	Agri-food
Swedish Municipal Workers' Union (Kommunal)	Union consultant	Agri-food
Committee of Professional Agricultural Organisations-General Confederation of Agricultural Cooperatives (Copa-Cogeca)	Policy advisor	Agri-food

All interviews were conducted over Microsoft Teams. Two researchers participated: one interviewed, while the other took notes and ensured the interview stayed on track and covered all necessary themes. We also recorded the interviews in Microsoft Teams, and all interviewees gave their verbal consent for us to do so.

Information received through the interviews provided guidance for the further search for relevant literature and important reflections on OSH-related supply chain governance, which we have included as concluding sections in Chapters 5 and 6 for agri-food and construction, respectively.

### 3 Classification of market leverage practices

The concept of market leverage is not applied in the research literature, either in the general supply chain management or the specific OSH literature. We therefore use the mainstream supply chain management literature to suggest a basic typology of market leverage practices and of context for market leverage.

#### 3.1 A typology of market leverage practices

The term supply chain is a metaphor for a network of organisations that collectively provide value to a customer or end user of a system. The metaphor of a chain makes it easier to visualise the flows of goods, information and money that move between members of the network on their way to provide value to the end customer. In network terminology, the member organisations of the network are nodes, while the flows of goods, information and money are what tie the nodes together. A portion of supply chain management entails trying to orchestrate the actions of the entire network simultaneously.

However, the most fundamental unit of a supply chain is the dyad: a link between two organisations (typically a buyer and a supplier) tied together by the flow of goods, money and information. The dyad, as a single supply chain relationship, is the focus of most supply chain management practice and research, for two reasons. First, orchestrating a large number of organisations simultaneously is highly complex, and so even when orchestration of the entire chain or network is needed, much of the actual flow of information, goods and money actually happens in much smaller groups, typically dyads. Second, most supply chain contracts that bind two actors are for a dyad, not a larger portion of the network.

Dyadic buyer-supplier relationships do not capture all situations. For example, in construction projects, collaboration between the principal contractor and multiple subcontractors is imperative for scheduling each subcontractor's work and for coordinating OSH practices. In these circumstances, the dyadic relationship between the focal firm and a direct supplier would be extended at least to a triadic relationship including three actors (subcontractors cooperating directly with each other and the main contractor). We acknowledge these more complex relationships exist. But we focus the review on dyads to align with most of the previous literature and practice, while also ensuring the review is able to detect more complex governance arrangements including triadic or polycentric governance arrangements (Gatignon & Capron, 2020; Ostrom, 2010), where described in the literature.

One of the critical issues for these dyads is governing the relationship, ensuring that one member (typically the supplier) provides what they promised the other (typically the buyer) – although buyers also make promises to suppliers, for instance, in the form of long-term relations or certain types of support. This is a complex topic. On the one hand, both parties profit from providing the end consumer with what they want. On the other hand, the totality of these profits is limited, and so the organisations often clash over their share of these fixed profits. In other words, while providing the customer value should help to align both parties' behaviour, the reality is they also have numerous incentives to work at cross purposes or behave opportunistically.

Hence, the basic idea of governance has been applied to numerous situations where (typically) buyers are trying to ensure a supplier does what is in the buyer's best interest, even if it might not be in the supplier's best interest. For example, Tachizawa and Wong (2015) explore how buying firms use governance mechanisms such as formal contracts or close collaboration to ensure their suppliers engage in environmental initiatives. Similarly, Hajmohammad and Vachon (2016) explore how buying firms use governance mechanisms such as codes of conduct or supplier development to manage and hopefully mitigate sustainability risks in their supply chains.

The literature on governing buyer-supplier relationships is part of a wider literature on governing inter-organisational relationships in general. This vast inter-organisational governance literature provides the framework we use for classifying the literature on market leverage instruments. Specifically, the (supply chain) governance literature recognises two main methods of governing a relationship: contractual and relational forms of governance (e.g. Cao & Lumineau, 2015).

This classification is particularly appropriate for our context for two reasons. First, the framework is well developed and built on a foundation of significant empirical research (e.g. Carson et al., 2006; Keller et al., 2021; Poppo & Zenger, 2002). Second, while the literature does not use the term market leverage instruments, there is an extensive body of extant supply chain management literature on how buyers govern their relationships with suppliers, which forms part of an even wider literature on governance of inter-organisational relationships. This body of knowledge essentially explores how buyers ensure suppliers do what the buyer wants, even when it would not otherwise be in the supplier's best interest. In other words, this existing framework will make it easy to translate literature developed for other contexts (for example, market leverage instruments used to get suppliers to reduce their carbon footprint) into the OSH realm.

### **3.1.1 Contractual governance**

Contractual governance 'highlights the importance of contracts between firms and its formal rules to safeguard against opportunism and conflict. Contractual governance may define outputs to be delivered, specify monitoring procedures, and detail duties, rights, and contingencies' (Cao & Lumineau, 2015, p. 15). In the context of governance of interfirm collaborations, contracts can be seen as project-planning tools as well as external enforcement devices (Ryall & Sampson, 2009). Typically, contracts may specify the distribution of responsibilities and roles in a business relationship, allocate monitoring practices and consequences of non-compliances and prescribe the desired outcomes and outputs that must be

accomplished (Poppo & Zenger, 2002). Contractual governance is often viewed as a formal form of governance, in that the 'rules' are codified. Examples of contractual governance include specific policies relating to the supplier's OSH management or outcomes (James et al., 2007), codes of conduct (Van Tulder et al., 2009) and supplier monitoring and audits (Short et al., 2020).

In the context of classifying the literature on market leverage instruments that firms use to improve the OSH performance of suppliers, contractual governance would be formal contractual terms that provide requirements, penalties or incentives related to OSH performance.

Contractual governance has limitations for both buyers and suppliers. It is almost impossible to specify all possible contingencies in a formal contract. The more specific a contract is, the higher the transaction cost, as the specification requires monitoring and follow-up procedures (Williamson, 1991, 2008). The problem can be mitigated by relational governance.

### **3.1.2 Relational governance**

Relational governance in a buyer-supplier dyad means that the relationship 'is governed by social relations and shared norms' (Poppo et al., 2008). The term relational governance originates from Macneil (1981), who described it as governance building on a set of shared norms and values among exchange partners. Relational governance is often viewed as an informal form of governance, in that it does not involve formal rules. While contractual governance relies on formal structure and third-party enforcement, relational governance relies on informal structures and self-enforcement of each party (Cao & Lumineau, 2015).

Relational governance becomes more complicated when exchange partners have different national or organisational cultures, since then they may also have different norms or expectations (e.g. Griffith & Myers, 2005). For example, buyers from countries with a large degree of power distance may have trouble relating to suppliers as equal partners, while companies whose norms are very human centred may have difficulty building relationships with others (even from the same country) who value profit over people (Bonatto et al., 2020).

Overall, relational governance is often described as manifesting in the development of the behavioural norms of flexibility, solidarity and information-sharing (Bonatto et al., 2020; Poppo & Zenger, 2002). Flexibility refers to the way the partners in the dyad adapt to unexpected events (Poppo & Zenger, 2002). Solidarity refers to the assumption that business partners will consider mutual interests when problem-solving and collaborating to reach strategic goals (Macneil, 1980). Finally, information-sharing describes the process of either implicitly or explicitly communicating information between business partners (Cao & Zhang, 2011).

Information-sharing translates directly from the general context to our specific context of classifying the literature on market leverage practices that firms use to improve the OSH performance of suppliers. An enhanced partnership and the promise of continuity (a long-term relationship) would foster solidarity, which may lead to increased trust (Beiro & Miguel, 2017), for example in the form of the buyer trusting that the supplier will adhere to the code of conduct. Both parties accepting and adapting to constraints from the other party would foster flexibility, for instance if the buyer accepts delivery problems rather than give penalties that force the supplier into extended overtime. Transparent information-sharing is important to secure valid information about OSH and working conditions, rather than suppliers withholding information. Shared norms can be cultivated by buyer support for supplier development and training efforts as well as frequent informal communication which advances personal relations (Huq et al., 2016; Kauppi, 2013; Pagell & Wu, 2009).

### **3.1.3 Hybrid forms**

In practice, the two main categories are mixed in hybrid forms, as excessively specific contractual governance creates cost and can lead to opportunistic behaviour, whereas purely relational governance carries a high delivery risk (Poppo & Zenger, 2002): the literature therefore points to the co-existence of hybrid (both relational and contractual) forms of governance (e.g. Carson et al., 2006; Um & Oh, 2020), where contracts can sometimes have informal clauses and relational means can be codified (e.g. Keller et al., 2021). The hybrid forms also imply that governance can occur between three or more partners on a horizontal and vertical level (Carbone, 2017; Gatignon & Capron, 2020; Ostrom, 2010; Révillon & Chappuis, 2005).

### 3.1.4 Decoupling

A particular issue for OSH and working conditions in supply chain governance is the tendency to decouple buying or procurement practices from OSH and other sustainability requirements (Ählström, 2010; Bartley & Egels-Zandén, 2015; Behnam & MacLean, 2011; Soundararajan et al., 2021). Buyers' procurement functions typically have good reasons to focus on cost, quality and delivery when dealing with suppliers, to maximise buyer profit. By contrast, CSR, sustainability or compliance functions within the firm often take care of OSH and working conditions requirements with weak links to procurement, and subsequently have little influence on actual buying practices. In other words, OSH issues are often raised only after a supplier has been selected and orders have been placed, which at best creates tension between procurement and OSH goals, and at worst leads to OSH goals being ignored to ensure orders are delivered.

The result is that even the best corporate policy has little effect in actually making a firm or its supply chain more socially sustainable (Shevchenko et al., 2016). Decoupling can occur due to intentional window-dressing (Haar & Keune, 2014) or greenwashing (Pagell & Wu, 2009), but it can also be the result of the many challenges to integrating procurement and sustainability in practice.

### 3.1.5 Power in supply chain relations

The term power is frequently described as the ability of one party to enforce its will on another party (Emerson, 1962). Buyers and suppliers usually have an interest in collaborating to achieve joint value creation. However, the balance of power will often determine which party gets the larger share of the profits and/or whether one party can impose requirements on the other, such as requirements to adopt specific safety practices.

Buyers with power would then be more able to impose specific market leverage instruments on suppliers, including OSH requirements. Williamson (2008) describes the power strategy as a muscular approach, which may backfire with supplier resistance. The efficacy of this muscular approach as a market leverage instrument is likely to be low if suppliers adopt the measures only in a symbolic sense to signal commitment, do not put resources into the required practices, or generally resist making the adoption.

### 3.1.6 Justice

Suppliers will decide how to adopt a practice or respond to a market leverage instrument partially based on assessment of the buyer's behaviour as fair or just (Adams, 1965; Griffith et al., 2006; Lu & Chen, 2015; Narasimhan et al., 2009). The concept of justice can be divided into three distinct dimensions: distributive, procedural and interactional justice (Luo, 2007; Narasimhan et al., 2013).

**Distributive** justice is concerned with whether the distribution of the outcome is perceived to be fair (Adams, 1965). Although the continuing character of relational governance means that business partners will be prepared to accept short-term imbalances, the overall outcome distribution must be perceived as fair over time for a business relationship to continue to exist (Griffith et al., 2006). When a market leverage instrument imposes high costs on suppliers or only benefits the buyer, outcomes are unlikely to be perceived as fair, with limited adoption and opportunistic behaviour likely to occur, which may hamper safety outcomes.

**Procedural** justice is concerned with how the fairness of a decision process is perceived (Liu et al., 2012). An important aspect of procedural justice is whether those involved in (or affected by) decisions perceive the procedures to be fair (Korsgaard et al., 1995). When the process by which a buyer imposes a practice or market leverage instrument on suppliers is perceived as unfair, adoption and outcomes are likely to suffer.

**Interactional** justice relates to the perceived fairness of communication and interpersonal treatment. High degrees of interactional justice will increase harmony and improve collaboration between business partners (Luo, 2007). According to the literature, the types of pressures that a buying company applies in buyer-supplier relationships could also explain the reasons for the implementation of OSH practices as well as their efficacy.

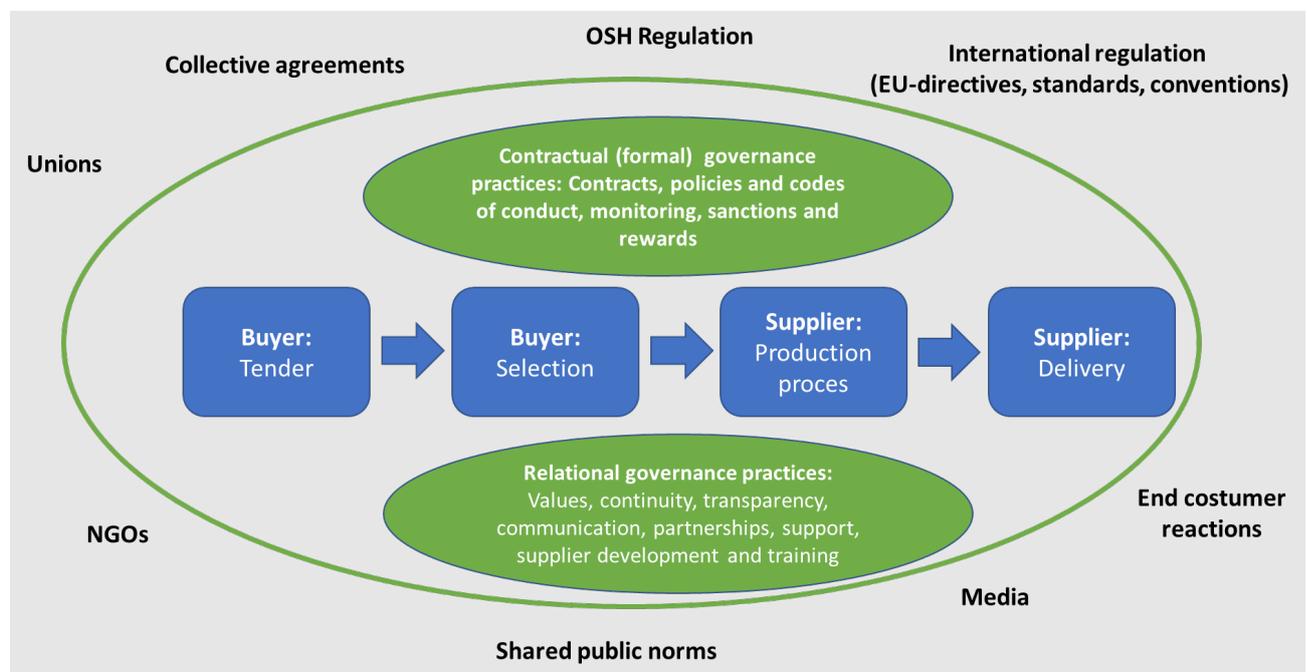
Neglecting procedural or distributive justice can negatively impact suppliers' performance such as OSH outcomes. Suppliers can struggle to navigate conflicting demands like severe price pressure (distributive justice), shortened lead times and social compliance demands, which combined can lead to high pressure on the production floor, with adverse consequences for the work environment (Raj-Reichert,

2012). Furthermore, if suppliers perceive the buyer's behaviour as unfair, opportunistic behaviour can result, with suppliers refusing to disclose safety records or failing to cooperate, which would then require buyers to enforce stronger contractual governance. This mechanism is well described in the research in the international garment industry (Anner, 2020; Huq et al., 2014).

### 3.2 Context influencing supply chain governance

The choice and effectiveness of market leverage instruments are influenced by the institutional context. Most research focuses on the choices and outcomes of market leverage instruments and practices within specific buyer-supplier dyads and supply chains. The specific market conditions and the tangible characteristics of the products – perishable in agri-food and temporary at a construction site – constitute determining factors for the specific governance practice, which we investigate in the next two chapters. Yet it is important to acknowledge that those choices are informed by a wider institutional context. The institutional context of interest is primarily international and national regulation, EU directives, unions, industry associations and NGOs that could directly influence the specific forms of governance on the supply chain.

Figure 1: A model of supply chain governance with the institutional context influencing the dyad



Regulation and pressure from stakeholders such as unions and NGOs have an influence on which market leverage instruments buyers select and the efficacy of those instruments. For this review, we include contextual factors related to regulation, regulatory frameworks and other stakeholders that could have a direct influence on supply chain relations and governance practices. Most national regulation form as foundation for how employers handle OSH in their own workplace, but does not directly influence the dyads' governance practice. Exceptions exist, as seen for instance in national legislation in Germany and France, which requires certain large companies to carry out due diligence of OSH and working conditions in their suppliers, or in the national regulation of contractor responsibility for subcontractors.

