



The impact of procurement practices in the electronics sector on labour rights and temporary and other forms of employment

The impact of procurement practices in the electronics sector on labour rights and temporary and other forms of employment

Ricarda McFalls¹

International Labour Office
Geneva

Working papers are preliminary documents circulated to stimulate discussion and obtain comments

¹ Ricarda McFalls is a consultant in Sustainable Global Business. After more than two decades of international management experience developing transition and emerging markets for global ICT brand leaders, her research focus over the past 10 years has been on corporate social responsibility policy and advancing social impact at the intersection of business, technology, and sustainable development.

Copyright © International Labour Organization 2016
First published 2016

Publications of the International Labour Office enjoy copyright under Protocol 2 of the Universal Copyright Convention. Nevertheless, short excerpts from them may be reproduced without authorization, on condition that the source is indicated. For rights of reproduction or translation, application should be made to ILO Publications (Rights and Licensing), International Labour Office, CH-1211 Geneva 22, Switzerland, or by email: rights@ilo.org. The International Labour Office welcomes such applications.

Libraries, institutions and other users registered with a reproduction rights organization may make copies in accordance with the licences issued to them for this purpose. Visit www.ifrro.org to find the reproduction rights organization in your country.

ILO Cataloguing in Publication Data

McFalls, Ricarda.

The impact of procurement practices in the electronics sector on labour rights and temporary and other forms of employment / Ricarda McFalls; International Labour Office. - Geneva: ILO, 2016.
(Working paper; 313)

ISBN: 978-92-2-129070-4 (web pdf)

International Labour Office.

procurement / electronics industry / working conditions / labour standards / temporary employment / value chains

12.07.2

The designations employed in ILO publications, which are in conformity with United Nations practice, and the presentation of material therein do not imply the expression of any opinion whatsoever on the part of the International Labour Office concerning the legal status of any country, area or territory or of its authorities, or concerning the delimitation of its frontiers.

The responsibility for opinions expressed in signed articles, studies and other contributions rests solely with their authors, and publication does not constitute an endorsement by the International Labour Office of the opinions expressed in them.

Reference to names of firms and commercial products and processes does not imply their endorsement by the International Labour Office, and any failure to mention a particular firm, commercial product or process is not a sign of disapproval.

ILO publications and digital products can be obtained through major booksellers and digital distribution platforms, or ordered directly from ilo@turpin-distribution.com. For more information, visit our website: www.ilo.org/publns or contact ilopubs@ilo.org.

Preface

Working papers published by the ILO Sectoral Policies Department aim to disseminate research on relevant and topical issues among policy-makers, administrators, social partners, civil society, the research community and the media. Their main objective is to contribute to an informed debate on how best to address sectoral issues within the overall agenda of full and productive work for all and decent work, a goal embedded in the 2008 ILO Declaration on Social Justice for a Fair Globalization.

A Global Dialogue Forum on the Adaptability of Companies to Deal with Fluctuating Demands and the Incidence of Temporary and Other Forms of Employment in Electronics was held at the International Labour Office in Geneva from 9 to 11 December 2014. The Forum assessed the reasons for companies to choose temporary and other forms of employment, as well as the impact of these forms of employment on the enterprise and the workers. The forum adopted points of consensus, including recommendations for future actions. One recommendation asked the Office to “conduct research on the impact of purchasing practices in the electronics sector on labour rights and temporary and other forms of employment.”

This working paper looks at the purchasing practices and how they impact rights at work, wages, working hours, non-standard forms of employment and occupational safety and health. It further discusses public governance and private standards in the electronics supply chain and concludes by evaluating how different stakeholders can impact the purchasing practices.

The working paper was written by Ricarda McFalls. We hope this paper will help to stimulate discussion on rights at work and working conditions in the electronics industry.

Alette van Leur
Director
Sectoral Policies Department

Contents

Preface	iii
Tables.....	vi
Figures	vi
Abbreviations and Acronyms	vii
1. Background: Procurement Practices in the Electronics Global Supply Chain.....	1
Introduction	1
Approach and definitions.....	2
2. Electronics Industry Overview.....	5
Industry Employment	5
Characteristics of the electronics industry	6
Evolution and geography of the Electronics Industry Global Value Chain.....	7
3. Procurement Practices and Impacts on Workers.....	9
Power Dynamics and Procurement Practices in the Electronics Industry	9
Procurement Typology and Impacts on Workers	11
Wages and Working Hours.....	14
Wages and Working Hours: The Squeeze on Suppliers and Workers.....	15
Non-standard forms of employment, agencies, and trafficking.....	18
Occupational Safety and Health	19
Rights at Work.....	20
4. Governance in the Electronics Supply Chain.....	22
Private standards.....	24
Multi-stakeholder initiative standards	24
Industry association codes	25
Individual company codes:.....	25
Electronic Industry Initiatives and Codes.....	25
Non-governmental Organization Advocacy Initiatives.....	27
Global Framework Agreements	27
Public Governance.....	27
5. Conclusions: Responsible Procurement – What Works?.....	29
Private Sector Approaches.....	29
Responsible Procurement Evaluation.....	31
Public Procurement.....	34
Conclusion	34

Addendum.....	37
References.....	39

Tables

Table 1. Largest Exporters of ICT Goods, 2013	9
Table 2. Gross Margins of Leading Companies	16
Table 3. Public Instruments governing Supply Chains	28
Table 4. EICC Guidance Implementation Examples	30
Table 5. Voluntary Standards and Codes	37

Figures

Figure 1. Procurement Typology - Electronics	13
Figure 2. Brand Name Selling Price	17
Figure 3. Supplier Margin	17
Figure 4. Stakeholder Approach to Responsible Procurement	36

Abbreviations and Acronyms

CSO	Civil Society Organization
CSR	Corporate Social Responsibility
EICC	Electronics Industry Citizenship Coalition
EU	European Union
FAR	Federal Acquisitions Regulation (United States)
GEN	GoodElectronics Network
GeSI	Global e-Sustainability Initiative
GFA	Global Framework Agreement
GPN	Global Production Network
GVC	Global Value Chain
HP	Hewlett Packard
ILO	International Labour Office/Organization
ISO	International Standards Organization
MNE	Multinational Enterprise
NSFE	Non-Standard Form of Employment
NGO	Non-Governmental Organization
ITUC	International Trade Union Confederation
OECD	Organisation for Economic Co-operation and Development
OHSAS	Occupational Health and Safety Group
R&D	Research and Development
ROHS	Restriction of Hazardous Substances
SOMO	Stichting Onderzoek Multinationale Ondernemingen (Centre for Research on Multinational Corporations)
UNGP	UN Guiding Principles on Business and Human Rights

1. Background: Procurement Practices in the Electronics Global Supply Chain

Introduction

The Global Dialogue Forum on the Adaptability of Companies to Deal with Fluctuating Demands and the Incidence of Temporary and Other Forms of Employment in Electronics, held in Geneva 9-11 December 2014, requested a series of actions to be taken by the International Labour Office (ILO), which included among other things to conduct research on the impact of purchasing practices in the electronic sector on labour rights and temporary and other forms of employment. Additionally, the Meeting of Experts on Non-Standard Forms of Employment held in Geneva on 16-19 February 2015 put the Office in charge of documenting and analysing trends on the effects of non-standard forms of employment on workers and their protection.

The electronics industry is characterized by supply chains network with a high level of outsourcing and subcontracting. In recent years, lead firms have increasingly outsourced manufacturing, as well as pre- and post- manufacturing activities. This led to the development of large intermediary contract manufacturers, working with a vast base of suppliers. For instance, Foxconn has grown to become the world's largest contract manufacturer of electronic goods, and manages a vast network of buyers and suppliers. In this context of multi-tiered production, suppliers face numerous challenges regarding timing, and a context of very flexible employment has emerged, with among other things employers resorting extensively to temporary workers.²

The question of purchasing practices relates to the way sourcing companies (including lead firms, but also intermediary manufacturers) manage the purchasing of goods and services from suppliers and vendors. The procurement policies used by the sourcing companies can be constraining for the suppliers, who face pressures in term of price and time, with the use of rush orders, cancellations, fragmentary orders, etc. The constant variations in and seasonality of customer demand also makes the electronic sector prone to “bullwhip effect”³. This impacts the working conditions in the supply chain, and translates into a demand for a highly flexible workforce, with an extensive use of temporary workers⁴. Research on the effect of temporary and other forms of employment on working conditions has showed evidence of potential negative effects on workers' health⁵ and work conditions. 'Non-standard workers' are considered more

² ILO: *Ups and downs in the electronics industry: Fluctuating production and the use of temporary and other forms of employment*, Issues paper for discussion at the Global Dialogue Forum on the Adaptability of Companies to Deal with Fluctuating Demands and the Incidence of Temporary and Other Forms of Employment in Electronics (Geneva, 9–11 December 2014).

³ Financial Times Definition: “a frustrating phenomenon that frequently starts with falling customer demand [or in reverse a rapid rise in customer demand]. This prompts retailers to under-order so as to reduce their inventories. In turn, wholesalers under-order even further to reduce their own inventories and the effect amplifies up the supply chain until suppliers experience stock-outs and then over-order in response. The effect can ripple up and down the supply chain many times”. [lexicon.ft.com/Term?term=the-bullwhip-effect]

⁴ Holdcroft, Jenny. 2015. “Transforming supply chain industrial relations” in *International Journal of Labour Research*, Vol.7, Issue 1-2, pp. 95 – 107

⁵ Quinlan, M. 2015. “The effects of non-standard forms of employment on worker health and safety”, in *Conditions of Work and Employment Series No. 67*.

vulnerable in labour markets and often regroup higher proportion of women, migrant and ethnic minorities than in standard employment relationships⁶.

Both private and public actors are increasingly under scrutiny regarding their procurement practices. Public awareness has led to some changes in the electronics sector legislation, especially in the issues of conflict minerals and human trafficking. Various NGOs have published reports and guidelines on good practices and ethical practices in procurement. Additionally, public pressure and adverse publicity has led lead firm to engage more actively in initiatives aiming to ensure that labour rights are enforced among their suppliers. At the private level, Private Compliance Initiatives (PCIs), such as social auditing and codes of practice have become well-established mechanisms in private governance to promote labour rights in supplier chains. Nevertheless, it has been pointed out that there is a conflict between the search for better labour standard enforcement and the 'just-in-time production model' imposed to suppliers. The implementation of good practices could make suppliers less competitive by raising their costs⁷, and some suppliers have started questioning the way lead firms have been asking for more efforts from the suppliers in term of work conditions, without being willing to share the costs of these higher standards⁸. New concepts have emerged, such as “fair purchasing”, “ethical sourcing”, or “sustainable procurement”. Some authors have attempted to define what can qualify as “good practice” in procurement, such as Anner et al. (2013), who describe it as “stable orders, fair prices and safe factories”⁹.

However, the data and analysis of procurement practices in electronics remains rather limited, when it comes to its effect on labour. Most of the business literature focuses on how to optimize the choice of supplier to increase efficiency. The social aspects of the supply chain management literature remain understudied.¹⁰ Some research exists on sustainable procurement practices in the garment industry¹¹, but overall the academic literature on this topic, especially applied to the electronics sector, remains limited. This study therefore aims to help bridge this knowledge gap, by providing an updated overview of the current situation in the electronics industry and the appearing trends.

Approach and definitions

This study explores the effects of procurement practices on workers in the electronics industry, an industry that is characterized by a high level of production outsourcing or offshoring. As such, its aim is to identify ‘good’ procurement practices or potential good practices in the global supply chain of the electronics industry.

⁶ ILO: Global Dialogue Forum on the Adaptability of Companies to Deal with Fluctuating Demands and the Incidence of Temporary and Other Forms of Employment in Electronics. Final report of the discussion (Geneva, 9-11 December 2014).

⁷ http://siteresources.worldbank.org/INTPSD/Resources/CSR/Strengthening_Implementatio.pdf

⁸ Becker, J. “The hidden downside of Santa's little helpers” in *The Irish Times*, issued December 21, 2002.

⁹ Anner, Mark, J. Bair and J. Blasi. 2013. “Towards Joint Liability in Global Supply Chains: Addressing the Root Causes of Labor Violations in International Subcontracting Networks”, in *Journal of Comparative Labor Law and Policy*, Vol. 35, No 1: pp. 1-43.

¹⁰ ILO: Navas-Aleman, L., Guerrero, T. “Good Procurement Practices and SMEs in Global Supply Chains: what do we know so far” (Geneva, 2016).

¹¹ See for instance Anisul Huq et al. 2014. Social Sustainability Implementation in Global Supply Chains.

As a starting point for this study, key ILO reports and documents were consulted, including those with authoritative ILO definitions for the concepts related to labour rights, temporary and other forms of employment, as well as, previous ILO studies on the electronics industry, including its report in preparation for the Global Dialogue Forum in December 2014¹². In addition, a recent report published by the ILO (2016) serves as a valuable companion to this study in providing a comprehensive and updated overview on the industry¹³. A review of the academic and gray literature on supply chain management, subcontracting, outsourcing and socially sustainable procurement was carried out by searching for articles that mentioned the “electronics industry”, and “the electronics industry and employment” and related titles and themes. While interchangeably referring to the “electronics industry,” this study primarily refers to the Information and Communications Technology (ICT) sub-sector of the electronics industry, as do the studies above and most studies found on this topic.

As defined by the OECD “ICT products must primarily be intended to fulfil or enable the function of information processing and communication by electronic means, including transmission and display”¹⁴. The sector includes such products as computer and peripheral equipment, communication equipment (including phones and networking equipment), consumer electronics, and miscellaneous components and accessories¹⁵.

Where closely related themes and studies, in particular the literature on the global value chain (GVC), global production networks (GPN), and corporate social responsibility (CSR) include meaningful linkages to the electronics industry, these are also included where relevant. Various terms refer to issues of cross-border production and trade, including global production networks, global value chains and global supply chains, and these terms are used synonymously and interchangeably in this report. These structures may also include subsidiary or joint venture arrangements between Multinational Enterprises (MNEs) and production sites within their chain. The electronics industry also includes a variety of international sourcing practices with terminology and relationships to characteristics in the electronics industry.

In order to both build on previous work and narrow in on the current situation as pertains to the status of ‘responsible procurement’ for decent work, more emphasis in this study is placed on the evolution of standards and the level of implementation of these standards in the electronics industry supply chains. While significant concerns are raised about the sourcing of raw materials in the production of electronics, and the violation of human rights in their extraction, a limited focus on these issues is included here.

A key challenge is in defining ‘good’ procurement practices. In the supply chain management literature, Socially and Environmentally Responsible Procurement (SERP) refers to procurement practices that include sustainable development objectives, and take into account environmental and social impacts. Ideally ‘good’ procurement practices would positively

¹² ILO: *Ups and downs in the electronics industry: Fluctuating production and the use of temporary and other forms of employment*, Issues paper for discussion at the Global Dialogue Forum on the Adaptability of Companies to Deal with Fluctuating Demands and the Incidence of Temporary and Other Forms of Employment in Electronics (Geneva, 9–11 December 2014); and Points of Consensus arising therefrom (ILO GDFACE/2014/7).

¹³ See Raj-Reichert, G. in *Promoting Decent Work in Global Supply Chains: The Electronics in ILO (2016). Sectoral Studies for Social and Economic Upgrading, Decent Work in Global Supply Chains: Comparative Analysis of Opportunities and Challenges*. International Labour Office, Sectoral Policies Department (SECTOR), Geneva, 2016.

¹⁴ OECD, (2011), p. 31: OECD Guide to Measuring the Information Society 2011. OECD Publishing, Paris.

¹⁵ Ibid, pp. 34–35: See ISIC rev 4 classification codes 2610, 2620, 2630 and 2640.

contribute to ‘decent work’ for workers within the buyer’s sphere of influence. However, previous studies on procurement practices in global supply chains have found it difficult to find meaningful data for measuring impact on labour standards, as the most common indicators available today are measurements of employment generation and changes in real wages¹⁶:

‘Decent work’ includes many variables which are difficult to assess with the data that is usually gathered for trade purposes: employment opportunities; adequate earnings and productive work; ‘decent working time’; combining work, family and personal life; work that should be abolished; stability and security of work; equal opportunity and treatment in employment; safe work environment; social security; and social dialogue, employers’ and workers’ representation (ILO 2012, p. 15)¹⁷.

The ILO estimates that by 2013 there were some 453 million global supply-chain-related jobs in 40 countries representing 85 per cent of world gross domestic product and covering approximately two-thirds of the global labour force¹⁸. According to the report’s estimates, a growing share of those employed in global supply chains are women, particularly as a percentage of supply chain workers in emerging economies¹⁹.

Increasingly, workers in global supply chains are found to be engaged in what is described as a “non-standard” employment relationship. According to the ILO (2015), there is no official definition of “non-standard form of employment” (NSFE)²⁰. In this case, NSFE describes work that “falls outside the scope of a standard employment relationship”. Standard work is described as “work that is full-time, indefinite employment in a subordinate employment relationship” (as opposed to self-employed)²¹. While non-standard forms of employment are on the rise, researchers are challenged by the complexity in accurately defining and measuring comparable data, due to a proliferation of terms pertaining to “non-standard”, as well as, due to findings that that today “standard work” is increasingly amorphous, with both “standard” and “non-standard” being highly dependent on context, including their location²².

For the purposes of this paper, ILO (2015) definitions of non-standard employment forms, whether informal or formal, are considered: (1) temporary employment; (2) temporary agency work and other contractual arrangements involving multiple parties; (3) ambiguous employment relationships; and (4) part-time employment. While all of these forms of employment are

¹⁶ Milberg and Winkler, from Barrientos, Pickles and Posthuma, 2011, p. 304.

¹⁷ ILO, 2012: Decent Work: Indicators and measurement. Geneva, ILO in Navas-Aleman, L. and Guerrero, 2016. Procurement Practices and SMEs in Global Supply Chains: What do we know so far?, ILO Publishing.