EU and international regulation constitutes the most important element in the institutional context, and this international regulation often forms the basis for national regulation such as the ILO conventions. So the international regulation follows both the horizontal space of traditional national state jurisdictions and the vertical lines of supply chains (Thomas & Turnbull, 2018). The ILO, the Organisation for Economic Co-operation and Development (OECD) and the UN have developed codes concerned with the behaviour of multinational companies that encompass labour standards (James et al., 2007) that

impact the choice of market leverage instruments and their efficacy. For instance, ILO conventions are often used in the development of companies' codes of conduct which are rooted in the ILO's eight fundamental conventions (convention numbers in parentheses):

- Freedom of association and protection of the right to organise convention (No 87),
- Right to organise and collective bargaining convention (No 98),
- Forced labour convention (No 29),
- Abolition of forced labour convention (No 105),
- Minimum age convention (No 138),
- Worst forms of child labour convention (No 182),
- Equal remuneration convention (No 100),
- Discrimination (employment and occupation) convention (No 111).

Furthermore, the ILO has launched programmes such as Safety + Health for All to support and promote decent working conditions and social sustainability issues on a global scale (International Labour Organisation, 2021, 2021).

The UN has brought forward important initiatives such as the UN Global Compact and the UNGPs, which use the fundamental ILO conventions as benchmarks (Ruggie, 2008) and rely on private companies' governance activities to improve labour standards and human rights in supply chains. These initiatives form the basis of most larger buyers' codes of conduct. But diffusing the application of the standards and creating impact are processes marked by paradoxes and dilemmas, depending in part on the context of the specific buyer-supplier relations (Haack & Rasche, 2021).

Equally, the EU has taken the first steps in developing a directive concerned with mandatory supply chain due diligence (Da Costa, 2021). A number of European countries (for example France, Germany, the Netherlands and Norway) have already introduced national rules on due diligence. All these different legislations oblige companies to respect sustainability issues by implementing due diligence commitments like the establishment of a risk management system to identify and prevent social and environmental violations. There are, however, substantial differences between the national rules. For example, the German Supply Chain Due Diligence Act initially will take effect in 2023 and apply to companies with at least 3,000 employees. From 2024, it will be expanded to cover companies with 1,000 employees (BMas, 2021). By comparison, the Norwegian Transparency Act applies even to small companies with 50 full-time employees or an annual turnover of NOK 70 million (Regjeringen, 2021). The EU is expanding activities to push for environmental, social and governance (ESG) sustainability in supply chains and in particular to avoid greenwashing (Scheffe, 2022). Among the most important initiatives are the Sustainable Finance Disclosure Regulation (SFDR) (Regulation 2019/2088) requiring financial companies to document sustainability of their investment, which will influence buyers' reporting. Another example is the Corporate Sustainability Reporting Directive (CSRD) (Directive 2022/2464) aimed at stronger transparency and comparability of ESG reporting.

Furthermore, there are examples of global framework agreements between multinational corporations and international unions that include provisions for OSH and working conditions, which influence supply chain governance (Hadwiger, 2018; EU-OSHA, 2012). Similarly, national collective agreements established in the relevant trade or industry can sometimes have direct influence on safety practices, and by extension, how these practices are governed in supply chains (James et al., 2007).

## 4 Agri-food

### 4.1 Characteristics of the European agri-food industry

#### 4.1.1 What is included in the agri-food sector?

The main components of the agri-food supply chain are primary producers (farming and fishing), processors (slaughterhouses, canning, dairy and packing), distributors and retailers (supermarkets, restaurants and canteens). The supply chain constitutes one of the largest economic sectors in the EU (Eurostat, 2021): in Denmark, for instance, the sector covers nearly 10 % of all employment. The sector also has suppliers from other sectors such as machinery for agriculture and processors, and pesticides and chemicals for agriculture. These suppliers are not included in the network.

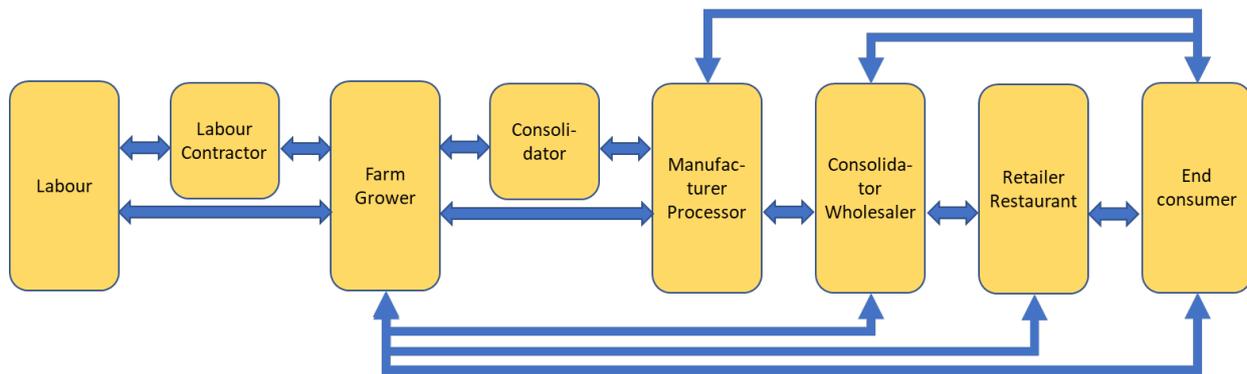
Agri-food has strong national and international components. Fresh products (meat, fish, fruit and vegetables) are traditionally delivered from local national markets, but thanks to efficient logistic operations, also increasingly from international sources. Fresh vegetables and fish are flown into retailers in national markets, and fresh products are delivered via land transport across borders (for example, tomatoes and other vegetables from southern to northern Europe). A large part of agri-food products such as coffee, cocoa, tropical fruits and vegetables, is imported from countries overseas. This review includes only products produced and sold inside Europe.

#### 4.1.2 Business structure

The agri-food supply chain is characterised by a forward flow of products from producers across a number of processors and distributors to buyers and consumers, at the same time feeding back a flow of information about the demand for products and labour (Davies, 2019) (see Figure 1). Global as well as European agri-food supply chains are dominated by a small number of multinational buyer companies mainly comprising large food companies (such as Nestle and Kraft) and retail supermarket chains (such as Lidl or Tesco) which exert pressure over their suppliers (farmers and other primary producers) who typically contend with strict requirements related to quality, lead time and cost of production (Davies, 2019). A large part of the product also goes to restaurants, canteens and government kitchens.

Agri-food is a highly regulated sector, particularly in relation to food safety, but not necessarily on OSH and working conditions. The EU as well as the individual Member States have strict food safety regulations in place, with procedures for maintaining food safety in every link in the chain from primary producers to consumers. The regulation covers requirements for management systems with a number of controls which are backed by rigorous government inspections. They are far more intensive than labour inspection: for instance, Denmark has yearly inspections in all food outlets including producers, stores and restaurants.

However, some European countries have chosen to combine hygiene inspections in restaurants with the monitoring of working conditions and issues related to occupational health and safety (Hasle et al., 2017). As primary production occupies most of the acreage in most European countries, the sector is subject to environmental protection both for end consumers (protection from pesticides) and for the general environment. Moreover, agri-food is a sector that is in the spotlight due to sustainability and responsibility interests. There are numerous multi-stakeholder initiatives aimed at food safety, environment and climate, many of which concentrated originally on developing countries with fair trade and eco labels for coffee and chocolate, which are increasingly implemented in European agri-food production.

**Figure 2: The general structure of the agri-food supply chain\***

\*Adapted from Davies (2019)

Some of these initiatives also include requirements for OSH and working conditions, and these are discussed in Subsection 6.3.2. Yet experience from the UK points to a responsibility pressure from buyers mainly related to food safety, and to some extent, the environment, whereas OSH and working conditions generally play a minor role (Lloyd & James, 2008).

Development during the past three decades has shifted power in the agri-food supply chain from the primary producers to large multinational processors and large retail supermarket chains (Newsome et al., 2013). The supermarkets can exert pressure for cost reduction upstream in the supply chain with potentially detrimental effects on OSH and working conditions. Retailers put strict demands on delivery with very short notice (Mendonça & Adăscăliței, 2020) and give fines for not complying, even when the reasons for late delivery are beyond the manufacturers' control. Suppliers' reporting of KPIs on labour (staffing and absenteeism) are also included in some cases in the UK (Newsome et al., 2013).

A large part of the supply to retail is organised through traders who may not have any production or active distribution (Grimm et al., 2016). Therefore, a key issue for downstream buyers is the management of sub-suppliers in terms of cost, quality and delivery and also in terms of social compliance (OSH and working conditions). In particular, buyers with strong brands have an interest in protecting the brands through the extended chain of suppliers. Control of sub-suppliers is delicate, as the suppliers may be unwilling to disclose their suppliers to avoid the risk of being bypassed. Buyers tend to join industry initiatives such as the BSCI on food safety, environment and social compliance to bundle efforts and exert a sectoral pressure on suppliers (Grimm et al., 2016).

The development of agri-food from national to still more international supply chains with growing sustainability demands but also a precarious workforce is adding complexity, making it difficult for downstream buyers to control activities in upstream suppliers – including the use of multi-tier suppliers (Davies, 2019). Adding to the complexity is stronger competition among retailers, with a heavy pressure on prices and delivery flexibility with potential for detrimental consequences for workers (Davies, 2020; Lloyd & James, 2008). One of the consequences is the increasing use of subcontracting including labour market intermediaries, involving still more stakeholders and blurring responsibility. It may be especially problematic for the use of labour market intermediaries to supply labour for seasonal work and low-paid processing activities, resulting in precarious conditions for migrant labour (Davies, 2020).

## 4.2 Safety, health and working conditions in agri-food

OSH and working conditions in the major segments of the agri-food supply chain have some of the poorest records on the labour market:

- Farming and fishing, part of the traditional primary production sectors, were marked by considerable OSH risks related chiefly to accidents and heavy work, even before industrialisation. Despite mechanisation, the risks are still high and the work is still heavy. In addition, new problems have emerged, for instance related to chemicals in farming (EU-OSHA 2020).

- Processors (slaughterhouses, dairies, canning and packing) are marked by repetitive work, awkward work postures, heavy lifting and high accident risk due to slips, falls and cuts (Lloyd & James, 2008).
- Distributors (warehouses and transport) have problems related to long working hours and heavy lifting, although technology is helping to reduce this problem, but often with an increase in repetitive work and high work speed in packing. In addition, there are new problems due to strict surveillance.
- End users (retailers, hotels and restaurants) and retailers experience problems with heavy lifting, repetitive work and aggressive, rude or angry customers, which is especially problematic for younger, inexperienced staff. The latter problems are shared by hotels and restaurants, part of subsectors with considerable OSH risks related to kitchen work. The risks include accidents, heavy lifting, repetitive work, long working hours and a harsh psychosocial climate.

Furthermore, almost all subsectors are marked by large and increasing problems with precarious conditions and migrant or seasonal labour, often hired through labour market intermediaries (Davies, 2019, 2020), where core suppliers outsource part of the labour responsibility to the intermediaries (Davies & Ollus, 2019). The extensive use of seasonal workers in agriculture, often from other countries on short-term contracts with working hours on a piece-rate basis and unfamiliarity with certain risks, adds to the pressure on workers. The consequences of seasonal demands and other demand variations are pushed upstream to suppliers and sub-suppliers, thereby blurring the consequences for end users, which for instance can be seen in the form of zero-hour contracts and intensified and long hours of seasonal work (Davies, 2020; Mendonça & Adăscăliței, 2020). Furthermore, the agri-food industry is characterised by a high degree of small, self-employed producers who are seldom inspected, rarely report their accidents and have limited access to resources that are vital for the improvement of OSH and working conditions (EU-OSHA 2020). These problems are widespread in Europe as well as in other OECD countries such as the US (Maloni & Brown, 2006). The literature on these problems is limited, but examples from the UK indicate how cost and delivery pressure with close monitoring of performance affects workers who experience tight control of their performance with intensification of their work (Newsome et al., 2013). Furthermore, large fluctuations in supermarket demands, partly due to unplanned promotions to consumers, lead to a pressure for casualisation of labour, resulting in deterioration of working conditions and constraints for workers' voices both directly and through unions (Mendonça & Adăscăliței, 2020).

### 4.3 OSH and working conditions market leverage in agri-food supply chains

As indicated above, market leverage of food safety and the environment plays a large role in the agri-food supply chain. However, we will only include these issues if they also have relevance for OSH and working conditions.

Supermarket chains and large food brands are exposed to high reputational risk, which is a key driver for CSR and safety and health practices. However, the main focus on protection and building reputation is generally on food safety, the environment and animal welfare (Beske et al., 2014; León-Bravo et al., 2017).

National regulation generally plays an important role as a foundation for OSH priorities (EU-OSHA 2021) but the role in market leverage of OSH and working conditions in agri-food is limited. However, there are exceptions: for instance, the recent German ban on outsourcing and the use of temporary labour in the meat-processing industry (Staunton, 2021). EU regulation can potentially also play a role with the expected rules for due diligence<sup>6</sup> and the farm-to-fork strategy, which alongside food safety and the environment, also focus on fairness and health for workers by reducing the use of hazardous pesticides; however, so far it is a strategy,<sup>7</sup> and it remains to be seen to what extent the strategy will be transformed into implementation of tangible measures.

<sup>6</sup> See: [https://ec.europa.eu/commission/presscorner/detail/en/fs\\_22\\_1147](https://ec.europa.eu/commission/presscorner/detail/en/fs_22_1147)

<sup>7</sup> See: [https://ec.europa.eu/food/horizontal-topics/farm-fork-strategy\\_en](https://ec.europa.eu/food/horizontal-topics/farm-fork-strategy_en)

### **4.3.1 Buyer contractual governance**

The literature on contractual governance in agri-food supply chains with an influence on OSH and working conditions is very limited. In the following section, we present the few identified examples, including the literature where food safety and environment play a large role and OSH consequences are blurred or indirectly described.

Purchasing practice has the potential to influence sustainability in a broader sense, including social issues, but price, quality and delivery are always the dominating issues in the process. Environmental issues such as food waste and recycling are prioritised before social issues. Yet, as pointed out before, there are also possibilities to include sustainability including social issues in purchasing (Feng & Huaccho Huatuco, 2022). It can, for instance, be in the form of questionnaires to suppliers, where buyers use the answers in their selection process (Feng & Huaccho Huatuco, 2022).

The motives for sustainable purchasing practices are manifold. A literature review conducted by Ambekar and colleagues (2019) indicates that pressure from stakeholders, regulation and public image are the most common motives. The same review points to multiple ways of managing sustainable sourcing such as buying strategies including communication and specification, supplier assessment and codes of conduct. A study of an Italian agri-food chain (León-Bravo et al., 2019) shows that normative pressure like the companies' motivation to be perceived as responsible is initiating selection, monitoring and control of suppliers on social issues.

An important concern for downstream buyers is the reputational risk, where food safety and the environment are important, but OSH and working conditions also pose a potential risk of public scandals, which the buyers want to ensure will not happen. A key element in the governance of reputational risk is the analysis of the risk of potential for problems from suppliers and sub-suppliers, often with a geographical focus (Grimm et al., 2016). Buyers often use the risk categories published by multi-stakeholder initiatives. Table 5 shows an example from the BSCI, which buyers use to select the level of requirements and follow-up monitoring.

**Table 5: Example from the BSCI, which buyers use to select the level of requirements and follow-up monitoring**

Country	Overall risk	Voice and accountability	Political stability & absence of violence	Government effectiveness	Regulatory quality	Rule of law	Control of corruption	Classification
<b>Belgium</b>	84.3	95.57	61.90	80.77	87.50	88.46	91.35	Low risk
<b>Denmark</b>	94.9	98.52	83.81	99.04	92.31	98.08	97.60	Low risk
<b>Ireland</b>	89.2	94.58	82.38	86.54	93.27	88.94	89.42	Low risk
<b>Estonia</b>	85.4	88.67	68.10	85.58	92.79	87.02	90.38	Low risk
<b>Spain</b>	76.2	82.76	59.05	79.81	81.73	80.29	73.56	Low risk
<b>Romania</b>	58.4	61.58	65.24	40.38	67.31	64.42	51.44	High risk

The standard contractual governance practice on OSH and working conditions is the buyer code of conduct, which buyers require their suppliers to follow. They typically build on ILO conventions and UNGPs. The buyers subsequently request their suppliers to prove their compliance to the code of conduct using third-party audits related to one of the many multi-stakeholder initiatives (Grimm et al., 2016). Moreover, buyers do their own social compliance audits of their suppliers.