¹⁸ ILO World Economic and Social Outlook 2015 report 67. Note: the same report drawing on data from 40 countries found that the quantity and type of employment in global supply chains is difficult to estimate. National employment statistics do not distinguish between different types of workers engaged in global supply chains, nor whether these jobs are informal and non-standard forms of work, nor do the statistics differentiate between workers supplying global or domestic suppliers.

¹⁹ Ibid.

²⁰ ILO, 2015. Non-standard forms of employment Report for discussion at the Meeting of Experts on Non-Standard Forms of Employment (Geneva, 16–19 February 2015).

²¹ Ibid.

²² George, E., and Chattopadhyay, P. 2015. Non-standard work and workers: organizational implications; International Labour Office, Inclusive Labour Markets, Labour Relations and Working Conditions Branch. Geneva: ILO, 2015.

identified as common in the electronics industry supply chain, hard data on how many workers are employed in each form remains scarce.

While it is difficult to assess procurement practice for the electronics industry as a whole, there are opportunities to explore good practice at the firm level, particularly given the scale and impact that some of the largest firms have on the industry, and on the regions and countries in which they operate. Firm level analysis can be increasingly valuable given high level of industry concentration among fewer brands. For example, as of November 2016, just three companies account for 58 per cent of all personal computer shipments²³.

In this context, supply chain governance practices and their evolution in the electronics industry can provide meaningful insights and will be considered here. However, unless otherwise indicated, the naming of companies in this report does not suggest that these companies are performing better or worse than their competitors or the industry as a whole. Large public companies are more easily identified and face a higher level of scrutiny due to their public image. Furthermore, those companies most pro-actively engaged in disclosure, considered good practice, may sometimes inadvertently experience negative researcher or reader bias. The electronics industry covers many sectors and sub-sectors, many outside of view to consumers. In addition, for private companies or those listed only on certain foreign exchanges, the level of reporting requirements and access to information by researchers is more limited.

2. Electronics Industry Overview

Industry Employment

Employing an estimated 18 million workers²⁴, the global electronics industry is one of the largest industrial sectors in the global economy. The information and communication technology (ICT) products sub-sector alone accounts annually for some \$3 trillion in trade and one fifth of all world merchandise imports²⁵. The ICT industry is estimated to employ some 12 million production workers²⁶. The fast-growing electronics industry further accounts for the largest share of intermediate manufactured goods trade by a wide margin, nearly double the next largest industry (automotive and motorcycles) and some ten-fold over the apparel and foot-ware industries, for which more data on supply chain working conditions are available²⁷.

²³ Lenovo (21.3 percent), HP, (21.2 per cent, and Dell (15.8 per cent), in Womack, B. 2016. PC shipments drop 3.9 percent as declines slow before holiday shopping. Bloomberg Technology, October 11, 2016. <https://www.bloomberg.com/news/articles/2016-10-11/pc-shipments-drop-3-9-as-declines-slow-before-holiday-shopping>

²⁴ Better Work, 2010. Electronics Feasibility Study, Executive Summary. August 2010.

²⁵ UNCTAD, 2015. Trade in ICT Goods and the 2015 Expansion of the WTO Information Technology Agreement.

²⁶ Delautre (2016, Forthcoming). The distribution of value added among firms and countries: The case of the ICT manufacturing sector. ILO Research.

²⁷ Sturgeon, J.T., Kawakami, M. (2010) Global Value Chains in the Electronics Industry. Was the Crisis a Window of Opportunity for Developing Countries? Policy Research Working Paper 5417. The World Bank. S.C.

A high percentage of production workers in the electronics industry are engaged in a “non-standard” employment relationship²⁸. Recent research on employment in the electronics industry in five countries (China, Japan, Malaysia, Mexico and Hungary) found temporary contract workers accounting for up to 80 or 90 per cent of production workers in some jurisdictions at peak periods²⁹. With increased visibility into supply chains made possible through mobile technology, there are growing concerns about the potential impact on workers of transferring production from developed countries to low-wage jurisdiction in developing countries. Outsourcing production to populous host countries with lower wages has lifted many out of poverty and has been found to help producers from developed countries enter new markets through their manufacturing investments, yet raises new challenges for displaced workers in home countries and about the working conditions outsourced production workers experience³⁰.

Prominent issues arising from the industry have been low wages, excessive overtime, the use of forced labour, occupational safety and health, and rights at work. GVC researchers have found that most often, a combination of these factors occur due to linkages – and what can become a vicious cycle resulting from an absence of good practice as defined by Anner et al (2013):

The trinity of ‘stable orders, fair prices and safe factories’ (Anner et al. 2013, p. 1) sums up the manner in which vertical and horizontal relations interact in the global production networks (GPN). Without the first two, the third becomes difficult, if not impossible. Without overlooking the culpability of local employers and governments, who cut corners supposedly to remain competitive, poor prices and unstable orders certainly contribute to the poor safety situation. Improving safety requires investment, and that is constrained by low prices and unstable orders. (Ahmed and Nathan, 2013, p. 20.)³¹

As a result, diverse stakeholders have emerged to put pressure on the industry to address these concerns. A range of public and private voluntary initiatives have been developed to provide the industry with guidance, and the industry itself has undertaken measures to self-regulate their activities. This study will examine these responses, as well as, new regulation recently enacted to promote a higher level of due-diligence in the industry.

Characteristics of the electronics industry

The size and complexity, and fragmented production processes of the electronics industry global value chain further complicates the research effort, which may account for the paucity of data by comparison to other sectors. The electronics industry is comprised of a variety of sub-sectors (ranging from computers and peripherals, to automobile and aerospace components and sub-components) addressing consumer, business, and industrial market segments. Nevertheless,

²⁸ CEREAL, 2016: 59.73 per cent of electronics workers in Ciudad Juárez; GoodElectronics, 2012: More than half of Thailand’s 500,000 electronics supply chain production workers; Electronics Watch 2014: A high number of bonded workers in Malaysia; ILO, 2014: study of five countries found 80-90 per cent of production workers found to be temporary at peak periods.

²⁹ ILO, 2014

³⁰ Sunil, A. 2014: *Is Outsourcing Exploitation or Chance for Developing Countries?* Daily Sabah. June 17, 2014 <http://www.dailysabah.com/opinion/2014/06/17/is-outsourcing-a-chance-for-developing-countries>

³¹ Anner et al (2013) and Ahmed and Nathan (2013) in Navas-Aleman, L. and Guerrero, T. (2016): Procurement practices and SMEs in global supply chains: what do we know so far? : A literature review / Lizbeth Navas-Aleman, Tamara Guerrero; International Labour Office, Enterprises Department. Geneva: ILO, 2016.

the products share the same fundamental characteristics of being highly “modular”,³² increasingly standardized, and tradeable. In other words, as multinational enterprises (MNEs) could increasingly digitally transfer designs to their suppliers, and as these products became more commodified or generic, production became more flexible and competitive – as plans and processes could be moved among different suppliers and locations. This has contributed to an electronics industry supply chain network with a high level of outsourcing and off-shoring³³.

At the top of the electronics supply chain are ‘lead firms,’ or ‘brands’. These companies are also known as “Original Equipment Manufacturers” (OEMs). However, while today the lead firm conceives of the product and initiates its production and branding, few are likely to still be manufacturing products directly. These firms contract production to contract suppliers, ‘contract manufacturers’, also known as Electronic Manufacturing Services (EMSs); the largest of these are now multi-billion dollar global companies in their own right (e.g. Foxconn [Hon Hai Precision Instruments], Flextronics, Sanmina, Jabil Circuit). Some contract manufacturers (Original Design Manufacturers, or “ODMs”) also provide product design services in addition to manufacturing a complete product on behalf of one or more brands, most notably, these are found in Taiwan (China) in the production of notebook computers. The contract manufacturers may manufacture products themselves but also work with vast networks of subcontractors who manufacture specific components for integration into the final product.

Meanwhile at the component level, another influential actor in the electronics value chain is the ‘platform leader’. These are influential as they yield significant power over other lead actors and can often capture a significant share of the value, i.e. profit margin, of the product. These are firms whose largely proprietary technology is embedded in the final product (e.g. Intel processors, Apple’s proprietary operating system) and can account for a significant share of the material cost; the majority of rents for this patented technology is payable to firms based in developed countries. As will be illustrated, among these actors, while some contract manufacturers are becoming more influential, the brands and platform leaders yield the most power in capturing the gains of production³⁴.

Evolution and geography of the Electronics Industry Global Value Chain

The move of electronics companies’ production from developed countries to East and Southeast Asia began in the 1970s when the American semi-conductor industry moved its then labour-intensive post-production assembly to the region. Over time as semiconductor production was automated, other labour-intensive processes, including circuit board and final product

³² “Modularity” refers to “product modularity” and by extension “value chain modularity”, whereby digitization allows for the codification and standardization, enhances interoperability and allows components and other system elements to be substituted without the need to redesign the entire product (Ulrich 1995); and a value chain in which multiple firms can contribute to the realization of specific products and where component producers and other firms in the supply chain can be substituted without a need for thoroughgoing engineering changes (Langlois and Robertson 1995; Balconi 2002; Langlois 2003), in Sturgeon and Kawakami, 2010. See: Gereffi et al, 2005, for more information on the characteristics of a modular value chain.

³³ Ibid: Trade in intermediate goods is indicative of GVCs because fragmented production processes require that parts, components, and partially manufactured subassemblies cross borders—sometimes more than once—before finished goods are shipped to final markets (Feenstra 1998; Dean, Fung, and Wang 2007; Brühlhart 2008; in Sturgeon 2010).

³⁴ Sturgeon and Kawakami, 2010. Op. Cit.

assembly, were shifted to developing East Asia as well³⁵. Largely fuelling this progression in the ICT industry in the 1980s was the strategic decision by the market-leaders to move to industry-standard architecture (“open standards”) leading to explosive growth in the industry and greatly expanding production needs³⁶. As part of this ramp up in the 1980s, multinational enterprises (MNEs) began to separate management from production activities in order to focus on core competencies, such as research and development (R&D), product design, brand management and marketing, while moving various labour-intensive production processes to lower-cost locations offshore³⁷. Since the 1990s, upon developing sufficient internal capacity, contract manufacturers were pressured by lead firms to ‘go-global’ and offer regional “one-stop shopping” production hubs and therefore set up facilities to serve key markets, including Mexico for North America, Malaysia and China for Asia, and Hungary, Poland, and Czech Republic for Western Europe³⁸. Because rates of unionization were very low in the U.S. electronics industry and because modularity allowed design and innovation functions to remain at home, domestic resistance to off-shoring remained low³⁹.

Today, having transferred its production capabilities offshore in pursuit of low-cost production sites, the vast majority of all manufacturing in the electronics industry including final goods assembly has been moved to Asia. Electronics represents a significant share of all exports from China, Singapore, Malaysia, and Vietnam. The industry employs an estimated 7.6 million workers in China alone.⁴⁰ According to Matsuzaki (2015), 62 per cent of LED and LCD televisions, 70 per cent of semiconductors, 76 per cent of car navigation systems, 86 per cent of mobile and smart phones, and 100 per cent of digital cameras are manufactured in the Asia region⁴¹. Increasingly lead companies are also Asian-owned: Samsung, the largest producer of cell phones is a Korean company, with large-scale manufacturing sites across the region; Acer and ASUS, both of Taiwan (China) lead the world market in notebook computer design and production. A number of prominent Western brands sold their production to Asian companies, including IBM to Lenovo (a Chinese company) and Siemens to BenQ (a Taiwanese, China) company.

While manufacturing is heavily concentrated in Asia, new trade agreements are leading to increased investment in electronics production in other low-wage markets as well. The WTO Information Technology Agreement (ITA) was extended in July 2015 (effective 2016) with the goal of expanding the number of products that will enjoy duty free treatment when imported into economies that are members of the agreement. Equivalent to a market of more than \$3 trillion,

³⁵ Ibid.

³⁶ Source: Author worked for IBM (1984) and Compaq Computer Corporation (1985-2002).

³⁷ ILO *Ups and downs in the electronics industry: Fluctuating production and the use of temporary and other forms of employment*, Issues paper for discussion at the Global Dialogue Forum on the Adaptability of Companies to Deal with Fluctuating Demands and the Incidence of Temporary and Other Forms of Employment in Electronics (Geneva, 9–11 December 2014).

³⁸ Linden 1998; Lüthje et al. 2002 in Plank, L., Staritz, C. 2013. Plank, Leonhard and Staritz, Cornelia, ‘Precarious Upgrading’ in Electronics Global Production Networks in Central and Eastern Europe: The Cases of Hungary and Romania (May 2, 2013).

³⁹ Sturgeon and Kawakami, 2010.

⁴⁰ Decision, ‘World Electronic Industries 2008–2013’, April 2009, 14, http://www.decision.eu/%20doc/brochures/exec_wei_current.pdf, in Martin-Ortega et al, 2015

⁴¹ See Matsuzaki (2015) in Raj-Reichert, G. in promoting Decent Work in Global Supply Chains: The Electronics Industry, ILO (2016). Sectoral Studies for Social and Economic Upgrading, *Decent Work in Global Supply Chains: Comparative Analysis of Opportunities and Challenges*. International Labour Office, Sectoral Policies Department (SECTOR), Geneva, 2016.

goods covered by the original ITA (ITA I) and by the revised ITA list (ITA II) represent almost one fifth (18 per cent) of world merchandise imports. As seen in the table below, the expansion of duty-free ICT goods will further drive cross-border trade and production, including for non-participants such as Mexico and Vietnam⁴².

Table 1 not only illustrates the dominance of individual producer countries in the production of electronics goods, but also the importance of the ICT sector as a share of overall exports. By making additional product categories “duty-free”, this change in trade policy plays a significant role in expanding investment in ICT production and their share of exports. More than a third of Malaysia and China’s overall exports are ICT goods (greater than 50 per cent of Hong Kong’s exports); and 40 per cent of Singapore’s exports.

Table 1. Largest Exporters of ICT Goods, 2013

Economy	ICT goods (\$million) ITA-I	ICT goods (\$million) ITA-I+ITA II	ICT goods as a share of total exports (%) ITA-I	ICT goods as a share of total exports (%) ITA-I+II
China	605,756	762,794	27	35
China, Hong Kong SAR	222,339	285,541	42	53
United States	139,951	275,616	9	17
Singapore	122,812	162,489	30	40
Korea, Republic of	107,127	175,748	19	31
*China, Taiwan Province of	105,646	n/a	35	n/a
Malaysia	64,407	77,287	28	34
Germany	62,327	197,706	4	14
Japan	61,813	163,071	9	23
Netherlands	59,038	99,496	10	17
Mexico (non-ITA participant)	61,804	83,342	16	22
Vietnam (non-ITA participant)	32,395	35,210	25	27

Source: UNCTAD (2015), *Data for ITA+II not available. China, Hong Kong (China) and the United States are the top three exporters and importers of ITA I+II goods. Mexico and Viet Nam are the two largest exporters of such goods that are not participating in ITA II. As a result of the Most Favoured Nation principle, exports from all WTO members will enjoy duty free treatment of the listed goods in markets covered by the ITA II once the agreement has been fully implemented. With \$1.8 trillion and 94% of world exports of ICT goods (2013), participants in the revised ITA (ITA II) dominate trade in the sector.

3. Procurement Practices and Impacts on Workers

Power Dynamics and Procurement Practices in the Electronics Industry

Whereas the electronics and automotive industry are linked in being the first and second largest source of intermediate manufacturing trade, with a strong hub of suppliers in Asia, there is an important distinction in the character of the evolution of the supply chains in the electronics industry by comparison to the automotive industry. Kaplinsky (2010) contrasts the two paths of corporate-driven value chains in these industries, whereby, the automotive industry approach pioneered by Toyota (“just-in-time” or “lean production”), involves close and high-trust relations along the chain to achieve cost reductions, while the electronics industry, uses modularized

⁴² UNCTAD, 2015. Trade in ICT Goods and the 2015 Expansion of the WTO Information Technology Agreement, Technical Note 5 (unedited), December 2015.

production systems, to promote more conflicted, arms-length relations on the chain, to drive down prices through competition⁴³.

With the accelerated growth of the electronics industry, and with increased volume and flexibility demanded of suppliers in the production network, these suppliers face numerous challenges. Very low profit margins, competitive pressure (driven by lead firm second-sourcing⁴⁴), and the requirement to take most inventory risks are among the biggest challenges for EMS and ODM companies, and are found to be drivers of their almost continuous organizational re-focusing and geographical re-shifting across production sites⁴⁵. Contract manufacturers are forced to deal with highly cyclical production phases and be prepared to provide above-normal manufacturing capacities for a short time and then to cope with over-capacity.⁴⁶ Consumer electronics have short product life cycles, ranging from three to 18 months, with a sudden end-of-life time frame, and as new products and models are introduced suppliers face increasingly fast time-to-market orders⁴⁷. For example, when the Apple iPhone was introduced in 2007, the time to market was six months; in 2012, it had shrunk to less than two weeks⁴⁸.

The number of new products introduced is identified as a challenge for suppliers⁴⁹, as well as, late orders and changes to orders in midstream as a result of inaccurate market forecasting, avoidance of product overstocking and uncertainty⁵⁰. Assembly factories must manage these last-minute orders with high ramp-ups during production peaks. When Apple introduced the iPhone 5 on September 12, 2012, it was on the shelf in 9 countries within 9 days, and during its first 3 months would ship 3.7 million units a week to 240 mobile carriers in 100 countries⁵¹. By the end of 2015, Apple was shipping over 230 million iPhones a year⁵², a huge demand on finding sufficient production labour.