Also, public institutions and actors hold roles as procurers and require their suppliers to comply with fair pay and decent working conditions through contractual requirements. For example, the city of Copenhagen has attached labour clauses to all its contracts with suppliers which specify social and working conditions. Furthermore, after realising the weak implementation of these clauses, the city established its own action team that makes unannounced control visits to suppliers to ensure compliance with these clauses (Københavns Kommune, 2021).

### **4.3.2 Multi-stakeholder initiatives, standards and audits aimed at agri-food**

There is a vast number of initiatives and standards targeting social sustainability including OSH and working conditions. In this subsection, we present a selection of multi-stakeholder initiatives, standards and audits which we identified as central to the agri-food industry, and which may affect OSH and working conditions. The information mainly originates from the initiatives' own webpages; explicit studies of the mechanisms and effects of the multi-stakeholder initiative are very rare, and it is therefore not possible to assess their efficacy without further research. Alongside standards and audits directly related to OSH and working conditions, buyers always require suppliers to follow national legislation and international standards on food safety such as ISO 22000, which in some cases can be beneficial for worker safety and health (providing protection against biological and chemical hazards) and in other cases presents obstacles to OSH improvements.

#### **Amfori Business Social Compliance Initiative (BSCI)**

The Amfori BSCI<sup>8</sup> is a multi-stakeholder initiative aimed at 'improving social performance in global supply chains' (Amfori, 2019). Amfori covers most sectors including agri-food. The majority of Amfori's members are importers (66 %), followed by brands (19 %), retailers (11 %) and holdings (4 %). The BSCI is a division under the umbrella of the Foreign Trade Association (FTA). The BSCI Code of Conduct refers to several international conventions such as the UNGPs, the OECD Guidelines, the ILO conventions and the UN Global Compact. It builds on 11 principles concerned with freedom of association and collective bargaining, forced and child labour, anti-discrimination, fair remuneration, decent working hours and occupational health and safety. Members are obligated to request their suppliers to comply with the BSCI Code of Conduct. The BSCI regularly develops lists (Table 5) of high-risk countries, and suppliers originating from high-risk countries are requested to be audited against the BSCI Code of Conduct by a third-party audit company to do business with BSCI members (Grimm et al., 2016).

#### **GlobalGAP**

GlobalGAP is a voluntary certification scheme predominantly concerned with food safety. GlobalGAP suppliers must comply with a broad array of food safety and quality requirements, but also with environmental and labour standards (Mook & Overdeest, 2021). However, to ensure inclusion of OSH and working conditions, an add-on has been developed: the GlobalGAP Risk Assessment on Social Practices (GRASP).<sup>9</sup> The GRASP audit can be conducted together with the GlobalGAP inspection by a GlobalGAP-approved third-party auditor. It is concerned with topics such as worker representatives, remediation, compliance with national labour regulation, working hours, payment of wages and the implementation of GRASP into the quality management system of the producer (GlobalGAP, 2017). GRASP refers both to ILO conventions and national regulation. Although GRASP assessments cannot be passed or failed, the supplier must initiate corrective actions if non-compliances are discovered. An assessment is valid for 1 year (GlobalGAP, 2015).

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<sup>8</sup> See: <https://www.amfori.org/>

<sup>9</sup> See: [https://www.globalgap.org/uk\\_en/for-producers/globalg.a.p.-add-on/grasp](https://www.globalgap.org/uk_en/for-producers/globalg.a.p.-add-on/grasp)

## **EU Code of Conduct on Responsible Food Business and Marketing Practices**

In the wake of the European Green Deal and as part of the Farm to Fork strategy, the EU Commission has recently developed the EU Code of Conduct<sup>10</sup> on Responsible Food Business and Marketing Practices (Schebesta et al., 2020). The development of the code included the involvement of and input from a broad array of stakeholders like international organisations, NGOs, trade unions and trade associations (European Commission, 2021). The code contains seven aspirational objectives concerned with the promotion and availability of healthy and sustainable food sources. There is, however, also an objective on sustainable sourcing in food supply chains, where one issue is to 'improve social performance in (global) food supply chains' (European Commission, 2021). The code identifies several indicative actions to achieve this, such as the mapping of social sustainability risks, the promotion of decent working conditions with suppliers and the uptake of certification or audit schemes in relation to social performance. Even though companies who commit to the code declare their engagement and actions within these areas, the code only represents a voluntary instrument. When it was launched in summer 2021, 65 signatories (23 associations and 42 companies) committed to the code, among them many of the leading European food producers and retailers (European Commission, 2021).

### **Social Accountability 8000 (SA8000)**

The SA8000 is a voluntary certification standard developed by Social Accountability International (SAI).<sup>11</sup> Audits against the SA8000 standard are conducted by third-party audit firms, and once certified, the suppliers are regularly monitored to ensure they still live up to SA8000 requirements (Ciliberti et al., 2009). The SA8000 standard refers to international conventions such as the Universal Declaration of Human Rights, ILO conventions and national laws. It is concerned with topics such as child labour, forced labour, discrimination, freedom of association and the right to collective bargaining, and safety and health. Furthermore, suppliers must demonstrate that they integrate the SA8000 standard into their own management system (SAI, 2022).

### **SEDEX (SMETA)**

The Supplier Ethical Data Exchange (SEDEX)<sup>12</sup> was formed in 2004 and has since developed into one of the world's largest platforms for managing and sharing ethical audit data. It brings together more than 38,000 companies from a variety of sectors including chemicals, engineering, and drugs and pharmaceuticals as well as agri-food (Gurzawska, 2020). Based on the Ethical Trading Initiative (ETI) Base Code, SEDEX developed its own social auditing methodology called SMETA. SEDEX claims that over 40,000 SMETA audits are uploaded to its platform every year. Based on the audit report, the supplier has to initiate a corrective action plan if any non-compliances are detected (SEDEX, 2021). Issues related to safety and health, wages and working hours are some of the most common non-compliances (Gurzawska, 2020).

The topics assessed during a SMETA audit include freedom of association, safety and health, child labour, working hours and non-discrimination. Additionally, the company can choose to include options on environment and business ethics (SEDEX, 2019). Audits are conducted by third-party audit firms approved by SEDEX (2022). SEDEX also offers other governance tools to its members, such as supply chain mapping, risk assessment tools covering social and environmental issues, and capacity-building activities (Gurzawska, 2020). SEDEX is reported to be applied in agri-foods by smaller fresh party fruit retailers, among others (Feng & Huaccho Huatuco, 2022).

### **'Protecting health and safety of workers in agriculture, livestock farming, horticulture and forestry' (EU Commission Guide)**

This non-binding guide is aimed at farmers and provides an overview of safety and health activities that can reduce occupational accidents and illnesses and the possibility of loss of property and production. The guide introduces farmers to the management of safety and health and focuses especially on the use of risk assessments, listing more than 120 typical hazards that need to be considered. As such, it also provides practitioners with concrete tools to manage risks and develop actions aimed at

<sup>10</sup> See: [https://ec.europa.eu/food/horizontal-topics/farm-fork-strategy/sustainable-food-processing/code-conduct\\_en](https://ec.europa.eu/food/horizontal-topics/farm-fork-strategy/sustainable-food-processing/code-conduct_en)

<sup>11</sup> See: <https://sa-intl.org/>

<sup>12</sup> See: <https://www.sedex.com/>

improvements (European Commission, Directorate-General for Employment, Social Affairs and Inclusion, 2016).

### **Ethical sourcing and procurement in the food industry**

While formal contractual governance practices are often concerned with suppliers' commitment to sustainability criteria or the requirement of certification and monitoring practices to engage in business relationships, ethical sourcing and procurement spotlight buyers' procurement behaviour.

The Ethical Trade Initiative and its Scandinavian partners Ethical Trading Initiative Norway and Danish Initiative for Ethical Trade developed the 'Guide to buying responsibly' that explicitly describes how buyers' procurement practices can have adverse implications on suppliers' working conditions if the procurement is based only on conventional, cost-driven practices. Issues such as forecasting (excessive overtime), price negotiations (pressure on workers' wages, and poor health and safety), contractual terms (where labour conditions may be overlooked) and production and lead times (excessive overtime, and irregular hours) can all critically impact workers' labour conditions.

The authors therefore advocate for a procurement concept where the cost-driven practices must be supplemented with ethical considerations (Ethical Trade Initiative, 2017). A similar relevant example is a guide developed in Denmark by the Danish Initiative for Ethical Trade, the dairy cooperative Arla Foods and the Danish Agriculture and Food Council. The guide is based on internationally recognised standards and was developed to introduce SMEs in the agri-food industry to human rights due diligence (The6steps, n.d.).

### **Additional multi-stakeholder initiatives**

Another form of multi-stakeholder initiative is horizontal cooperation in the supply chain. Stakeholders at the same level in the chain cooperate on the development and coordination of shared standards, although this is rarely described in the literature. This is often focused on non-OSH topics such as organic products in farming and food safety in retailers, but such cooperation is also relevant for OSH and working conditions. The emphasis can be on the development of shared values, among others. Examples can be seen in organic beef farming in the US (Pullman & Dillard, 2010) and in ethical trading initiatives in several European countries where peer buyers organise discussions about responsible trading.

Sometimes subsectors make agreements about certain OSH measures after union pressure. One such example is an agreement between the Scottish Whisky Association and logistics providers about the improvement of OSH at distilleries and bottling sites (Mendonça & Adăscăliței, 2020).

### **4.3.3 Buyer relational governance**

León-Bravo et al. (2017) distinguish between three different types of collaborative relationships in the supply chain in agri-food: 1) the transaction (which is operational and short term), 2) the event (which is tactical and medium term), and 3) the process (which is strategic and long term). The process of collaboration implies a better possibility of long-term relationships with trust and partnership that provide better opportunities for the improvement of OSH and working conditions. An important element is support to partners upstream in the supply chains, for example, from larger processors to farmers (León-Bravo et al., 2017), where procurement practices such as advanced payments and economic development support can play a major role for the potential for farmers to secure decent working conditions. However, the focus of this form of support is mainly on environmental and food safety issues. Multinational corporations in agri-food have also been found to support development of long-term collaboration with their upstream suppliers (Touboulis & Walker, 2015).

Geography plays an important role in relational governance. In cases where processors are located close to buyers, they may pay relatively frequent drop-by (informal) visits (Lloyd & James, 2008), which can be considered a policing control as well as a form of support and possible trust-building. The importance of visits and dialogue in supplier selection, when geography allows, is also described by Feng and Huaccho Huatuco (2022). As expressed by a manager interviewed in their study: 'Local suppliers on fresh produce line ... have binding bond with them and I don't think we have issues with them. If I have, just speak with them but don't really need to audit' (Feng & Huaccho Huatuco, 2022, p.

153). However, relational governance activities can also be utilised to reduce uncertainties and gain influence and power over suppliers (León Bravo et al., 2021).

If conducted fairly, such personal negotiations and visits would also foster commitment and trust between buyer and supplier and enhance collaboration on sustainability issues. Trust between the buying firm and its direct suppliers is described as a key factor in the context of sub-supplier management. Grimm et al. (2014) describe how trust between a focal firm and supplier and between a supplier and sub-supplier is critical if buyers want to improve their supply chain sustainability performance. The buying company can stimulate a trustful relationship by communicating its intentions to continuously source from suppliers, even when things do not work out as intended. Such communication reduces the fear of termination of business commitments among suppliers and sub-suppliers, and renders frank information to the buyer about their challenges more likely.

- Sustainability training and workshops for suppliers are a valuable option for buyers who want to further social sustainability (León-Bravo et al., 2019). Training can take the form of awareness-raising workshops and training for brokers (intermediaries) seeking to reach out to sub-suppliers. Brokers receive training and information on the importance of transparent supply chains and critical sustainability requirements (Grimm et al., 2016). However, even if brokers can communicate the buyer's sustainability strategy and outline social and OSH requirements, the suppliers' low competency level may hinder implementation of the sustainability strategy (Grimm et al., 2014). The value of workshops and training sessions are also recognised by organisations and multi-stakeholder initiatives. For example, the BSCI organises training workshops for supplier development on topics such as awareness-raising or advanced training, albeit described as only for Asian producers (Grimm et al., 2016).
- If suppliers show serious non-compliant behaviour, this usually leads to the application of contractual governance such as termination of contracts or the issuing of fines. However, buying companies may also use more informal practices to punish their suppliers (Feng & Huaccho Huatuco, 2022) such as by disclosing the suppliers' non-compliant practices to the public.

#### 4.4 Stakeholder opinions

Three qualitative interviews cover stakeholders in the agri-food business. We asked the stakeholders about their own experiences and analyses on market leverage instruments to improve OSH in supply chains.

The first interview was with a consultant from a national trade union organising industrial employees with jobs in processing and distribution in the agri-food supply chain. The consultant works with European colleagues in various committees and cooperative structures in the EU and beyond.

He pointed out that it is very hard to get union members interested in OSH in the supply chain, mainly because unions exist primarily to further their members' own local interests. So knowledge about due diligence or audits is not part of the training for union activists. It is chiefly 'a focus in the CSR departments', as he put it. He noted that he knows from colleagues in countries with many producers that retailers and processors primarily leave the auditing and check-ups to distributors in the chains.

The second interview was with an agri-food sector consultant from a large trade union, with a background as a farmer himself. He mentioned that one of the problems on the farms is the economic competition, and that membership density is low because a lot of precarious workers on the farms fear they will lose their jobs if they organise. It is therefore difficult for unions to influence their conditions. He was, however, positive about the possibility for market leverage instruments. He mentioned a new certification scheme initiated by wholesalers in the business, where farmers are certified based on working conditions, salaries and other OSH-related topics; also, some wholesalers only buy from certified farms. However, one must also consider that such certification schemes may represent a bureaucratic burden for farmers.

Finally, a consultant for the European association of farmers and agro-cooperatives said that it is very hard to effect change from upstream in the supply chains, especially because of the small number of full-time staff often employed by individual farms. Furthermore, they lack any power in the supply chain relationship with respect to the supermarkets and the wholesale retailers. He said that in his view, legal

and mandatory laws and regulation are more effective at achieving change at farm level, because they are characterised by traditions in general, and are thus more inclined to work as they have always done.

## 5 Construction

### 5.1 Characteristics of the European construction industry

The construction industry is one of the largest sectors in the EU, employing around 6 % of the EU workforce, and accounting for no less than 9 % of the EU gross domestic product (GDP) (European Commission, n.d.). The construction sector covers the following subsectors: civil engineering, which encompasses larger infrastructural projects such as railways, bridges and tunnels; buildings, which in turn can be split into residential and non-residential buildings; and specialised construction activities (European Construction Industry Federation, 2020). Construction is characterised by a very high number of micro enterprises, and small and medium-sized enterprises (SMEs). Besides companies that plan, develop, and build structures or buildings, the construction sector comprises manufacturers, consultancies and numerous other actors providing supporting activities along the value chain. According to the European Construction Industry Federation (FIEC), the construction sector has recorded a strong multiplier effect: for each person working in the construction sector, there are two further persons working in other sectors. The construction sector is heavily regulated in areas such as building codes and permits, construction products, technical standards and national OSH regulation.

The construction industry plays a pivotal role in relation to the green and digital transitions in Europe. Construction is an energy-intensive sector that produces a large share of the total greenhouse gas emissions (for the construction and the operation of buildings). Construction is one of the industrial ecosystems and sectors identified in the EU Industrial Strategy with the most important challenges for green and digital transformation (Marichova, 2021). To make progress in the greening of the construction sector, it must reduce the resources used and increase resources reuse and the use of recycled materials at all stages of the construction process and among all parties involved in the construction value chain (Marichova, 2021). Concerning the latter, close collaboration is needed between parties, based on good work relationships, clear contracts, information exchange and trust. As discussed in Section 5.2, these aspects raise new OSH and working conditions challenges in relation to contractual and relational governance including compliance monitoring with standards.