⁴³ Kaplinsky, R. (2010). The role of standards in Global Value Chains. Policy Research Working Paper 5396. The World Bank, Washington, D.C. [accessed September 25, 2016]

⁴⁴ Second-sourcing (dual or multi-sourcing) by maintaining or contracting multiple suppliers for the same or similar components is considered an important risk mitigation strategy in the procurement of technology. For more, see: European Commission, 2010. Risk Management in the procurement of innovation. Concepts and empirical evidence in the European Union: Expert Group Report. European Commission. Brussels. In addition, Electronics Sourcing experts find “Second Sourcing is essential”, see Smart, TGE (2015) article of same name in Electronics Sourcing Online <http://www.electronics-sourcing.com/2015/09/08/second-sourcing-is-essential/> [accessed December 13, 2016].

⁴⁵ Drahokoupil, J., Andrijasevic, R. and Sacchetto (2016). Flexible workforces and low profit margins: electronics assembly between Europe and China. ETUI, Brussels.

⁴⁶ Harris, A. (2014). Dragging out the best deal: How billion dollar margins are played out on the backs of electronics workers. GoodElectronics, The Netherlands.

⁴⁷ Burruss, J. and Kuettner, D. (2003) in ILO 2014.

⁴⁸ Yeung, H.W. (2014) in ILO 2014.

⁴⁹ Kaipia, Korhonen and Hartiala (2006) in ILO 2014.

⁵⁰ Jack, E.P. and Raturi, A. (2002) in ILO 2014.

⁵¹ Simpson, C. (2013). An iPhone Tester Caught in Apple’s Supply Chain, 7 November. Bloomberg Businessweek.

⁵² Apple will have shipped 1 billion i-Phones cumulatively by the end of 2016. <http://aaplinvestors.net/stats/iphone/>

Long lead times, seasonal demand, high product variety, short product life cycles, and market sensitivity to a diverse range of global economic factors are found to contribute to market forecasting errors⁵³. The pressure on workers under these circumstances has been increasingly documented, as in this report:

Around 150 Chinese workers at Foxconn, the world's largest electronics manufacturer, threatened to commit suicide by leaping from their factory roof in protest at their working conditions. The latest protest began ...after managers decided to move around 600 workers to a new production line, making computer cases for Acer, a Taiwanese computer company. *"We were put to work without any training, and paid piecemeal,"* said one of the protesting workers, who asked not to be named. *"The assembly line ran very fast and after just one morning we all had blisters and the skin on our hand was black. The factory was also really choked with dust and no one could bear it,"* he said.⁵⁴

During peak season, overtime becomes a requirement for fulfilling the last-minute orders of lead firms. This impacts the working conditions in the supply chain, and translates into a demand for a highly flexible workforce, with an extensive use of temporary workers⁵⁵. A 2014 study of 39 electronics brand companies surveyed found only 12 monitored the use of temporary workers by their suppliers⁵⁶.

Procurement Typology and Impacts on Workers

As outlined in **Figure 1** below, there are a number of drivers that influence procurement practices with implications for workers. These include a range of pressures that bear down from the competitive environment, institutional and private investors, and public and private consumers, onto buyers, who respond through applying downward pressures on external suppliers and ultimately the issues cascade to the workers and cascade through sub-suppliers on the same basis:

- **Competition:** Lead companies (buyers) operate in a global competitive environment and must bring out innovate, price competitive products that consumers want to buy. In addition to assessing what the market wants, buyers need to access many of the same resources as their competition and in most cases aim to bring the product to market faster.
- **Shareholders** (including institutional investors, pension plans, and individual consumers): Publicly listed companies are rewarded on the stock market when they show growth and profitability on a quarterly basis. Among others, technology stocks are held by many of the largest public and private pension schemes. The pressure on firm management to maximize the product margin is extreme and continuous, and for lead firms to achieve higher profits, they negotiate the lowest possible prices from suppliers. (See Box 1).
- **Consumers:** Consumers are increasingly technology savvy and more readily discriminate on product features over brand name, putting more pressure on innovation, time to market and pricing. Increasing competition from new entrants and in some cases, products about which less is known about the manufacturing environment, are

⁵³ Sodhi and Lee (2007), and QFinance (2014), in ILO 2014.

⁵⁴ Moore, M. (2012), 'Mass suicide' protest at Apple manufacturer Foxconn factory. The Daily Telegraph, 11 January 2012 [accessed 18 October 2016]

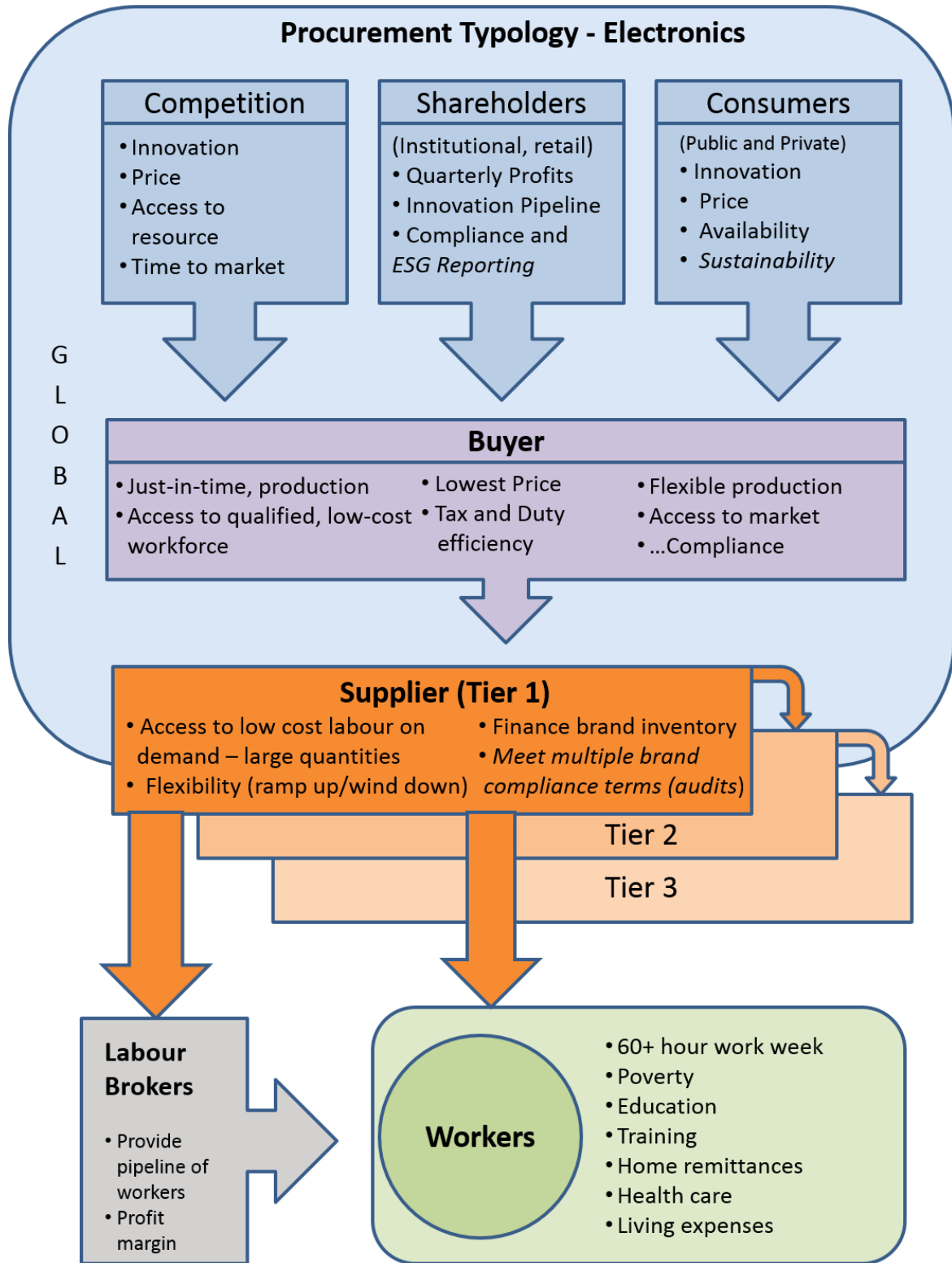
⁵⁵ Holdcroft, Jenny. 2015. "Transforming supply chain industrial relations" in *International Journal of Labour Research*, Vol.7, Issue 1-2, pp. 95 – 107

⁵⁶ Nimbalkar et al.: Electronics industry trends: The truth behind the barcode, Not for Sale and Baptist World Aid Australia, May 2014, in ILO 2014.

competitive with large brands. Finally, public procurement in the electronics industry plays a significant role, as governments are among the world's largest buyers of ICT equipment.

- **Buyers:** As holding any unsold inventory and labour is a cost, the buyer has adopted just in time production methods and outsourced production to a less expensive location. Buyers will also look for production locations with greatest tax and duty efficiencies, including export processing zones. Because of the high production volumes, access to a large, flexible labour pool is critical.
- **Suppliers:** Initially suppliers benefit from transfer of technology, as they develop their operations to meet the buyers' needs. In highly populated countries, there is initially no shortage of labour. As production ramps up, there is need for instant availability of labour to fill gaps and to meet sudden surges in demand or to address a production change. While perhaps under normal circumstances, a worker may receive training, urgent situations override training in an effort for expeditious resolution. To meet the gaps and surges in demand for labour, specialized labour brokers step in to provide a pipeline of available workers.
- **Labour Broker:** Because of the cost of their services, any wage advantages that direct employees would have are eliminated, and these workers are brought in at a minimum wage. In worst cases, the wages are below minimum, as certain costs such as dormitory housing and costs of recruitment are deducted at source (a practice increasingly legally banned). As the overall local pool is reduced and it becomes more difficult to find workers at minimum wage, the brokers seek out new workers: youth, students, or migrants.
- **Workers:** Long-term prospects for the workers at the production level are reported as limited, as the industry reports high turnover levels. A 60 hour or more work week carrying out repetitive actions cannot be sustained over long periods. While some may stay and advance to higher positions, others may be compelled to stay, due to high rates of poverty at home and the need to provide remittances, or in worst case, to pay back debts associated with forced labour. A lack of training results in exposure to injury, physical and psychological illnesses and potentially to life-threatening diseases due to prolonged exposure to hazardous chemicals.

Figure 1. Procurement Typology - Electronics



Source: Author

The following sections describe in greater detail the implications of the downward pressure on workers, including (1) wages and working hours; (2) non-standard forms of employment, use of agencies, and trafficking; (3) occupational safety and health; and (4) rights at work, as well as how, these impact may effect women and men differently.

Wages and Working Hours

Excessive working hours with extensive overtime have been identified as key concerns in the industry, with working hours often far exceeding the ILO limit of 48 hours per week established in the Hours of Work (Industry) Convention, 1919 (No. 1), and the Hours of Work (Commerce and Offices) Convention, 1930 (No. 30). A range of different factors are seen to drive these excessively long hours. As previously highlighted, there is an increasing body of evidence that shorter lead times owing to the use of just-in-time or lean production systems, seasonal demand and volatile sourcing contracts are among the key factors driving excessive and often inadequately compensated overtime in global supply chains.

Such factors were exposed to the world when 14 young workers at Foxconn committed suicide, with four more trying, in 2010. According to reports from the factory, Foxconn had lost tens of thousands of workers during the financial crisis and had been stretched to the breaking point by the volume of new orders, as products such as the iPad enjoyed such success, leading to average overtime of 120 hours per month:

“The machines keep moving and the staff have to keep up. The workers need practice to become really efficient, and with a heavy churn of new staff, they cannot adapt. In the past three months, the factory has been losing 50,000 staff a month because workers are burning out,” he said. “Even the engineers and the training staff have had to man the production line,” he added: “Because Foxconn has had a large number of big orders, the workers are reduced to repeating exactly the same hand movement for months on end.”⁵⁷

Following these tragic events in 2010, Apple called in the Fair Labour Association (FLA), an independent monitoring organization to help make improvements – however, implementing working time controls over the long-haul proves difficult. Three years later, while FLA reported overall improvements, inspections in some plants still showed up to 68 per cent of production workers exceeded the monthly cap of 36 overtime hours⁵⁸. Two years on, in 2015, China Labour Watch, a civil society organization (CSO) investigation sampled 1261 pay slips at Pegatron Corporation’s Shanghai plant (one of the makers of the iPhone), and found that 71 per cent of pay slips sampled exceeded Apple’s self-imposed 60-hour work week, and all but 1 one percent violated China’s overtime regulations (set at 49 overtime hours per month)⁵⁹.

To address this persistent overtime compliance issue, Apple’s most recent approach at Pegatron is reported to be an advanced scanning system:

⁵⁷ Moore, M. (2010), Inside Foxconn's suicide factory. The Daily Telegraph, May 27, 2010 [accessed October 18, 2016]

⁵⁸ Bloomberg, 2013. <https://www.bloomberg.com/news/articles/2013-12-12/apple-supplier-foxconn-fails-china-labor-law-amid-99-compliance>

⁵⁹ Slater, C. 2016. Apple Supplier in China’s Poor Labor Practices clash with US tech giant’s promises to lift supply chain standards: Report. International Business Times. February 23, 2016. <http://www.ibtimes.com/apple-supplier-chinas-poor-labor-practices-clash-us-tech-giants-promises-lift-supply-2320357>

The men and women stare into face scanners and swipe badges at security turnstiles to clock in. The strict ID checks are there to make sure they don't work excessive overtime. The process takes less than two seconds⁶⁰.

According to the company, the new tracking system has helped to bring working hours into the 60 hour work week limit set by the company, citing 97 per cent compliance in 2015⁶¹.

Wages and Working Hours: The Squeeze on Suppliers and Workers

Wages and working time are also affected by the terms of purchasing between the buyer and its suppliers, which often reflected the asymmetrical bargaining position of the two partners and the power of the buyers to switch suppliers. Negotiated prices between the buyer and suppliers may not always cover costs. In these conditions, wages become the adjustment variable at the end of the supply chain, with competitive pressures leading to lower wages and longer working hours.

According to a study by Electronics Watch (2014), Electronics Manufacturing Services (EMS) companies such as Foxconn (Taiwan), Flextronics (Singapore), Jabil Circuit (US), Celestica (Canada) and Sanmina-SCI (USA) – which accounted for 70 per cent of the market share over the period from 2001 and 2009 – only had profit margins between 2 and 3 per cent from 2004 to 2009⁶². Some researchers suggest that ensuring low profit margins for contract manufacturers is an instrument of subordination to prevent their investments and upward mobility; and this creates further downward pressure on lower tier suppliers⁶³

Increasingly as researchers gain access to the complex global network of contract manufacturing, information is coming to light about formal and informal institutional arrangements and financial market pressures. Industry relations and management planning periods are found to facilitate specific corporate strategies that result in poor work conditions⁶⁴.

⁶⁰ Oster, S. (2016). Inside of one of the World's most Secretive iPhone Factories: An exclusive look into a plant where Apple addressed claims of excessive overtime. Bloomberg, April 24, 2016

⁶¹ Ibid.

⁶² Sodhi and Tang 2012, Managing Supply Chain Risk: 4; in Evermann, A. (2014). The ICT sector in the spotlight Leverage of public procurement decisions on working conditions in the supply chain. Electronics Watch Consortium, Berlin, Germany.

⁶³ Froud et al 2012: 15-16; 17-18, 20; in Evermann (2014)

⁶⁴ Hall and Soskice, 2001, in Drahokoupil et al, 2015

Box 1: A closer look at the squeeze on workers

Harris (2014), an industry insider, describes the financial parameters in the relationship between lead firms and contract manufacturers and illustrates how these distorted financial practices are at the crux of penalizing production workers.¹

At the surface level, the gross margin disparity between brands and EMS partners is easy to capture, as illustrated in **Table 2**:

Table 2. Gross Margins of Leading Companies

EMS / BRAND	Country (Management Center)	Employees (Source Bloomberg 2013)	Gross Margin (1) (source Bloomberg 2013)
Foxconn	Taiwan (China)	1,290,000 (2)	6.4 per cent (3)
Flextronics	USA (4)	149,000	5.8 per cent (5)
Jabil	USA	108,000	7.4 per cent
Celestica	Canada	29,000 (6)	6.7 per cent
Apple	USA	80,300	37.6 per cent (7)
Dell	USA	108,000	21.4 per cent
HP	USA	317,500	23.1 per cent

(1) *Gross margin = (revenue - costs of goods sold / revenue). The gross margin accounts for the company as a whole. For some companies this includes component production, printer ink, software and services which deliver higher composite margins.*

(2) *Employee numbers of Foxconn relate to 2012.*

(3) *Based on the financial data in the annual report 2013 of Hon Hai Precision Industry Co., Ltd. Bloomberg makes a distinction between Foxconn/Hon Hai Precision Industry Co as parent company (gross margin is 2.3%) and as a consolidated company (gross margin is 6.4%).*

(4) *Flextronics is officially registered in Singapore, but for all intents and purposes, it is a US-managed company.*

(5) *Bloomberg does not include the restructuring charges in the costs; some other financial analysts do which results in a gross margin of 4.9%.*

(6) *Per 31 December 2012, source Form 20-F*

(7) *Gross margin was 43.9% in 2012.*

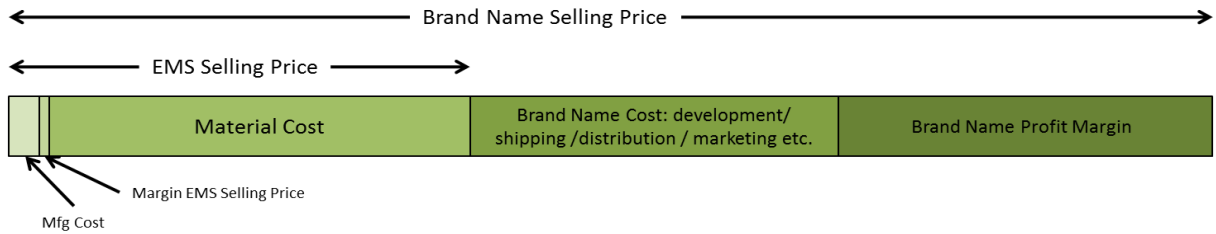
Source: Adopted from Harris, 2014.