The literature search did not reveal studies analysing OSH and working conditions in the construction sector across Europe. The identified studies focus on the sector within the national context. This lack of cross-European research may be due to the dynamics within the construction sector, which are still to a large extent particular to national contexts (though European or international dynamics such as migration, EU legislation and mega-infrastructure projects are of increasing importance) (Lillie & Greer, 2007). Furthermore, there are organisational and institutional factors such as language, networks, diverse standards, technologies and knowledge that lead researchers to focus on their own national contexts when studying the effect of OSH practices and instruments on the ground in the sector. However, the particulars of construction, such as the physical structure and the temporality of the construction site, influence the realities of the organisation of work and the technologies used in the sector: this provides us with the opportunity to learn from instruments and practices in various national contexts, and apply this knowledge across the EU.

#### 5.1.1 Business structure

Supply chains in the construction sector are rather distinctive. The traditional linear logic of 'extraction-manufacturing-sale' does not apply in the sector. Instead, the construction site is characterised by companies from different tiers of the supply chain carrying out simultaneous work at the same geographical location (the site). Thus, globalisation in construction has not led to a widespread outsourcing of production processes to producers or service providers abroad, as seen in other sectors. In contrast with other industries in the EU, the construction industry's share of EU employment has remained relatively stable since the 1990s (see Eurostat, n.d.).

Instead, in construction, globalisation encourages the subcontracting of tasks on-site to contractors across Europe, who then post several workers abroad where labour is needed (for example, a Polish

company sending Polish workers to work on construction sites in Belgium). In this way, these workers, nationals of a wide array of EU and non-EU countries, work within the industrial relations frameworks of the posting company's country of origin (Lilie & Wagner, 2015). This leads to 'dis-integrated organisational structures' (Ahlstrand, 2022) where flexibility is high, thereby increasing the need for even more subcontractors of labour and services. The challenge of aligning the different actors that participate in the construction value chain has also been pointed out in the literature (Rompoti et al., 2020).

These challenges are especially poignant for the so-called megaprojects, defined by van Marrewijk (2015) as construction projects characterised by high complexity in terms of agreements with customers and design, and non-linearity of construction phases and employment of both main contractor employees and subcontractor-employees in the same or interdependent processes. This also means that these megaprojects are at even higher risk of disorganisation, which in turn can have grave consequences for safety and health.

There is an increasing tendency in construction processes to rely on prefabricated units manufactured outside the construction site and subsequently delivered and installed at the construction site. This can lead to safety improvements, for example, manufacturing with a higher degree of standardisation of the production processes and working at ground level rather than at heights. However, these processes tend to follow the same outsourcing logic as any other manufacturing process, and can thus be partly or wholly outsourced to suppliers in other countries, which raises concerns about time pressure and communication issues (Ahlstrand, 2022). This is also evident in the increase in employment in the manufacturing of products for the construction sector (European Construction Industry Federation, 2020).

Power differences can be immense in construction supply chains, where principal contractors wield considerable authority over the subcontractors to whom they outsource much of the actual work (James et al., 2015b). Short-term employment is widespread upstream in the supply chain, and unionisation density varies considerably across the EU Member States, but is particularly low among foreign workers providing short-term labour in the sector. Even though SMEs dominate the construction industry numerically, the larger construction projects are usually executed by a smaller number of (very) large contractors. They serve as principal contractors – often in consortiums with several large contractors – heading long subcontracting chains where much of the work is eventually done by smaller companies and independent workers (James et al., 2015a).

This practice of subcontracting can lead to challenges for OSH management. As firms downstream the supply chain seek to appropriate a maximum of the value created, fierce competition for building contracts can lead to reduced attention to safety and health. The division of roles in terms of OSH management can be unclear, and subcontracting workers are often less well-informed about important policies and procedures (Choe et al., 2020). By contrast, when building clients and main contractors give priority to OSH in the tendering process, companies competing for contracts need to give higher priority to OSH, as seen in the London Olympics (Hasle et al., 2017) and the bridge between Copenhagen and Malmo ( Spangenberg et al., 2002).

The distance between the construction sites and back offices of both contractors and subcontractors, which is an organisational reality in most of the construction sector, can create an OSH knowledge gap. In addition, subcontracting workers also run more risks due to longer hours, intensity of work, economic stress and their concentration in higher-risk segments of a supply chain (James et al., 2015a). In this regard, it is striking that the available research on OSH in integrated systems encompassing subcontractors in the construction sector is limited (Johansson et al., 2019).

An important characteristic of the construction sector is that tasks and projects are limited in time and space. Large projects can go on for many years, but even so, they are performed within a limited time frame. This often implies that standards, local rules and control systems, worksite culture, etc. primarily exist embedded in the specific project, and must be developed anew in the next project. As most tenders are optimistic about timing, pressure on the production time and schedule will most often be the consequence. These conditions determine that supply chains in construction are developed and exist for a limited time – although some relationships may continue over multiple contracts, and lead contractors may have their preferred suppliers and subcontractors to work with, depending on the specific project. The configuration of the supply chain for a new construction project will most often differ (with more or fewer new partners joining) and the involved companies may take on new and different

roles. Even in longer-lasting and larger projects, some supply chain relations are limited to parts of the project.

Supply chain relations in construction therefore have a strong link to the contractual governance of the construction projects on the one hand, and on the other, a considerable element of relational governance as different suppliers (contractors) work side by side at the same construction site. OSH at construction sites is strongly influenced by demands for cost reduction, but often even more so by the time constraints generated by optimistic planning from construction projects. On this note, in many large construction projects, governments are the ultimate client. Previous research, however, suggests that governments face substantial barriers in relation to the procurement and the management of construction projects. Data from the Single Market Scoreboard for 2018 for construction, for example, show wide diversity in terms of public procurement performance across the EU (European Commission, 2021b, European Construction Sector Observatory, 2019; Flyvbjerg, 2014). In particular, Member States in the south and east of Europe recorded poor performance. Poor performance is understood here as whether the public sector gets ‘value for money’ and whether the procurement process follows the principles of equal treatment, non-discrimination and transparency.

### **5.1.2 Safety, health and working conditions in construction**

Construction work involves a wide variety of tasks associated with different types of hazards and risks, including those related to using machinery and harmful materials, working at heights, instability, slips, trips and falls, working with electricity and gas, moving objects and vehicles (including traffic related) and others.<sup>13</sup> Importantly, construction workers are exposed to these hazards and risks not only directly but also indirectly, through the actions of other co-workers nearby on the construction site (for example, when a worker working at a height drops a hammer on another worker) (Pinto et al., 2011). Another characteristic of construction work precisely relates to the nature of temporality. The physical structures change every day, calling for new OSH measures which may be superfluous the next day, leaving potentially hazardous shortcuts.

So the construction industry is a high-risk sector in terms of work-related accidents (Blanc et al., 2022; Jones et al., 2006): it is among the sectors with the highest occurrence of fatal and non-fatal accidents, according to Eurostat data.<sup>14</sup> The sector is also one of the three sectors in which workers are most likely to report MSDs. Data on MSDs from the 2015 European Working Conditions Survey (EWCS) (a European-wide survey administered by Eurofound) shows that 54 % of the sampled employees reported pain in the upper limbs within the last 12 months, while 41 % and 52 % reported pain in the lower limbs and backaches, respectively (de Kok et al., 2019). Similarly, in terms of exposure to dangerous substances, the construction sector scores above the EU-28 average<sup>15</sup>. In addition, construction sites differ from each other, which implies that workers need to be able to adapt and learn from their previous experiences when moving from one site to the next: however, this takes time, making workers vulnerable to accidents and injuries at each new site. Most literature on OSH in the construction sector appears to focus on accident analysis, risk prevention and risk assessment, while education and training and regulation are under-addressed as topics (Suárez Sánchez et al., 2017).

Furthermore, the sector also relies heavily on migrant labour, and migrant workers often find themselves in precarious positions (Shepherd et al., 2021). Migrant labour in construction supply chains is particularly problematic in this respect. As supply chains become increasingly longer, OSH responsibility is often delegated – along with the work – to small subcontractors experiencing considerable economic pressures, as described above. These small contractors at the bottom of construction value chains often employ migrant workers, who are more vulnerable to various types of exploitation and problematic safety situations (Duret, 2016). Research has consistently shown differences in terms of safety and health between ‘native’ and migrant construction workers (Shepherd et al., 2021).

<sup>13</sup> The OSHwiki provides a detailed description of these hazards and risks: see [https://oshwiki.eu/wiki/Construction\\_safety\\_risks\\_and\\_prevention#cite\\_note-25](https://oshwiki.eu/wiki/Construction_safety_risks_and_prevention#cite_note-25)

<sup>14</sup> Eurostat data on accidents at work can be consulted here: [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Accidents\\_at\\_work\\_statistics#:~:text=2010%20to%202018-,Number%20of%20accidents,accidents%20for%20every%20fatal%20accident](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Accidents_at_work_statistics#:~:text=2010%20to%202018-,Number%20of%20accidents,accidents%20for%20every%20fatal%20accident)

<sup>15</sup> Data from ESENER (2019) [https://visualisation.osha.europa.eu/esener/en/survey/detailpage-national-bar-chart/2019/osh-management/en\\_1/E3Q200\\_9/activity-sector/EU27\\_2020](https://visualisation.osha.europa.eu/esener/en/survey/detailpage-national-bar-chart/2019/osh-management/en_1/E3Q200_9/activity-sector/EU27_2020)

## 5.2 Market leverage in construction supply chains

Safety and health standards can be applied through a range of strategies. State-led control and enforcement of OSH regulation are traditionally seen as crucial elements in this variety of approaches, and stronger regulation and enforcement have led to better safety conditions, as pointed out in the EU-OSHA overarching review of regulatory strategies (EU-OSHA 2021).

However, regulatory enforcement has the strongest effect in the higher tiers of the chain where power is concentrated in a limited number of publicly listed companies, while proving the most difficult in lower tiers where OSH risks are mostly found. Moreover, in the UK and in many countries in the EU, inspection capacity has been reduced (Walters, 2020), while subcontracting practices have only complicated inspections.<sup>16</sup> Therefore, governance mechanisms are being increasingly driven by either clients or principal contractors, and then targeted also at the high-risk subcontractors further down the chain (James et al., 2015b; Walters & James, 2011).

Besides government attention for the potential of market-based leverage and the leading role of large contractors, labour unions can also play an important role in stimulating governance practices in construction supply chains. Leveraging reputational risk can help workers to incentivise their (principal-contracting) companies to improve conditions, and workers in lower tiers of a subcontracting chain to do likewise (Upstill-Goddard et al., 2012; Wright, 2016).

As is the case in many sectors, lead contractors find themselves in an ambivalent position. On the one hand, construction supply chains have become increasingly long and complex precisely because subcontracting allows principal contractors to outsource much of the work to smaller companies, while appropriating a maximum of the value created. The pressure on sub-subcontractors and subcontractors is the source of problematic OSH performance in many construction supply chains (James et al., 2015b; Jounin, 2006; Walters & James, 2011). On the other hand, lead companies fear suffering reputational damage for their subcontractors' acts (James et al., 2015a; Wright, 2016). As the most powerful actors in a contracting supply chain, principal contractors have at their disposal a variety of governance mechanisms to improve OSH conditions on a construction site. This issue also relates to the building clients – especially larger professional clients such as government, multinational firms and pension schemes. They are all sensitive to reputation risk and may raise OSH requirements in the supply chain, as seen with the London Olympics and the bridge between Copenhagen and Malmo (Hasle et al., 2017; Spangenberg et al., 2002). According to the literature review conducted by Walters & James (2011), OSH is addressed within supply chains in construction using three main strategies: 'purchaser' procurement strategies, industry level certification schemes, and product-related initiatives. By using OSH standards as a key criterion in procurement, companies can ensure that the subcontractors they select to carry out a specific task comply with OSH standards and regulations. However, evidence on the success of this approach appears to be mixed (Walters & James, 2011): for example, compliance with these specifications is not always monitored.

Nevertheless, some good examples were found, notably in cases where the size, prominence or degree of risk of the construction projects were in themselves reasons for close monitoring by inspectorates and other relevant authorities. Certification schemes have proved successful in improving the OSH competency of both organisations and individuals (see Subsection 5.2.2) (Walters & James, 2011). Finally, product-related initiatives launched by trade unions, sector federations or other organisations aim to help improve the safety of tools used during construction work, for example by providing detailed information sheets on how to use certain tools and prefabricated products (Walters & James, 2011).

### 5.2.1 Contractual governance

Even within the EU, the exact nature of contractual relations between clients, main contractors and subcontractors in a construction supply chain can vary considerably depending on the national legislative framework (for example, as regards liability and subcontracting (Houwerzijl & Peters, 2008)), although Directive 2014/67/EU partially harmonised rules on these relations. This variation influences

<sup>16</sup> See also other articles in the magazine *HesaMag* Vol. 14 (2020): <https://etui.org/topics/health-safety-working-conditions/hesamag/labour-inspection-a-public-service-in-crisis>

the way in which companies decide to govern their relationships through contracts. It is not known to what extent OSH and working conditions in general are included in the contracts, but a study in Spain showed that a high frequency of almost 70 % of SMEs in the construction sector have clauses on OSH in contracts with subcontractors (Segarra Cañamares et al., 2017).

Research suggests that clear and detailed contractual relations are crucial for the successful functioning of inter-organisational relations in construction projects (Ke et al., 2015; Rompoti et al., 2020). Formal contracts help clarify the roles and responsibilities of the involved contractors, set the outputs and lay out the procedures regarding non-compliance. However, it is important to note that different types of contracts may be more or less suited to different profiles of subcontractors (Rompoti et al., 2020).

The contractual governance starts with the procurement strategy, which can be used to ensure safer construction projects (e.g. EU-OSHA, 2012). This entails that a building client selects main contractors and subcontractors according to their safety capabilities, competency and track record. In other words, it entails that building clients should look at safety training, accident statistics and other important safety KPIs in their selection process. Researchers point to a number of large-scale construction projects that successfully reduced or prevented accidents by employing such procurement strategies. These include the Danish-Swedish bridge between Copenhagen and Malmö, and the London Olympics noted earlier, as well as the construction of a new terminal in Heathrow, UK and a new car manufacturing plant in France (EU-OSHA, 2012).

In the context of governing OSH throughout a supply chain during the whole construction process, successful instances of contractual governance include monitoring systems put in place on a construction site, using regular audits of all contractors present, safety personnel having authority over all contractors present on a site (James et al., 2015a) and the signing of codes of conduct. Under the Responsibility in Procurement (Respiro) project, the 'Guide on Socially Responsible Procurement of Building Construction Works' was developed, which lays out how social and ethical requirements can be introduced into procurement actions in the construction sector (EU-OSHA, 2012).

Another example of a buyer successfully monitoring supplier working conditions is from the city of Copenhagen, which includes labour clauses in its contracts to ensure decent work for all employees working for its suppliers and sub-suppliers. The city created its own taskforce, which performs unannounced visits at construction sites to assess compliance with the labour clauses (Københavns Kommune, 2021). It showed that in-house agents are more effective than outsourcing the monitoring of working conditions (European Commission, 2021a).

### **5.2.2 Third-party standards and audits**

Building companies can adopt different standards in formal contracts to guide them in improving their safety and health performance in construction (EU-OSHA, 2012). At the same time, these standards and certifications serve as crucial ways for construction companies to show their engagement in OSH in the workplace to their clients and the wider public (Jones et al., 2006; Upstill-Goddard et al., 2012). The most important certification schemes in use are:

- OHSAS 18001, a widely shared occupational health and safety standard, now superseded by ISO 45001 (Lafuente & Abad, 2018);
- ISO 9001, which concerns quality management, but also integrates health and safety considerations (NQA, 2021);
- ISO 26000, which concerns social responsibility – although it is not intended as a certificate (Upstill-Goddard et al., 2012).

National initiatives for certification and auditing of companies exist in a number of European countries: the VCA in Belgium and the Netherlands; the SCC in Austria, Germany and Switzerland; and a similar scheme in France (EU-OSHA, 2012). Such national schemes often rely on third-party certification regimes and are usually voluntary. In the case of the VCA, for example, a checklist has to be completed on contractors' practices in the area of safety and health (for example, provision of OSH training). Once a contractor meets all criteria, the company can obtain a certificate. The idea is that clients or main contractors can request such a certificate from their subcontractors, or choose to work only with certified contracts for specific assignments (e.g. in the Belgacom case, for high-risk activities, see EU-OSHA, 2012).

Another national initiative is the German self-assessment tool GDA-ORGCheck. The tool requires companies to analyse and improve their OSH organisation through systematic planning of work, continuous use of risk assessments, and the integration of OSH in all operational processes. In a supply chain context, the initiative requires companies to set up guidelines and procedures for collaboration with contractors and suppliers on the company premises or on construction sites. The ORGCheck has been explicitly developed to enable larger companies to assess their suppliers and contractors by asking them to complete the self-assessment, and companies have the option to compare their performance with other participating companies by using an online benchmarking tool. The instrument is aimed at small and medium-sized companies and was jointly developed by the German central government, federal state governments, social partners and German social accident insurance institutions (Joint German Occupational Safety and Health Strategy, 2013).

Another German example is the social accident insurance institution for the building trade, BG BAU, that has developed an OSH management system (AMS BAU) for the construction industry. The AMS BAU takes into account specific industry challenges. Certified companies demonstrate responsible OSH management, which they can use as leverage in tendering procedures (BG BAU, n.d.). The Institute for Work and Health of the German Social Accident Insurance (IAG) evaluated the implementation of the OSH management systems in 2013. The results were positive, showing that OSH-related responsibilities and processes improved significantly after the management systems were introduced, and that the number of work accidents as well as instances of sick leave was significantly lower than before implementation (Institute for Work and Health of the German Social Accident Insurance, 2013).

Safety passports constitute another relevant national initiative for certification and auditing in supply chain relations. The safety passports target individuals (EU-OSHA, 2012) in the sense that only those with the required OSH competence can access a construction site. In some cases in the Netherlands and Belgium, the safety passports are incorporated into the certification schemes mentioned above (EU-OSHA, 2012).

At international level, the EU directive on construction safety and health (Council of the European Union, 1992) secures a basic shared regulation in the EU. The client or project supervisor must appoint one or more coordinators for safety and health and prepare a safety and health plan prior to setting up a construction site. Taking into account some differences and depending on national context and the size of the project, the OSH coordinator oversees health and safety on a construction site. Research indicates that the extent to which the coordinator has a positive impact on the OSH at a construction site will at least partially depend on their competence (Møller et al., 2021); there are still not any standardised requirements for safety coordinators across the EU.

Certain global framework agreements can also contain objectives and codes of conduct on OSH (Hadwiger et al., 2018; EU-OSHA, 2012). Such agreements are concluded between global trade union federations and multinational companies (for example, the Building and Wood Workers' International (BWI) in the case of the construction sector (Davies et al., 2011)) and can play a key role in global subcontracting chains in the sector. The agreements concluded by the BWI contain quite extensive OSH obligatory provisions, building on a range of ILO conventions (Davies et al., 2011). Similarly, research by the European Trade Union Confederation (ETUC) covering 72 international framework agreements found that OSH was mentioned in 58 agreements, and specific OSH clauses were taken up in 49 agreements (European Trade Union Confederation, 2010). It is not specified in the report how many of these are relevant to construction. However, the BWI is among the global trade unions with the highest ratio of occupational safety and health (OSH) inclusion in the International Framework Agreements (IFAs) it has signed.

Hadwiger (2018) carried out an extensive study of global framework agreements that showed they have gained in importance during recent decades, often including clauses on OSH and working conditions, and establishing the responsibility of lead firms to carry out human rights due diligence and secure human rights among their suppliers and contractors. The agreements generally build on the UNGPs, the UN Global Compact and the ILO conventions as well as related frameworks (for example, the OECD Guidelines for Multinational Enterprises). There are several agreements in the construction sector: for example, Siemens-Gamesa, a leading wind turbine manufacturer, signed a global framework agreement with IndustriAll.<sup>17</sup> In this agreement, stronger demands on suppliers and contractors for the rights of

<sup>17</sup> See: <https://www.industrial-union.org/industrial-renews-global-agreement-with-siemens-gamesa>

workers in the supply chain, in particular in relation to safety and health, are explicitly mentioned (in addition to efforts related to stopping violence and harassment at work, providing opportunities for training, etc.).

### 5.2.3 Relational governance

Relational governance plays an important role in cooperation and performance in construction supply chains (Ke et al., 2015; Ruijter et al., 2021). In the relations between a client and a contractor, trust plays an essential role for the selection of governance mechanisms – and for their subsequent operation, once in place (Ceri et al., 2021; Manu et al., 2011). Examples of important elements in the development of trust-based relations and a shared safety culture on a construction site are awareness programmes, promotion of a safety culture, support of contractors in implementing safety measures, reporting of near misses, a well-functioning system of safety education, and the promotion not only of technical knowledge but also of a general atmosphere conducive to open and clear communication (Quintas et al., 2009; Shepherd et al., 2021). However, as the scale and complexity of a construction project increases, informal control based on trust can become increasingly complex and burdensome, driving the proliferation of formal governance mechanisms (Caldwell et al., 2009).

The relatively short life cycle of construction projects and the temporary nature of value chains in the sector can make it difficult to establish mutual trust and good working relationships between actors that have not collaborated before. This can lead to conflicts between actors, especially if there are delays or unexpected costs. Yet the close physical vicinity of contractors and their workers also creates opportunities for fostering social relations. Research shows that good personal relations between the central actors in a construction project (notably the construction manager, site managers, supervisor, specialist staff and subcontractors – but also among the workers themselves) are crucial for facilitating effective information flows, joint planning and managing problems and crisis situations (Claro et al., 2003; Duret, 2016; Loosemore et al., 2020), something which could prove essential to OSH outcomes.

The development of trust is a major challenge for the governance of public-private infrastructure megaprojects. Contractual pre-arrangements should provide a blueprint for collaborative behaviour and trust development, but the nature and characteristics of megaprojects challenge such arrangements.

In a study on the road infrastructure megaproject Schiphol, Amsterdam and Almere (SAA) in the Netherlands, Ruijter et al. (2021) examined how trust was established between the partners involved in this project, through a series of different types of workshops (shared values, dealing with dilemmas, storytelling, fishbowl, the chair and role-playing), organised at various stages of project implementation (initiation, negotiation, formation and operation). Being aware that contractual arrangements are needed, but still leaving open questions or issues that could be interpreted in different ways, the SAA management focused on building trust with the different contractors involved in the project, based on the principles of transparency and the ability to explain (Ruijter et al., 2021). They organised a series of different workshops aimed at building normative trust that stems from personal relationships and is based on past behaviour and a shared identity, rather than calculative trust based on structures and rewards. To buffer the potential loss of trust through conflicts, project partners negotiated for a balanced reciprocal relationship, which is the simultaneous exchange of equivalent resources without delay. Importantly, this study showed that contractual arrangements proved insufficient as a blueprint for successful collaboration, and highlighted instead the importance of a resilient partnership and normative trust (Ruijter et al., 2021).

In their study of OSH knowledge transfer in the UK construction sector, Duryan and colleagues (2020) showed how successful OSH management between various partners in a construction project also relies on non-contractual factors such as culture and good communication. They interviewed 43 representatives of organisations and companies in the sector: regulatory bodies, clients, main contractors and subcontractors. They showed that professional competency is a factor that can increase overall knowledge-sharing between supply chain partners. In this way, larger firms with more resources for OSH professionals have an advantage over smaller firms with fewer resources when it comes to knowledge management of subcontractors. Furthermore, the study revealed that the adaptation and tailoring of OSH management tools to a given project is very important. Construction sites are too heterogeneous for generic ‘one size fits all’ management tools and instruments to work, especially because a major part of what needs to be communicated to subcontractors is tacit knowledge. A successful programme must find a way to reveal the employees’ tacit knowledge and communicate it through the daily practice at the construction site. Finally, the study pointed to the need for a culture of

OSH awareness. This entails creating an environment where near misses and small accidents are consistently reported by employees of both main contractors and subcontractors, without fear of retribution or reprimands. The study concluded that line and project managers are the most important agents in creating this culture.

Organisational culture as one of the main drivers of knowledge-sharing in construction is spotlighted by Alfons van Marrewijk (2015). The author points out that culture is not simply a strategy an organisation can invent or implement in specific sub-arenas of organisational life. Culture is the sum of interactions, symbols and practices within the organisation. For that reason, creating one unified organisational culture is not possible in the context of megaprojects and complex construction projects that involve many partners and long time frames. It is therefore important to understand the various subcultures which will inevitably develop in the process, and establish links and communicative strategies to include them. This conclusion is underlined in an elaborated report from the Institute for an Industrial Safety Culture (ICSI) (2019) on safety culture in the construction sector, which also stresses the essential role of relational governance and presents practical recommendations mirroring the many facets of safety culture. The report notes that a preliminary step in the planning phase is workshops for all involved stakeholders on possible risks and the project goal.

Finally, efforts to improve communication, cooperation and training are critical when it comes to creating safe and healthy work environments (EU-OSHA, 2012). This includes information-sharing at different stages of the construction project: the initiative ConstructionOnline in the UK is an example of a platform that shares information about quality and safety in the construction sector, thereby improving communication and teamwork (EU-OSHA, 2012).

### 5.3 Stakeholder opinions

Three interviews offered some important insights into the mechanisms in the supply chains in the construction sector. The interviewees were a national construction trade union representative, a European confederation of unions representative and a safety manager from a very large corporation. Both union representatives indicated that even though OSH demands are often included in the tenders and reflected in the bids, the method of tendering almost always favours the lowest bidders in terms of costs. They explained that this puts OSH management at risk of being little more than a 'box-ticking' exercise. A common example of such a paper exercise is the demands for training and information of workers – they are often hired for a project only after the tender has been won.

Overall, the union voices considered OSH regulation to be functioning well in the EU in terms of basic risk protection (such as personal protective equipment (PPE)), due to the regulation and inspection regimes. However, they consider market mechanisms much weaker instruments than government regulation, since they are highly contingent on the companies' own will and abilities. They experienced substantial differences between large companies and SMEs. This is also mentioned in Segarra-Cañares and colleague" article (2017).

Construction companies have to maintain numerous standards concerning quality, environment, climate, and product selection. This has led to a new group of professional staff within medium and larger construction companies (e.g. Daudigeos, 2013; Seim et al., 2015; Uhrenholdt Madsen et al., 2019) which includes at least one OSH professional with an impact on the ability to develop and monitor OSH standards and include OSH as a management objective. The safety manager in the large corporation, who also acts as a client for a larger construction project, described the evolution in attitude and priorities of the corporation in supply chain management. The corporation is currently using a new strategy for their supply chain management, where they assess if subcontractors are 'ready for business' and shortlist a large number of possible subcontractors. They are now moving towards another step, referred to as 'ready to order', which is based on an assessment of whether each specific supplier is capable of performing a specific task including fulfilling OSH demands. This process is more costly prior to signing the contract, but is believed to be much less costly when the construction tasks are subsequently performed.

OSH coordinators play a crucial role in many larger construction projects. They are an important instrument for the main contractor to ensure OSH standards on-site (including in the management of subcontractors). It is not yet a defined profession and competence profiles vary accordingly. However, at national levels as well as at EU level, a growing focus on the coordinators' tasks, competence, tool

development and training opportunities can support a stronger role for this important stakeholder in larger construction projects.

## 6 Discussion and conclusion

Market leverage as a strategy to improve OSH and working conditions is a relatively new concept. This review therefore opens a path for new research on how market mechanisms can influence OSH – not only in negative ways, as often depicted in the literature and the media – but also in a positive manner. Even though we found that the literature lacked the specific words and phrases, the agri-food and construction industries review identified examples of instruments and practices with a positive influence that are already running and functioning in supply chains. However, it is also clear that this is an area of study that would benefit from more scrutiny: most research on OSH and working conditions interventions focuses on individual companies or national sectors in the two industries, and on OSH problems in supply chains – compared with studies of measures to improve conditions. In this section, we discuss the identified themes that are relevant across both sectors, despite differences in the two sectors that may complicate the comparison. We believe a discussion of the overall mechanisms, aims and objectives (and to a lesser degree, the contextual elements behind the leverage instruments and practices) can fruitfully contribute to the research field and to policy and practice development. In the following section, the discussion concentrates on the knowledge we have, the key knowledge we are lacking, and the potential implications for practice.

Even though there are important and evident differences between agri-food and construction, we found some similarities in the overall leverage instruments and practices in the two sectors. In terms of contractual leverage mechanisms, we can distinguish two overall groups of practices: 1) sustainable procurement and tendering practices, and 2) auditing and certification practices. In terms of relational leverage, there are several related but different sets of practices.

### 6.1 Sustainable procurement and tendering practices

In both sectors, we found examples of instruments and practices related to the terms sustainable procurement and tendering. These practices entail focal firms incorporating suppliers' and subcontractors' OSH performance and practices as part of their tendering or procurement decisions. These practices are mainly motivated by reputational risks and expectations from end consumers in agri-food and building clients in construction. The practices are applied in contexts such as megaprojects in construction and large retail chains and international food labels in agri-food. The fear of media attention with reputational loss and public criticism from stakeholders is an important motivation factor. The sustainable procurement and tendering mechanism comprises requirements for specific levels of OSH activities and performance expressed in codes of conduct in agri-food and tender documents in construction, which serve as a basis for placing an order or contract. Part of this practice can be to apply specific certifications and/or audit outcomes as preconditions for an order or contract. The sustainable procurement and tendering subsequently rely on assessment and auditing schemes that can help them ensure the suppliers continuously fulfil the standards agreed upon. Although research is still limited, there are promising examples from both sectors showing that these instruments and practices provide important support for the development of safe and healthy workplaces in the supply chains in the two sectors.

However, we did not find studies that document to what extent the procurement and tendering practices are applied, nor how contextual factors and particular types of focal firms influence the application of the practices. Answers to these questions are of great interest for both researchers and policy-makers. First, it would be interesting to see to what extent these practices have been institutionalised to a degree where they are taken for granted as part of a normal procurement or tendering practice in the two sectors, or whether they are still considered idiosyncrasies reserved for progressive companies. Second, it would be interesting to learn whether the sustainable procurement and tendering instruments are utilised only by companies subject to public scrutiny, such as those with high public profiles or who are particularly visible to end customers and other stakeholders in sustainability discussions.

Given that this is an area with a good prospect of influencing OSH and working conditions across supply chains, it is also important for regulators and policy-makers. One way to advance the use of the instrument would be for public authorities to include OSH concerns in the evaluative criteria for procurement to a greater extent, and if needed, adapt current national and EU regulations (e.g. European Parliament and the Council of the European Union., 2014), as present procurement rules may hamper the application. The current Public Procurement Directive (Directive 2014/24/EU) does not presuppose such issues, although the European Commission advocates for socially responsible public procurement practices to address the impact on society of public procurement. Social objectives with relevance for this report could be the promotion of decent work based on ILO definitions as well as compliance with social and labour rights (European Commission, 2021a).

Another prospective study of interest is the influence of non-OSH procurement practices on OSH and working conditions. The research indicates that the power of the downstream buyer (supermarket chain, building client or main contractors) may be applied in a manner that is detrimental to OSH. In agri-food, for instance, demands for extreme flexibility by suppliers may cause excessive overtime, just as tight deadlines for the completion of building contracts may introduce safety shortcuts. Furthermore, a holistic approach to sustainable procurement and tendering is key to preventing environmental and climate measures from conflicting with OSH and working conditions.

## 6.2 Certification and auditing practices

Certification and auditing are in many ways a continuation of sustainable procurement and tendering practices. They constitute the control and surveillance schemes that are put in place to ensure that suppliers and subcontractors are fulfilling the demands for OSH and working conditions agreed upon in the contract. It is common in both sectors to monitor whether suppliers or subcontractors are observing the agreed code of conduct: this was observed with GRASP in agri-food; and in the construction sector with the VCA in Belgium and the Netherlands and the SCC in Austria, Germany and Switzerland. Monitoring is performed by third-party auditors, representatives from the focal company, or via written documentation from the supplier or subcontractor that is submitted in agreed intervals and formats. The two sectors use a whole range of different certification schemes and standards, both sector specific and generic. In our review, we focused primarily on sector-specific standards, as the application of generic standards like ISO 45001/OSHAS 18001 is not specifically studied in the two sectors. The standards and auditing practices can be divided into two categories: OSH-focused standards, and broader standards that incorporate OSH performance. In construction, we primarily found examples of the former, and in agri-food, chiefly examples of the latter (such as GRAP/GRASP). However, both types are used in both sectors.