Digging deeper, an analysis on the production of an Apple iPhone shows how labour ends up as approximately 0.5 per cent of the product's selling price. This is possible as consumer pricing is based on a series of mark-ups that are compounded on each step of the chain. Contract manufacturers are squeezed, as their total costs (including labour) represent only about five per cent of the factory selling price, the remaining 95 per cent are cost of materials (whose prices are largely dictated by the brand). In other words, on a \$100 item sold to the brand company, \$95 is spent by the manufacturer on the materials, leaving a total of \$5 to cover labour (ca. \$2), infrastructure, machines, and profit (ca. \$3). Although a series of mark-ups along the chain (brand, distributor, and retailer) transform the product to a \$500 item on the shelf, the only way for the contract manufacturer to earn more is to hide cost in the material costs, often by putting downward pressure on their own suppliers. However, these component prices are often known to the brands or dictated by the brands (and platform leaders) and second source competition keeps the squeeze on the contract manufacturers. Demand fluctuations and overtime charges can displace the slim margins at the production level¹. By examining a very basic, but realistic model of how final prices are calculated helps illustrate why simply applying pressure onto suppliers to raise wages out of a precariously low margin is insufficient to address wage concerns.

¹ Harris, A. 2014. *Dragging out the best deal: How billion dollar margins are played out on the backs of electronics workers.* Goodelectronics, The Netherlands.

Figure 2 illustrates the EMS selling price, of which 95 per cent is material cost, leaves little for operating expenses:

Figure 2. Brand Name Selling Price



N.B. The Brand Name selling price is not the same as the retail price which can be significantly more (retailer margin, VAT etc.)

Figure 3 illustrates the share of the EMS selling price available for operating costs and profit. Of this labour accounts for 40 per cent.

Figure 3. Supplier Margin

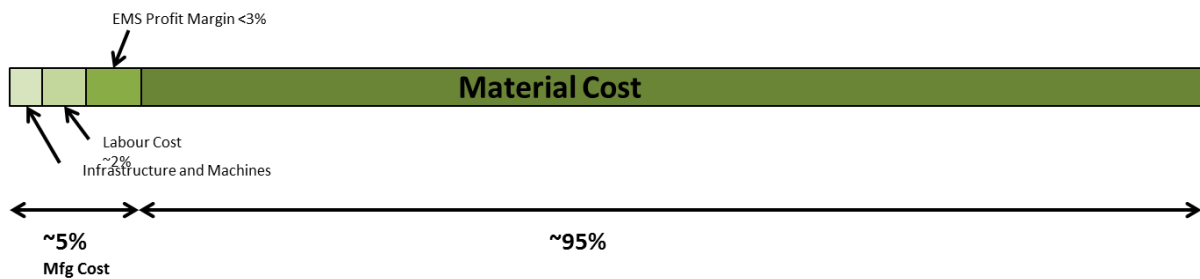


Figure 2 and 3 from: Harris, A. 2014. Dragging out the best deal: How billion dollar margins are played out on the backs of electronics workers. GoodElectronics. The Netherlands.

While similar supply-chain mark-up structures are found in other industries, the specific power relations between companies, and labour conditions in the electronics industry are seen to be “driven by excessive profit expectations, offshoring dynamics and increasingly fast innovation cycles” and are seen to be spreading the idea of a “highly flexible industry organization that relies on low-wage work performed under oppressive labour conditions” to a growing number of related industries.⁶⁵

The recent increase in investment by the electronics industry in Mexico’s assemble-for-export schemes provides an illustration of the wage conditions faced by workers, as reported by CEREAL, an NGO⁶⁶: Fueled by a new Labour Law, a decreased tax burden, plus a devaluation of the peso against the US dollar, significant new investments and projects were added to the electronics sector, including new investments by companies such as Sanmina, Flextronics, Jabil, Foxconn, Samsung, and LG. By the end of 2015, the electronic industry, established in Mexican

⁶⁵ Angel 1994; Pawlicki 2014 in Drahokoupil et al, 2015.

⁶⁶ CEREAL, 2016. Beyond voluntary codes and audits: A challenge for the electronic Industry; Seventh report on working conditions in the Mexican Electronics Industry. Center for Reflection and Action on Labour Issues (CEREAL). Good electronics. July 2016.

territory, included more than 800 companies that employed about 600,000 workers. The majority of these are foreign companies – 80 per cent of them are US-based companies, with more than 90 per cent of all production exported to the United States. More than 200,000 are estimated to be employed in the electronics industry in Ciudad Juarez on the U.S. border and are reported to earn amongst the lowest wages in Mexico. When compared with manufacturing wages in China, Mexico is now estimated to be 40 per cent cheaper.⁶⁷ Fifty-eight per cent of workers surveyed, many of them internal migrants, reported earning \$114 pesos (USD\$ 6) per day, far insufficient to cover the basic food basket, and while already low, reflecting a nominal decline of 5 per cent. Low wages were found to be forcing workers to supplement with overtime and additional outside work⁶⁸.

Non-standard forms of employment, agencies, and trafficking

Suppliers may respond to external pressures and unpredictable production schedules through the use of non-standard forms of employment to ensure that demand is met. Demand is often met and flexibility increased through various means, including greater use of part-time, temporary, casual and zero-hour contracts.⁶⁹ On the positive side, labour-force flexibility in global supply chains can be increased through the use of third-party labour intermediaries or labour contractors and brokers, whether as formally registered companies that provide temporary staffing services or more informal or quasi-registered labour contractors. While widespread detailed statistics on these services are not available, they are reported to play an important role in providing a pipeline of workers across the electronics industry, particularly where high numbers of workers are required⁷⁰.

In Ciudad Juarez, where almost 60 per cent of workers are on temporary or fixed term contracts, the vast majority are reported to be supplied through labour brokers⁷¹. In the electronics industry in Thailand, over half of the approximately 500,000 workers (90 per cent of these women between 18 and 31 years old, and many of them migrants from neighbouring countries) are reported to be agency workers⁷².

Unfortunately, the use of brokers further reduces wages for workers. Non-standard workers have been found to earn less for comparable work with wage penalties for non-regular workers

⁶⁷ Ortiz Uribe, M. (2016), "Workers in Mexico's border factories say they can barely survive, so they're turning to unions." *PRI's The World*, February 29, 2016.

⁶⁸ CEREAL, 2016.

⁶⁹ Smyth, R. et al (2013): "Working hours in supply chain Chinese and Thai factories: Evidence from the Fair Labor Association's 'Soccer Project'", in *British Journal of Industrial Relations* (2013, Vol. 51:2, June 2013), pp. 382–408 in ILO, 2015b.

⁷⁰ See ILO (2014) *Ups and downs in the electronics industry: Fluctuating production and the use of temporary and other forms of employment*, Issues paper for discussion at the Global Dialogue Forum on the Adaptability of Companies to Deal with Fluctuating Demands and the Incidence of Temporary and Other Forms of Employment in Electronics, Geneva, 9–11 December 2014, International Labour Office, Sectoral Policies Department, Geneva, ILO, 2014.

⁷¹ CEREAL, 2016.

⁷² GoodElectronics, 2012: Labour issues in the Thai electronics industry, *On the Spot* - April 2012

between 30 per cent and 60 per cent of the wages of regular workers in developing countries, and between 1 and 34 per cent in developed countries⁷³.

As a result of increased cross-border flows of workers, migrants attained through brokers are also at risk of being trafficked or forced labour (Kluwer, 2015). Due to enforcement gaps and fragmentation of norms, policy initiatives and responsibilities of the actors, there are challenges in protecting migrant workers in global supply chains, putting companies at risk of being associated with forced labour through business links to contractors and suppliers who may conceal unlawful practices.⁷⁴

While employers and migrant workers alike can benefit from temporary and flexible work arrangements, substantial abuses have been uncovered in the electronics industry. Labour abuses, including forced labour, may occur at the lower subcontracted tiers of global supply chains via unethical labour contractors with links to human traffickers. In recent years, this risk has been highlighted by research exposing the extent of the issue in the electronics industry, particularly in Malaysia, which has been dependent on a high number of foreign migrant workers to meet production demands in the electronics industry. Verité's exposure of trafficking and forced labour in Malaysia, a major production site for multinational companies from the US, Europe, Japan, and Taiwan, played a significant role in attracting public interest to the issue and triggering response from policy-makers.

Verité (2014) reported that 28 per cent of all workers in the Malaysia study sample were found to be in situations of forced labour, and that among foreign workers the rate was even higher, at 32 per cent or nearly one in every three foreign workers. This finding was based on conservative measures and was considered to be a minimum estimate of the problem. Forced labour was found in the study sample in significant numbers across all major producing regions, electronics products, foreign worker nationalities, and among both female and male workers, suggesting that forced labour is present in the Malaysian electronics industry and can indeed be characterized as widespread:

Debt bondage and the illegal confiscation of passports and documents were the main drivers of this "systemic" forced labour, which traps workers in low-paid jobs and prevents them from returning home. Once in the workplace, migrant workers face further exploitation and abuse due to their inability to leave. Verité's investigations found that workers were forced to live in cramped and dangerous accommodation; that female workers experienced sexual abuse by their supervisors, and migrants were forced to work excessive overtime under the threat of losing their jobs, which would leave them saddled with large debts they couldn't pay off⁷⁵.