Certification and auditing are scarcely studied in practice in the two sectors, and research is still relatively limited overall, with partly conflicting results – although there are indications of a positive effect (Uhrenholdt Madsen et al., 2020). One of the few such examples is positive results shown from application of the German AMS BAU management system. There are important questions around the practical application of certification and auditing in practice: How is the auditing and monitoring carried out in practice by the focal firms and the third-party auditors? What kind of competence is required for auditors and monitors to properly understand the intricacies of a multilingual construction site with many different companies simultaneously working on a megaproject? Or of a tomato farm with byzantine hiring structures outsourced to labour agencies and with a workforce primarily consisting of immigrants in rather precarious situations? To perform auditing in such a context requires a developed set of skills, and if the auditors' skillsets are not tailored to the specific type of work place, the risk of decoupling or window-dressing is increased (Jespersen et al., 2016; Short et al., 2016). Therefore, we believe that future research into OSH practices in supply chains could benefit from qualitative case studies with observations and interviews concentrated on the roles and practices of auditors in supply chain arrangements (EU-OSHA 2021).

Another potentially beneficial direction for research is the particular contextual factors that make a certification scheme 'work'. We know from other research projects into the OSHAS 18001 standard that both macro contextual factors (such as sector or size) and micro contextual factors (such as management approach and other OSH practices already in place) can have an effect on the efficiency of the standard (Uhrenholdt Madsen et al., 2020; Lafuente & Abad, 2018). Again, we believe that this could be important knowledge that contributes to the development of efficient OSH practices in the two

sectors. Both quantitative and qualitative studies could be designed to illuminate what makes standards and auditing practices successful in construction and agri-food.

The insights from our review show that standards and certification schemes are integrated parts of the supply chain OSH management in both sectors. Therefore, it is clear that this area calls for policy-makers' and stakeholders' attention to strengthen the impact on the OSH and working conditions in the two sectors.

### 6.3 Relational instruments and practices

We found a variety of examples of relational practices in both sectors. Some of the practices were aimed directly at OSH and working conditions, while others were broader approaches aimed at development of good social relations and supplier development. First, there were several examples of activities seeking to raise awareness and increase competence of suppliers and subcontractors. These activities included awareness workshops, regular visits from buyer representatives to suppliers, and economic support to suppliers in exchange for OSH development. Second, we found several examples of relational activities that did not cover specific interventions with an intended outcome but aimed rather at relation-building. Studies show, for instance, how a culture of high trust and reciprocity in day-to-day interaction between supply chain partners can increase safety information transfer, as well as communication and learning about – and from – accidents and near misses. Another example is how OSH professionals in the buyer, main contractor or building client who can manage the dialogue on safety and health with suppliers and subcontractors can increase suppliers' OSH performance.

Most buyer-supplier governance will include both contractual and relational elements. However, we did not find publications on and examples of how the relational and contractual instruments and practices have developed in explicit hybrid forms and how they work together within individual supply chains. An interesting research direction would be to take departure in specific dyads and examine all the practices and instruments working in tandem, studying the 'orchestration' of the various practices throughout a supply chain. Another potentially rewarding research path is the study of the actors involved in creating the hybrid governance forms. What competence is needed on the part of the OSH professional in the buyer firms to be able to create trusting cultures and long-lasting relations with suppliers and subcontractors? What are the strategic considerations when dealing with another firm where one has ambiguous authority and does not know the internal organisation and traditions? In short, we recommend studies that focus on the consultants and technicians from buyer firms tasked with initiating and maintaining OSH relationships upstream in the supply chain, as well as studies of the reactions and capability of suppliers or subcontractors.

### 6.4 Policy pointers

As the specific knowledge from research in market leverage of OSH in the agri-food and construction supply chain is limited, it constrains the possibilities of identifying evidence-based policy pointers. However, as the discussion above implies, there is scope for some suggestions.

- 1 The priority of social sustainability including OSH as a systematic element in procurement and tendering is growing, and policy-makers and other stakeholders can support this development through:
  - integration of OSH and working conditions requirement in procurement by public sector actors;
  - development of standards and guidelines for procurement with integrated OSH to be applied on a broader scale in the private sector too, thereby expanding the application and creating more balanced, equal terms for competition;
  - development of complete and workable criteria for OSH themes in procurement and tendering, including process and outcome criteria.
- 2 A wide variety of standards exists in both sectors, and suppliers and subcontractors often have to comply simultaneously with several co-existing standards that create audit fatigue. There is therefore a need for policy-makers and stakeholders to:

- merge existing standards, or develop a new standard encompassing the different systems, so that suppliers and subcontractors only have to comply with one standard;
  - make the certification and audit schemes transparent to allow stakeholders and end consumers to gain insights into outcomes, and thereby make informed choice possible in their purchase of goods and services.
- 3 Relational governance is a new subject of interest, with limited evidence for specific practices, but it remains evident that trustful relations and fair treatment supports good OSH and working conditions. Policy-makers and stakeholders can support this development through:
- development of guidelines for the day-to-day relational procurement practices where examples already exist in agri-food;
  - development of training schemes for procurement officers on social sustainability, as they are the ones who have daily contact with suppliers.
- 4 A key outcome of the review is on the one hand, the limited research in market leverage of OSH and working conditions in supply chains, and on the other the promising nature of the examples of existing measures to give OSH a stronger priority in supply chain relations. There is therefore a need for policy-makers and stakeholders to:
- Initiate further research of market leverage of OSH in supply chains. The research should cover both quantitative studies of the effects of market leverage on OSH and working conditions, and qualitative case studies of the mechanisms showing how the wide variety of instruments and practices work.

## 7 References

- Adams, J. S. (1965). Inequity in social exchange. In B. Leonard (Ed.), *Advances in Experimental Social Psychology* (Vol. 2, pp. 267–299). Academic Press. [https://doi.org/10.1016/S0065-2601\(08\)60108-2](https://doi.org/10.1016/S0065-2601(08)60108-2)
- Ahlstrand, R. (2022). *Structures of subcontracting: Work organisation, control, and labour in the Swedish building sector*. Lund University. <https://lup.lub.lu.se/record/2803902b-6ba8-4b3a-9a1b-2953a26dd1f3>
- Ählström, J. (2010). Corporate response to CSO criticism: Decoupling the corporate responsibility discourse from business practice. *Corporate Social Responsibility and Environmental Management*, 17(2), 70-80. <https://doi.org/10.1002/csr.232>
- Ambekar, S., Kapoor, R., Prakash, A., & Patyal, V. S. (2019). Motives, processes and practices of sustainable sourcing: a literature review. *Journal of Global Operations and Strategic Sourcing*, 12(1), 2-41. <https://doi.org/10.1108/JGOSS-11-2017-0046>
- Amengual, M., & Kuruvilla, S. (2020). Editorial Essay: Introduction to a special issue on improving private regulation of labor in global supply chains: theory and evidence. *ILR review*, 73(4), 809-816. <https://doi.org/10.1177/0019793920927693>
- amfori. (2019). *Our Members*. <https://www.amfori.org/content/our-members>
- Anner, M. (2020). Squeezing workers' rights in global supply chains: purchasing practices in the Bangladesh garment export sector in comparative perspective. *Review of International Political Economy*, 27(2), 320-347. <https://doi.org/10.1080/09692290.2019.1625426>
- Bartley, T., & Egels-Zandén, N. (2015). Responsibility and neglect in global production networks: the uneven significance of codes of conduct in Indonesian factories. *Global Networks*, 15, S21-S44. <https://doi.org/10.1111/glob.12086>
- Behnam, M., & MacLean, T. L. (2011). Where is the accountability in international accountability standards?: A decoupling perspective. *Business Ethics Quarterly*, 21(1), 45-72. <https://doi.org/10.5840/beq20112113>
- Beske, P., Land, A., & Seuring, S. (2014). Sustainable supply chain management practices and dynamic capabilities in the food industry: A critical analysis of the literature. *International Journal of Production Economics*, 152, 131-143. <https://doi.org/10.1016/j.ijpe.2013.12.026>
- BG BAU. (n.d.-a). *AMS BAU Wiederbegutachtung*. <https://www.bgbau.de/service/angebote/arbeitschutzpraemien/praemie/ams-bau-wiederbegutachtung>
- BG BAU. (n.d.-b). *Was ist AMS BAU?*. <https://www.bgbau.de/service/angebote/ams-bau-arbeitschutzmanagementsystem/was-ist-ams-bau>
- Bird, Y., Short, J. L., & Toffel, M. W. (2019). Coupling labor codes of conduct and supplier labor practices: The role of internal structural conditions. *Organization Science*, 30(4), 847-867. <https://doi.org/10.1287/orsc.2018.1261>
- Blanc, F., Ottimofiore, G., & Myers, K. (2022). From OSH regulation to safety results: Using behavioral insights and a 'supply chain' approach to improve outcomes-The experience of the health and safety Executive. *Safety Science*, 145, 105491. <https://doi.org/10.1016/j.ssci.2021.105491>
- BMas. (2021). *Act on Corporate Due Diligence Obligations for the prevention of Human Rights violations in Supply Chains*. [https://www.bmas.de/SharedDocs/Downloads/DE/Internationales/act-corporate-due-diligence-obligations-supply-chains.pdf;jsessionid=9D1A4AEDD8086B8C3D838D8DA86B3815.delivery2-master?\\_blob=publicationFile&v=3](https://www.bmas.de/SharedDocs/Downloads/DE/Internationales/act-corporate-due-diligence-obligations-supply-chains.pdf;jsessionid=9D1A4AEDD8086B8C3D838D8DA86B3815.delivery2-master?_blob=publicationFile&v=3)
- Bonatto, F., de Resende, L. M. M., & Pontes, J. (2020). Relational governance in supply chain: a

- systematic literature review. *Benchmarking*, 27(6), 1711-1741. <https://doi.org/10.1108/BIJ-01-2019-0033>
- Brito, R. P., & Miguel, P. L. S. (2017). Power, governance, and value in Collaboration: Differences between buyer and supplier perspectives. *Journal of Supply Chain Management*, 53(2), 61-87. <https://doi.org/10.1111/jscm.12134>
- Caldwell, N. D., Roehrich, J. K., & Davies, A. C. (2009). Procuring complex performance in construction: London Heathrow Terminal 5 and a Private Finance Initiative hospital. *Journal of Purchasing and Supply Management*, 15(3), 178-186. <https://doi.org/10.1016/j.pursup.2009.05.006>
- Cao, M., & Zhang, Q. (2011). Supply chain collaboration: Impact on collaborative advantage and firm performance. *Journal of Operations Management*, 29(3), 163-180. <https://doi.org/10.1016/j.jom.2010.12.008>
- Cao, Z., & Lumineau, F. (2015). Revisiting the interplay between contractual and relational governance: A qualitative and meta-analytic investigation. *Journal of Operations Management*, 33-34, 15-42. <https://doi.org/10.1016/j.jom.2014.09.009>
- Carbone, A. (2017). Food supply chains: coordination governance and other shaping forces. *Agricultural and Food Economics*, 5(3). <https://doi.org/10.1186/s40100-017-0071-3>
- Carson, S. J., Madhok, A., & Wu, T. (2006). Uncertainty, opportunism, and governance: The effects of volatility and ambiguity on formal and relational contracting. *The Academy of Management Journal*, 49(5), 1058-1077. <https://www.jstor.org/stable/20159816>
- Ceri, A., Vukomanovi, M., Ivi, I., & Kolari, S. (2021). Trust in megaprojects: A comprehensive literature review of research trends. *International Journal of Project Management*, 39(4), 325-338. <https://doi.org/10.1016/j.ijproman.2020.10.007>
- Choe, S., Seo, W., & Kang, Y. (2020). *Inter-and intra-organizational safety management practice differences in the construction industry*. *Safety science*, 128, 104778. <https://doi.org/10.1016/j.ssci.2020.104778>
- Claro, D. P., Hagelaar, G., & Omta, O. (2003). The determinants of relational governance and performance: How to manage business relationships? *Industrial Marketing Management*, 32(8), 703-716. <https://doi.org/10.1016/j.indmarman.2003.06.010>
- Council of the European Union. (1992). *Council Directive 92/57/EEC of 24 June 1992 on the implementation of minimum safety and health requirements at temporary or mobile construction sites (eighth individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC)* (OJ L 245, 26.8.1992, p. 6-22). <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A31992L0057>
- Da Costa, G. R. (2021, April 29). *European Union Moves Toward Mandatory Supply Chain Due Diligence: Start Gearing up For New Directive*. *National Law Review*. <https://www.natlawreview.com/article/european-union-moves-towards-mandatory-supply-chain-due-diligence-start-gearing-new>
- Daudigeos, T. (2013). In their profession's service: How staff professionals exert influence in their organization. *Journal of Management Studies*, 50, 722-749. <https://doi.org/10.1111/joms.12021>
- Davies, J. (2019). From severe to routine labour exploitation: The case of migrant workers in the UK food industry. *Criminology and Criminal Justice*, 19(3), 294-310. <https://doi.org/10.1177/1748895818762264>
- Davies, J. (2020). Corporate harm and embedded labour exploitation in agri-food supply networks. *European Journal of Criminology*, 17(1), 70-85. <https://doi.org/10.1177/1477370819874416>
- Davies, J., & Ollus, N. (2019). Labour exploitation as corporate crime and harm: Outsourcing responsibility in food production and cleaning services supply chains. *Crime, Law and Social Change*, 72(1), 87-106. <https://doi.org/10.1007/s10611-019-09841-w>

- Davies, S., Hammer, N., Williams, G., Raman, R., Ruppert, C. S., & Volynets, L. (2011). Labour standards and capacity in global subcontracting chains: evidence from a construction MNC. *Industrial Relations Journal*, 42(2), 124-138. <https://doi.org/10.1111/j.1468-2338.2011.00620.x>
- de Kok, J., Vroonhof, P., Snijders, J., Roullis, G., Clarke, M., Peereboom, K., van Dorst, P., & Isusi, I. (2019). *Work-related musculoskeletal disorders: prevalence, costs and demographics in the EU* [European Risk Observatory Report]. European Agency for Safety and Health at Work (EU-OSHA). <https://doi.org/10.2802/66947>
- Duret, R. (2016). *De l'émergence des risques à leur intégration dans une organisation: le cas de l'industrie de la construction* (Doctoral dissertation). Université Panthéon-Sorbonne. <https://theses.hal.science/tel-01816348>
- Duryan, M., Smyth, H., Roberts, A., Rowlinson, S., & Sherratt, F. (2020). Knowledge transfer for occupational health and safety: Cultivating health and safety learning culture in construction firms. *Accident Analysis and Prevention*, 139, 105496. <https://doi.org/10.1016/j.aap.2020.105496>
- Emerson, R. M. (1962). Power-dependence relations. *American Sociological Review*, 27(1), 31-41.
- Ethical Trade Initiative. (2017). Guide to buying responsibly. [https://www.ethicaltrade.org/sites/default/files/shared\\_resources/guide\\_to\\_buying\\_responsibly.pdf](https://www.ethicaltrade.org/sites/default/files/shared_resources/guide_to_buying_responsibly.pdf)
- Eurofound. (2021, September 17). About COVID-19 EU PolicyWatch. <https://www.eurofound.europa.eu/data/covid-19-eu-policywatch>
- European Agency for Safety and Health at Work. (2000). Occupational Safety and Health in Marketing and Procurement. [https://osha.europa.eu/sites/default/files/TE3000811ENC\\_-\\_Occupational\\_safety\\_and\\_health\\_in\\_marketing\\_and\\_procurement.pdf](https://osha.europa.eu/sites/default/files/TE3000811ENC_-_Occupational_safety_and_health_in_marketing_and_procurement.pdf)
- EU-OSHA (2021b). Improving compliance with occupational safety and health regulations: an overarching review. European Agency for Safety and Health at Work. <https://osha.europa.eu/en/publications/literature-review-improving-compliance-occupational-safety-and-health-regulations-0>
- European Commission, Directorate-General for Employment, Social Affairs and Inclusion. (2016). *A non-binding guide to best practice with a view to improving the application of related directives on protecting health and safety of workers in agriculture, livestock farming, horticulture and forestry*. <https://doi.org/10.2767/53801>
- European Commission. (2021a). *Buying Social-- A guide to taking account of social considerations in public procurement – Second edition* (2021/C 237/01). <https://op.europa.eu/en/publication-detail/-/publication/47c69b3a-cfcf-11eb-ac72-01aa75ed71a1/language-en>
- European Commission. (2021b). *EU Code of Conduct on Responsible Food Business and Marketing Practices: A common aspirational path towards sustainable food systems*. [https://ec.europa.eu/food/horizontal-topics/farm-fork-strategy/sustainable-food-processing/code-conduct\\_de](https://ec.europa.eu/food/horizontal-topics/farm-fork-strategy/sustainable-food-processing/code-conduct_de)
- European Commission. (2021c). *Public Procurement | Single market scoreboard*. [https://single-market-scoreboard.ec.europa.eu/European Commission. \(n.d.\). Objectives of the European construction observatory.](https://single-market-scoreboard.ec.europa.eu/European%20Commission.%20(n.d.).%20Objectives%20of%20the%20European%20construction%20observatory) [https://ec.europa.eu/growth/sectors/construction/observatory/objectives\\_en](https://ec.europa.eu/growth/sectors/construction/observatory/objectives_en)
- European Construction Industry Federation. (2020). *Key Figures 2019. Construction activity in Europe. Edition 2020*. FIEC. [https://www.fiec.eu/application/files/9016/0190/8790/FIEC\\_Key\\_Figures\\_Edition\\_2020.pdf](https://www.fiec.eu/application/files/9016/0190/8790/FIEC_Key_Figures_Edition_2020.pdf)
- European Construction Sector Observatory. (2019). *Strengthening the Internal Market for Construction*. <https://ec.europa.eu/docsroom/documents/33803/attachments/1/translations/en/renditions/native>

- European Parliament and the Council of the European Union. (2014). *Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement and repealing Directive 2004/18/EC Text with EEA relevance* (OJ L 94, 28.3.2014, p. 65-242). <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014L0024>
- European Trade Union Confederation. (2010). *Sustain labour— International Labour Foundation for Sustainable Development, Environment and occupational health and safety clauses in the International Framework Agreements*. ETUC.
- Eurostat. (2021). *Key figures on the European food chain — 2021 edition*. <https://ec.europa.eu/eurostat/documents/15216629/15230598/KS-FK-21-001-EN-N.pdf/20068cf7-5ae8-8020-4ed7-12b0ccadf854?t=1666944507652>
- Eurostat. (n.d.). *Employment by NACE Rev.2 - percentage change Q/Q-1 (construction)*. *Data Explorer*. Retrieved 31/03/2023 from: <https://ec.europa.eu/eurostat/databrowser/view/tec00108/default/table?lang=en>
- Eurofound (2014). *Construction sector: Working conditions and job quality, European Working Conditions Survey*. [https://www.eurofound.europa.eu/sites/default/files/ef\\_publication/field\\_ef\\_document/ef1384en18\\_0.pdf](https://www.eurofound.europa.eu/sites/default/files/ef_publication/field_ef_document/ef1384en18_0.pdf)
- Feng, K., & Huaccho Huatuco, L. (2022). Sustainable purchasing practices: A study of fresh food SMEs in Yorkshire. *Smart Innovation, Systems and Technologies* 262, 149-158. [https://doi.org/10.1007/978-981-16-6128-0\\_15](https://doi.org/10.1007/978-981-16-6128-0_15)
- Flyvbjerg, B. (2014). What you should know about megaprojects and why: An overview. *Project Management Journal*, 45(2), 6-19. <https://doi.org/10.1002/pmj.21409>
- Fridell, G., & Walker, C. (2019). Social upgrading as market fantasy: The limits of global value chain integration. *Human Geography*, 12(2), 1-17. <https://doi.org/10.1177/194277861901200201>
- Gatignon, A., & Capron, L. (2020). The firm as an architect of polycentric governance: Building open institutional infrastructure in emerging markets. *Strategic Management Journal*, 1-38. <https://doi.org/10.1002/SMJ.3124>
- GlobalGAP. (2015). *GRASP General Rules*. [https://www.globalgap.org/.content/galleries/documents/190429\\_GRASP\\_Add-on\\_GR\\_V1\\_3-1\\_en.pdf](https://www.globalgap.org/.content/galleries/documents/190429_GRASP_Add-on_GR_V1_3-1_en.pdf)
- GlobalGAP. (2017). *GRASP Guideline for Retailers*. [https://www.globalgap.org/.content/galleries/documents/170830\\_GRASP\\_Guideline-for-Retailers\\_en.pdf](https://www.globalgap.org/.content/galleries/documents/170830_GRASP_Guideline-for-Retailers_en.pdf)
- Grant, M. J., & Booth, A. (2009). A typology of reviews: An analysis of 14 review types and associated methodologies. *Health Information and Libraries Journal*, 26(2), 91-108. <https://doi.org/10.1111/J.1471-1842.2009.00848.X>
- Griffith, D. A., & Myers, M. B. (2005). The performance implications of strategic fit of relational norm governance strategies in global supply chain relationships. *Journal of International Business Studies*, 36, 254-269. <https://doi.org/10.1057/palgrave.jibs.8400131>
- Griffith, D. A., Harvey, M. G., & Lusch, R. F. (2006). Social exchange in supply chain relationships: The resulting benefits of procedural and distributive justice. *Journal of Operations Management*, 24(2), 85-98. <https://doi.org/10.1016/j.jom.2005.03.003>
- Grimm, J. H., Hofstetter, J. S., & Sarkis, J. (2014). Critical factors for sub-supplier management: A sustainable food supply chains perspective. *International Journal of Production Economics*, 152, 159-173. <https://doi.org/10.1016/j.ijpe.2013.12.011>
- Grimm, J. H., Hofstetter, J. S., & Sarkis, J. (2016). Exploring sub-suppliers' compliance with corporate sustainability standards. *Journal of Cleaner Production*, 112, 1971-1984. <https://doi.org/10.1016/j.jclepro.2014.11.036>

- Grzawska, A. (2020). Towards responsible and sustainable supply chains – innovation, multi-stakeholder approach and governance. *Philosophy of Management*, 19(3), 267-295. <https://doi.org/10.1007/s40926-019-00114-z>
- Haack, P., & Rasche, A. (2021). The legitimacy of sustainability standards: A paradox perspective: *Organization Theory*, 2(4), 263178772110494. <https://doi.org/10.1177/26317877211049493>
- Haar, B. Ter, & Keune, M. (2014). One step forward or more window-dressing? A legal analysis of recent CSR initiatives in the garment industry in Bangladesh. *The International Journal of Comparative Labour Law and Industrial Relations*, 30(1), 5-26. <https://doi.org/10.54648/ijcl2014002>
- Hadwiger, F. (2018). *Contracting International Employee Participation: Global Framework Agreements*. Springer.
- Hajmohammad, S., & Vachon, S. (2016). Mitigation, avoidance, or acceptance? Managing supplier sustainability risk. *Journal of Supply Chain Management*, 52(2), 48-65. <https://doi.org/10.1111/jscm.12099>
- Hasle, P., Refslund, B., Antonsson, A-B., Ramioul, M., & Walters, D. (2017). *Safety and health in micro and small enterprises in the EU: From policy to practice* [European Risk Observatory Report]. European Agency for Safety and Health at Work. Houwerzijl, M., & Peters, S. (2008). *Liability in subcontracting processes in the European construction sector*. Eurofound. [https://www.eurofound.europa.eu/sites/default/files/ef\\_files/pubdocs/2008/94/en/1/EF0894EN.pdf](https://www.eurofound.europa.eu/sites/default/files/ef_files/pubdocs/2008/94/en/1/EF0894EN.pdf) <https://doi.org/10.2802/54078>
- Huq, F. A., Chowdhury, I. N., & Klassen, R. D. (2016). Social management capabilities of multinational buying firms and their emerging market suppliers: An exploratory study of the clothing industry. *Journal of Operations Management*, 46(1), 19-37. <https://doi.org/10.1016/j.jom.2016.07.005>
- Huq, F. A., Stevenson, M., & Zorzini, M. (2014). Social sustainability in developing country suppliers: An exploratory study in the ready made garments industry of Bangladesh. *International Journal of Operations & Production Management*, 34(5), 610-638. <https://doi.org/10.1108/IJOPM-10-2012-0467>
- Institute for an Industrial Safety Culture. (2019). *La culture de sécurité dans les projets de construction*. ICSI. <http://www.icsi-eu.org/>
- Institute for Work and Health of the German Social Accident Insurance. (2013). *Befragung zur Wirksamkeit von Arbeitsschutzmanagementsystemen*. IAG. <https://publikationen.dguv.de/widgets/pdf/download/article/2766>
- International Labour Organisation. (2021, December 7). *ILO's Flagship Programme Safety + Health for All launches its second phase, reaching up to 138 million workers worldwide*. ILO. [https://www.ilo.org/global/topics/safety-and-health-at-work/WCMS\\_830834/lang--en/index.htm](https://www.ilo.org/global/topics/safety-and-health-at-work/WCMS_830834/lang--en/index.htm)
- James, P., Johnstone, R., Quinlan, M., & Walters, D. (2007). Regulating Supply Chains to Improve Health and Safety. *Industrial Law Journal*, 36(2), 163-187. <https://doi.org/10.1093/INDLAW/DWM002>
- James, P., Walters, D., Sampson, H., & Wadsworth, E. (2015a). Protecting workers through supply chains: Lessons from two construction case studies. *Economic and Industrial Democracy*, 36(4), 727-747. <https://doi.org/10.1177/0143831X14532296>
- James, P., Walters, D., Sampson, H., & Wadsworth, E. (2015b). Regulating the employment dynamics of domestic supply chains: *Journal of Industrial Relations*, 57(4), 526-543. <https://doi.org/10.1177/0022185615582235>
- Jespersen, A. H., Hohnen, P., & Hasle, P. (2016). Internal audits of psychosocial risks at workplaces with certified OHS management systems. *Safety Science*, 84, 201-209. <https://doi.org/10.1016/j.ssci.2015.12.013>
- Johansson, J., Berglund, L., Johansson, M., Nygren, M., Rask, K., Samuelson, B., & Stenberg, M.

- (2019). Occupational safety in the construction industry. *Work*, 64(1), 21-32. <https://doi.org/10.3233/WOR-192976>
- Joint German Occupational Safety and Health Strategy. (2013). *GDA-ORGCheck: Arbeitsschutz mit Methode-zählt sich aus*. <http://www.offensive-mittelstand.de/>
- EU-OSHA (2020). *Review of the future of agriculture and occupational safety and health (OSH): Foresight on new and emerging risks in OSH* [European Agency for Safety and Health at Work]. <https://doi.org/10.2802/769257>
- Jones, P., Comfort, D., & Hillier, D. (2006). Corporate social responsibility and the UK construction industry. *Journal of Corporate Real Estate*, 8(3), 134-150. <https://doi.org/10.1108/14630010610711757>
- Jounin, N. (2006). La sécurité au travail accaparée par les directions: Quand les ouvriers du bâtiment affrontent clandestinement le danger. *Actes de La Recherche En Sciences Sociales*, 165(5), 72-91. [https://www.cairn.info/revue-actes-de-la-recherche-en-sciences-sociales-2006-5-page-72.htm?trk=public\\_post\\_comment-text](https://www.cairn.info/revue-actes-de-la-recherche-en-sciences-sociales-2006-5-page-72.htm?trk=public_post_comment-text)
- Kauppi, K. (2013). Extending the use of institutional theory in operations and supply chain management research: Review and research suggestions. *International Journal of Operations and Production Management*, 33(10), 1318-1345. <https://doi.org/10.1108/IJOPM-10-2011-0364>
- Ke, H., Cui, Z., Govindan, K., & Zavadskas, E. K. (2015). The impact of contractual governance and trust on EPC projects in construction supply chain performance. *Engineering Economics*, 26(4), 349-363. <https://doi.org/10.5755/j01.ee.26.4.9843>
- Keller, A., Lumineau, F., Mellewigt, T., & Ariño, A. (2021). Alliance governance mechanisms in the face of disruption. *Organization Science*, 32(6), 1542-1570. <https://doi.org/10.1287/orsc.2021.1437>
- Københavns Kommune. (2021). *Årsrapport 2021: København mod social dumping*. [https://socialdumping.kk.dk/sites/default/files/2022-05/OKF\\_social\\_dumping\\_a%CC%8Arsrapport\\_2022\\_endelig%20version.pdf](https://socialdumping.kk.dk/sites/default/files/2022-05/OKF_social_dumping_a%CC%8Arsrapport_2022_endelig%20version.pdf)
- Koberg, E., & Longoni, A. (2019). A systematic review of sustainable supply chain management in global supply chains. *Journal of Cleaner Production*, 207, 1084-1098. <https://doi.org/10.1016/j.jclepro.2018.10.033>
- Korsgaard, M. A., Schweiger, D. M., & Sapienza, H. J. (1995). Building Commitment, Attachment, and Trust in Strategic Decision-Making Teams: The Role of Procedural Justice. *Source: The Academy of Management Journal*, 38(1), 60-4. <https://www.jstor.org/stable/256728?seq=1&cid=pdf->
- Lafuente, E., & Abad, J. (2018). Analysis of the relationship between the adoption of the OHSAS 18001 and business performance in different organizational contexts. *Safety Science*, 103, 12-22. <https://doi.org/10.1016/j.ssci.2017.11.002>
- León Bravo, V., Moretto, A., & Caniato, F. (2021). A roadmap for sustainability assessment in the food supply chain. *British Food Journal*, 123(13), 199-220. <https://doi.org/10.1108/BFJ-04-2020-0293>
- León-Bravo, V., Caniato, F., & Caridi, M. (2019). Sustainability in multiple stages of the food supply chain in Italy: practices, performance and reputation. *Operations Management Research*, 12(1-2), 40-61. <https://doi.org/10.1007/s12063-018-0136-9>
- León-Bravo, V., Caniato, F., Caridi, M., & Johnsen, T. (2017). Collaboration for sustainability in the food supply chain: A multi-stage study in Italy. *Sustainability (Switzerland)*, 9(7), 11-22. <https://doi.org/10.3390/su9071253>
- Lilie, N., & Wagner, I. (2015). Chapter 7 Subcontracting, insecurity and posted work: evidence from construction, meat processing and ship building. In J. Drahokoupil (Ed.), *The Outsourcing Challenge: Organizing workers across fragmented production networks* (pp. 157-174). European Trade Union Institute.

- Lillie, N., & Greer, I. (2007). Industrial relations, migration, and neoliberal politics: The case of the European construction sector. *Politics & Society*, 35(4), 551-581. <https://doi.org/10.1177/0032329207308179>
- Liu, Y., Huang, Y., Luo, Y., & Zhao, Y. (2012). How does justice matter in achieving buyer-supplier relationship performance? *Journal of Operations Management*, 30(5), 355-367. <https://doi.org/10.1016/j.jom.2012.03.003>
- Lloyd, C., & James, S. (2008). Too much pressure? Retailer power and occupational health and safety in the food processing industry. *Work, Employment and Society*, 22(4), 713-730. <https://doi.org/10.1177/0950017008098366>
- Loosemore, M., Braham, R., Yiming, Y., & Bronkhorst, C. (2020). Relational determinants of construction project outcomes: a social network perspective. *Construction Management and Economics*, 38(11), 1061-1076. <https://doi.org/10.1080/01446193.2020.1776350>
- Lu, H., & Chen, H. (2015). Does a people-oriented safety culture strengthen miners' rule-following behavior? The role of mine supplies-miners' needs congruence. *Safety Science*, 76, 121-132. <https://doi.org/10.1016/j.ssci.2015.02.018>
- Luo, Y. (2007). The Independent and Interactive Roles of Procedural, Distributive, and Interactional Justice in Strategic Alliances. *Academy of Management Journal*, 50(3), 644-664. <https://doi.org/10.5465/amj.2007.25526452>
- Macneil, I. R. (1981). *The new social contract: An inquiry into modern contractual relations*, 79(4), 827. *Michigan Law Review*.
- Maloni, M. J., & Brown, M. E. (2006). Corporate social responsibility in the supply chain: An application in the food industry. *Journal of Business Ethics*, 68(1), 35-52. <https://doi.org/10.1007/s10551-006-9038-0>
- Manu, E., Ankrah, N. A., Chinyio, E., & Proverbs, D. G. (2011). Control influence on trust and relational governance in the client-contractor dyad. In C. Egbu & E. C. W. Lou (Eds.), *Proceedings of the 27th Annual ARCOM Conference* (pp. 455-463). Association of Researchers in Construction Management (ARCOM). <https://irep.ntu.ac.uk/id/eprint/26302/>
- Marichova, A. (2021). *The Green and Digital Transformation – the New Challenges of the Construction Market*. *Ovidius University Annals of Constanta-Series Civil Engineering*, 23(1), 25-34. <https://doi.org/10.2478/ouacsce-2021-0003>
- Mendonça, P., & Adăscăliței, D. (2020). Trade Union Power Resources within the Supply Chain: Marketisation, Marginalisation, Mobilisation. *Work, Employment and Society*, 34(6), 1062-1078. <https://doi.org/10.1177/0950017020906360>
- Møller, J. L., Kines, P., Dyreborg, J., Andersen, L. L., & Ajslev, J. Z. N. (2021). The competences of successful safety and health coordinators in construction projects. *Construction Management and Economics*, 39(3), 199-211. <https://doi.org/10.1080/01446193.2020.1818800>
- Mook, A., & Overdeest, C. (2021). What drives market construction for fair trade, organic, and GlobalGAP certification in the global citrus value chain? Evidence at the importer level in the Netherlands and the United States. *Business Strategy and the Environment*, 30(7), 2996-3008. <https://doi.org/10.1002/bse.2784>
- Narasimhan, R., Nair, A., Griffith, D. A., Arlbjørn, J. S., & Bendoly, E. (2009). Lock-in situations in supply chains: A social exchange theoretic study of sourcing arrangements in buyer-supplier relationships. *Journal of Operations Management*, 27, 374-389. <https://doi.org/10.1016/j.jom.2008.10.004>
- Narasimhan, R., Narayanan, S., & Srinivasan, R. (2013). An investigation of justice in supply chain relationships and their performance impact. *Journal of Operations Management*, 31(5), 236-247. <https://doi.org/10.1016/j.jom.2013.05.001>
- Newsome, K., Thompson, P., & Commander, J. (2013). 'You monitor performance at every hour':

- Labour and the management of performance in the supermarket supply chain. *New Technology, Work and Employment*, 28(1), 1-15. <https://doi.org/10.1111/ntwe.12000>
- NQA. (2021). *Construction Industry*. NQA. <https://www.nqa.com/en-si/certification/sectors/construction>
- Osoimehin, S., & Popov, L. (2020). Sectoral Impact of COVID-19: Cascading Risks. *Opportunity and Inclusive Growth Institute Working Papers*, 31. Federal Reserve Bank of Minneapolis. <https://doi.org/10.21034/iwp.31>
- Ostrom, E. (2010). Beyond Markets and States: Polycentric Governance of Complex Economic Systems. *American Economic Review*, 100(3), 641-672. <https://doi.org/10.1257/aer.100.3.641>
- Pagell, M., & Wu, Z. (2009). Building a more complete theory of sustainable supply chain management using case studies of 10 exemplars. *Journal of Supply Chain Management*, 45(2), 37-56. <https://doi.org/10.1111/j.1745-493X.2009.03162.x>
- Parker, C., & Nielsen, V. (2017). Compliance: 14 questions. In P. Drahos (Ed.), *Regulatory Theory: Foundations and Applications*. (pp. 217–232). Australian University Press. <https://library.oapen.org/bitstream/handle/20.500.12657/31596/626829.pdf?sequen>
- Pawson, R. (2006). *Evidence-based Policy: A Realist Perspective*. SAGE Publications Ltd. <https://doi.org/10.4135/9781849209120>
- Pinto, A., Nunes, I. L., & Ribeiro, R. A. (2011). Occupational risk assessment in construction industry – Overview and reflection. *Safety Science*, (49)5, 614-624. <https://doi.org/10.1016/j.ssci.2011.01.003>
- Poppo, L., & Zenger, T. (2002). Do formal contracts and relational governance function as substitutes or complements? *Strategic Management Journal*, 23(8), 707-725. <https://doi.org/10.1002/smj.249>
- Poppo, L., Zheng Zhou, K., & Zenger, T. R. (2008). Examining the Conditional Limits of Relational Governance: Specialized Assets, Performance Ambiguity, and Long-Standing Ties. *Journal of Management Studies*, 45(7), 1195-1216. <https://doi.org/10.1111/j.1467-6486.2008.00779.x>
- Pullman, M. E., & Dillard, J. (2010). Values based supply chain management and emergent organizational structures. *International Journal of Operations and Production Management*, 30(7), 744–771. <https://doi.org/10.1108/01443571011057326>
- Quintas, C., Ferro, M., Graca, V., & Coelho, V. (2009). Políticas e práticas de prevenção da sinistralidade na construção civil em Portugal. APSIOT – Associação Portuguesa de Profissionais de Sociologia Industrial Das Organizações e Do Trabalho. *XIII Encontro Nacional da APSIOT-Viver o Trabalho, Estratégias e Políticas de Mobilidade Positiva*, 41-53. <http://hdl.handle.net/11144/271>
- Raj-Reichert, G. (2012). Safeguarding labour in distant factories: Health and safety governance in an electronics global production network. *Geoforum*, 44, 23-31. <https://doi.org/10.1016/j.geoforum.2012.05.007>
- Regjeringen. (2021). *Prop. 150 L (2020-2021). Proposisjon til Stortinget (forslag til lovvedtak). Lov om virksomheters åpenhet og arbeid med grunnleggende menneskerettigheter og anstendige arbeidsforhold (åpenhetsloven)*. <https://www.regjeringen.no/contentassets/c33c3faf340441faa7388331a735f9d9/no/pdfs/prp202020210150000dddpdfs.pdf>
- Révillon, S., & Chappuis, J.-M. (2005). Effects of the Swiss Retailers' Strategy on the Governance Structure of the Fresh Food Products Supply Chains. *Agribusiness*, 21(2), 237-252. <https://doi.org/10.1002/agr.20045>
- Rompoti, K., Madas, M., & Kitsios, F. (2020). A conceptual framework for effective contracting in construction supply chains. *International Journal of Construction Supply Chain Management*, 10(3), 92-114. <https://ruomo.lib.uom.gr/bitstream/7000/966/5/%CE%9C.%20%CE%9C%CE%91%CE%9D%CE>

[%A4%CE%91%CE%A3%20-%20Pub.2%20-%20Accepted.pdf](#)

- Ruggie, J. (2008). *Protect, respect and remedy: A framework for business and human rights: Report of the Special Representative of the Secretary-General on the issue of human rights and transnational corporations and other business enterprises, John Ruggie, UN.* <https://policycommons.net/artifacts/65027/protect-respect-and-remedy/131230/>
- Ruijter, H., van Marrewijk, A., Veenswijk, M., & Merkus, S. (2021). 'Filling the mattress': Trust development in the governance of infrastructure megaprojects. *International Journal of Project Management*, 39(4), 351-364. <https://doi.org/10.1016/j.ijproman.2020.09.003>
- Ryall, M. D., & Sampson, R. C. (2009). Formal contracts in the presence of relational enforcement mechanisms: evidence from technology development projects. *Management Science*, 55(6), 906-925. <https://doi.org/10.1287/mnsc.1090.0995>
- Schebesta, H., Bernaz, N., & Macchi, C. (2020). The European Union farm to fork strategy: Sustainability and responsible business in the food supply chain. *European Food and Feed Law Review*, 15(5), 420-427. <https://doi.org/10.2139/ssrn.3809931>
- Scheffe, A. F. (2022). *Bæredygtighed er blevet et minfelt for virksomheder.* Mandag Morgen. <https://www.mm.dk/artikel/baeredygtighed-er-blevet-et-minfelt-for-virksomheder>
- Sedex. (2019). *SMETA 6.1 Measurement Criteria.* <https://www.sedex.com/wp-content/uploads/2019/05/SMETA-6.1-Measurement-Criteria.pdf>
- Sedex. (2021). *SMETA Audit.* <https://www.sedex.com/our-services/smeta-audit/>
- Sedex. (2022). *Affiliate Audit Companies.* <https://www.sedex.com/affiliate-audit-companies/>
- Segarra Cañamares, M., Villena Escribano, B. M., González García, M. N., Romero Barriuso, A., & Rodríguez Sáiz, A. (2017). Occupational risk-prevention diagnosis: A study of construction SMEs in Spain. *Safety Science*, 92, 104-115. <https://doi.org/10.1016/j.ssci.2016.09.016>
- Seim, R., Limborg, H. J., & Jensen, P. L. (2015). Professionalization of occupational health and safety management in Danish companies and the effects on worker participation. In *Proceedings 19th Triennial Congress of the IEA*. International Ergonomics Association. <https://orbit.dtu.dk/en/publications/professionalization-of-occupational-health-and-safety-management->
- Shepherd, R., Lorente, L., Vignoli, M., Nielsen, K., & María Peiró, J. (2021). Challenges influencing the safety of migrant workers in the construction industry: A qualitative study in Italy, Spain, and the UK. *Safety Science*, 142, 105388. <https://doi.org/10.1016/j.ssci.2021.105388>
- Shevchenko, A., Lévesque, M., & Pagell, M. (2016). Why Firms Delay Reaching True Sustainability. *Journal of Management Studies*, 53(5), 911-935. <https://doi.org/10.1111/joms.12199>
- Short, J. L., Toffel, M. W., & Hugill, A. R. (2016). Monitoring global supply chains. *Strategic Management Journal* 37(9), 1878-1897. <https://doi.org/10.1002/smj.2417>
- Short, J. L., Toffel, M. W., Hugill, A. R., Allen, C., Galvin, J., Mccaffrey, E., & Rivera, C. (2020). Improving working conditions in global supply chains: The role of institutional environment and monitoring program design. *Industrial & Labor Relations Review*, 73(4), 873-912. <https://doi.org/10.1177/0019793920916181>
- Soundararajan, V., Wilhelm, M. M., & Crane, A. (2021). Humanizing Research on Working Conditions in Supply Chains: Building a Path to Decent Work. *Journal of Supply Chain Management*, 57(2), 3-13. <https://onlinelibrary.wiley.com/doi/full/10.1111/jscm.12260>
- Spangenberg, S., Mikkelsen, K. L., Kines, P., Dyreborg, J., & Baarts, C. (2002). The construction of the Øresund Link between Denmark and Sweden: the effect of a multi-faceted safety campaign. *Safety Science*, 40, 457-465. [https://doi.org/10.1016/S0925-7535\(01\)00013-3](https://doi.org/10.1016/S0925-7535(01)00013-3)
- Staunton, B. (2021). Change a long time coming for subcontracted slaughterhouse workers.

*HesaMag*, 23, 14-17.

- Staunton, B. (2021). [https://etui.org/sites/default/files/2021-05/HM23\\_Change%20a%20long%20time%20coming%20for%20subcontracted%20slaughterhouse%20workers\\_2021\\_0.pdf](https://etui.org/sites/default/files/2021-05/HM23_Change%20a%20long%20time%20coming%20for%20subcontracted%20slaughterhouse%20workers_2021_0.pdf)
- Suárez Sánchez, F. A., Carvajal Peláez, G. I., & Catalá Alís, J. (2017). Occupational safety and health in construction: a review of applications and trends. *Industrial Health*, 55(3), 210-218. <https://doi.org/10.2486/indhealth.2016-0108>
- Tachizawa, E. M., & Wong, C. Y. (2014). Towards a theory of multi-tier sustainable supply chains: A systematic literature review. *Supply Chain Management: An International Journal*, 19(5/6), 643-663. <https://doi.org/10.1108/SCM-02-2014-0070>
- Tachizawa, E. M., & Wong, C. Y. (2015). The performance of green supply chain management governance mechanisms: A supply network and complexity perspective. *Journal of Supply Chain Management*, 51(3), 18-32. <https://doi.org/10.1111/jscm.12072>
- The6steps. (n.d.). *Respect for Human Rights*. <https://www.the6steps.dk/>
- Thomas, H., & Turnbull, P. (2018). From horizontal to vertical labour governance: The International Labour Organization (ILO) and decent work in global supply chains. *Human Relations*, 71(4), 536-559. <https://doi.org/10.1177/0018726717719994>
- Touboulis, A., & Walker, H. (2015). Love me, love me not: A nuanced view on collaboration in sustainable supply chains. *Journal of Purchasing and Supply Management*, 21(3), 178-191. <https://doi.org/10.1016/j.pursup.2015.05.001>
- Uhrenholdt Madsen, C., Hasle, P., & Limborg, H. J. (2019). Professionals without a profession: Occupational safety and health professionals in Denmark. *Safety Science*, 113(November 2018), 356-361. <https://doi.org/10.1016/j.ssci.2018.12.010>
- Uhrenholdt Madsen, C., Kirkegaard, M. L., Dyreborg, J., & Hasle, P. (2020). Making occupational health and safety management systems 'work': A realist review of the OHSAS 18001 standard. *Safety Science*, 129, 104843. <https://doi.org/10.1016/j.ssci.2020.104843>
- Um, K. H., & Oh, J. Y. (2020). The interplay of governance mechanisms in supply chain collaboration and performance in buyer-supplier dyads: substitutes or complements. *International Journal of Operations and Production Management*, 40(4), 415-438. <https://doi.org/10.1108/IJOPM-07-2019-0507>
- Upstill-Goddard, J., Glass, J., Dainty, A. R. J., & Nicholson, I. (2012). Integrating responsible sourcing in the construction supply chain. In S. D. Smith (Ed.), *Proceedings 28th Annual ARCOM Conference, 3-5 September 2012*. [https://repository.lboro.ac.uk/articles/conference\\_contribution/Integrating\\_responsible\\_sourcing\\_in\\_the\\_construction\\_supply\\_chain/9437456/1](https://repository.lboro.ac.uk/articles/conference_contribution/Integrating_responsible_sourcing_in_the_construction_supply_chain/9437456/1)
- EU-OSHA (2012). *Promoting Occupational Safety and Health through the Supply Chain* [Literature Review]. European Agency for Safety and Health at Work. <https://doi.org/10.2802/39216>
- van Marrewijk, A. H. (Ed.). (2015). *Inside Mega-Projects: Understanding Cultural Practices in Project Management*. Copenhagen Business School.
- Van Tulder, R., Van Wijk, J., & Kolk, A. (2009). From chain liability to chain responsibility: MNE approaches to implement safety and health codes in international supply chains. *Journal of Business Ethics*, 85(SUPPL. 2), 399-412. <https://doi.org/10.1007/s10551-008-9742-z>
- Voronov, M., & Vince, R. (2012). Integrating emotions into the analysis of institutional work. *Source: The Academy of Management Review*, 37(1), 58-81. <https://doi.org/10.5465/amr.2010.0247>
- Walters, D. (2016). Labour inspection and health and safety in the EU. *HesaMag* 14, 12-17. [https://www.etui.org/sites/default/files/Hesamag14\\_EN-12-17.pdf](https://www.etui.org/sites/default/files/Hesamag14_EN-12-17.pdf)

- Walters, D., & James, P. (2011). What motivates employers to establish preventive management arrangements within supply chains? *Safety Science*, 49(7), 988-994. <https://doi.org/10.1016/j.ssci.2010.12.004>
- Walters, D., Johnstone, R., Limborg, H. J., Bluff, E., & Gensby, U. (2021). Securing Compliance: Some Lessons for EU Strategy on Occupational Health and Safety (ETUI Research Paper - Working Paper 2021.05). *European Trade Union Institute (ETUI) Research Paper Series*. Elsevier. <http://dx.doi.org/10.2139/ssrn.3873809>
- Williamson, O. E. (1991). Comparative economic organization: The analysis of discrete structural alternatives. *Administrative Science Quarterly*, 36(2), 269-296. <https://doi.org/10.4324/9781315486253-13>
- Williamson, O. E. (2008). Outsourcing: Transaction cost economics and supply chain management. *Journal of Supply Chain Management*, 44(2), 5-16. <https://doi.org/10.1111/J.1745-493X.2008.00051.X>
- Wright, C. F. (2016). Leveraging reputational risk: Sustainable sourcing campaigns for improving labour standards in production networks. *Journal of Business Ethics*, 137(1), 195-210. <https://doi.org/10.1007/S10551-015-2552-1>
- Yazdani, A., Neumann, W. P., Imbeau, D., Bigelow, P., Pagell, M., & Wells, R. (2015). *Prevention of musculoskeletal disorders within management systems: A scoping review of practices, approaches, and techniques*. *Applied ergonomics*, 51, 255-262. <https://doi.org/10.1016/j.apergo.2015.05.006>

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