Occupational Safety and Health

Research on the effect of temporary and other forms of employment on working conditions has showed evidence of potential negative effects of temporary and other forms of employment on workers' health.⁷⁶ In general, these workers are more likely to be inadequately covered or not covered at all by contributory social security mechanisms (ILO, 2014) and are, as a result, more exposed to social risks than other workers, including with respect to income security and effective access to health care. Accident rate among temporary and temporary agency workers of up to 2.5

⁷³ Lee and Yoo, 2008, in ILO 2015: 26.

⁷⁴ R. Blanpain (ed.): Protecting labour rights in a multi-polar supply chain and mobile global economy, Bulletin for Comparative Labour Relations No. 89 (Wolters Kluwer, 2015), p. 189.

⁷⁵ Reporting on Verite findings: Kelly, A. (2014) *Modern-day slavery rife in Malaysia's electronics industry*, The Guardian.

⁷⁶ Quinlan, M. 2015. "The effects of non-standard forms of employment on worker health and safety", in Conditions of Work and Employment Series No. 67.

times that of regular workers, and non-standard forms of employment may be associated with psychosocial factors that lead to adverse health outcomes.⁷⁷

The electronics industry is associated with multiple health and safety risks including repetitive motion injuries, eyesight problems, use of dangerous machinery and exposure to hazardous chemicals⁷⁸. In addition to the psychosocial and emotional pressure that led to previously referenced suicides and protests, chemical exposure is leading to high incidences of and death from cancer and other illnesses⁷⁹.

In recent years, reports of electronic industry workers contracting occupational diseases have gained international attention, most notably as South Korean victims and their support networks have taken action to get recognition and compensation. During specific phases of the production process, workers are exposed to harsh fumes and contact with dangerous chemicals, which can have harmful long-term effects on their health, particularly so in the semi-conductor industry where an extensive assortment of chemicals is used; some of these are dangerous to human health and reproduction. SHARPS, a civil society organization in South Korea, documented 289 workers from the IT manufacturing industry to have contracted various forms of leukaemia, multiple sclerosis and aplastic anaemia⁸⁰.

A high concentration of reported chemical poisoning in China's Pearl River Delta led to a recent study by civil society researchers⁸¹ on the experiences of former workers in the region who fell ill and whose health and reproductive health was negatively affected by exposure to chemicals (in particular dangerous solvents such as benzene and N-hexane) in the supply chains of some 36 large electronics companies. Although considered a number one human carcinogen in the US and Europe, with strict exposure limits – the limits were found to be much higher in the plants where those surveyed worked. The study emphasized that China, and most electronics companies (regardless of home base) had yet formulated a “no-benzene and n-hexane” policy – a governance gap that was determined to be affecting the health of tens of thousands of workers. While occupational health is enshrined in Chinese Labour Law, the study revealed that of 59 workers surveyed, only 8.5 per cent had heard of an Occupational Safety and Health policy in their company, and only 3.51 per cent had received training before beginning or while working.⁸²

Rights at Work

Freedom of association and the right to collective bargaining are core labour rights as they make it possible to promote and develop fair working conditions, and facilitate dialogue between employers and workers. However, in the global electronics industry, the degree of union representation is generally very low and corporate resistance to unionisation is considered widespread.⁸³ It is estimated that worldwide, only a handful of contract manufacturing plants that

⁷⁷ See (1) Dolado et al., 2012, and Beard and Edwards, 1995; De Witte, 1999; Bohle et al., 2001, p. 39. [ILO, NESF, 2015. P. 28-29]

⁷⁸ Verite, 2015.

⁷⁹ Matsuzaki, 2015; Smith, Sonnenfeld and Pellow, 2006; in Raj-Reichert, 2016.

⁸⁰ Electronics Watch, 2014. Winds of Change: Public procurement's potential for improving labour conditions in the global electronics industry.

⁸¹ LAC, LESN, SOMO, 2016.

⁸² Ibid.

⁸³ Electronics Watch, 2014, op. cit.

manufacture products on behalf of brands have any union presence. When electronics manufacturing went through its greatest expansion in the 1990s, unions were not able to organise the hundreds of thousands of new electronics workers; this means that today they are not in a position on which to build further organising efforts⁸⁴.

Another factor resulting in low unionization rates is that in both developed and developing countries, women, low-skilled workers, migrants and young people are more likely to be found in NSFE. The greater difficulty that workers in NSFE have in joining trade unions means that affiliation and collective bargaining rates for these workers are lower. As a result, there is less opportunity for them to use collective bargaining as a means to negotiate better working and employment conditions⁸⁵. A key obstacle to electronic workers exercising these rights includes the widespread use of precarious temporary and agency contracts. The electronics industry is one of the industries with the most precarious workforce⁸⁶.

According to the ILO, workers in export processing zones face particular challenges in terms of freedom of association and collective bargaining. As electronics manufacturing is increasingly located in export processing zones and the work most often being performed by women, migrant and domestic workers, the challenges to unionisation in the global electronics industry are numerous. Migrants and domestic workers may be afraid of joining unions and may not be aware of their rights. Traditionally and still in some segments of electronics manufacturing, the majority of work has been performed by men. Organising women therefore has been found to pose a challenge to metal unions which used to cater mainly to a male membership⁸⁷.

A significant concern is that companies actively move operations from areas with stronger rights at work to jurisdictions with fewer rights or reduced transparency. Trade Unionists have actively campaigned for Rights at Work, most recently launching a renewed campaign to encourage Samsung to be more transparent in its practices (ITUC, 2016)⁸⁸:

Samsung relies on a hidden workforce of contracted and subcontracted workers in countries around the world. Starting in 2013, Samsung Electronics began to use a similarly aggressive recruitment drive in Vietnam, where it hired 20,000 workers right out of high school that year alone, for ever-expanding smartphone operations. As of 2015, the 50,000-strong Vietnamese operations make up 40 per cent of the company's annual smartphone [production]. In 2011, 84 per cent of Samsung's electronics revenue was generated outside Korea. There is little disclosure regarding their working conditions while the workers frequently work the night shift assembling smartphones at one-tenth the cost that would be incurred in South Korea.

A recent survey⁸⁹ of 56 companies in the electronics industry found some positive indication that the efforts of NGOs and civil society to promote Rights at Work are gaining traction: by 2016, the percentage of companies surveyed that include rights to collective bargaining in their code of conduct had risen to 55 per cent, up from 31 per cent in 2014. However, the study also found that only 7 per cent of companies could demonstrate facilities with collective bargaining agreements in place and that "the industry will need to do more work to support the right and

⁸⁴ Ibid.

⁸⁵ ILO, 2015: 30

⁸⁶ Electronics Watch, 2014.

⁸⁷ Ibid.

⁸⁸ The International Trade Union Confederation (ITUC) represents 168 million workers in 155 countries.

⁸⁹ Nimbalkar, G. et al. The Truth Behind the Barcode: Electronics Industry Trends, 9th February 2016. Baptist World Aid Australia.

capacity of workers to organize in order to ensure that their policy statements become more than just rhetoric”⁹⁰.

4. Governance in the Electronics Supply Chain

The electronics industry has been one of the pioneers in contemporary globalization accounting for the largest amount of cross-border trade by value, yet the industry escaped the scrutiny of “sweatshop” campaigners by at least a decade, being seen to have successfully portrayed itself as a “clean industry”⁹¹. Guidance for good governance in global supply chains has been available since the late 1970s. However, while Environmental and Social Accounting standards arose in the 1980s, overall global supply chain governance remained largely relegated to individual company codes of conduct.

The full impact of the industry’s global production processes finally blew open in the early 2000s exposing a wide range of abuses of labour rights and conditions of work (union busting, exploitive wages, excessive mandatory overtime, unsafe or unhealthy work place exposure, abusive management, underage workers, forced workers, discrimination). A 2004 report by the Catholic Agency for Overseas Development (CAFOD) about the working conditions in the electronic industry is widely referenced as the source of concern for the electronics industry itself to initiate action, leading IBM, HP, DELL, Sanmina, Flextronics, Jabil, Celestica, and Solectron to found the Electronics Industry Citizenship Coalition (EICC), originally under the name “Electronic Industry Code of Conduct”⁹². In addition, the environmental impacts of water-intensive production and toxic electronic waste came to light, as well, as the plight of workers and human rights abuses in the mining of rare minerals (3 TG) in conflict zones⁹³.

Leading Voluntary Governance Instruments

Governance of supply chains has become increasingly complex- not only based on the different forms of contractual relationships across globalized production systems, but also in terms of the number of corporate social responsibility standards to which an enterprise may elect to adhere to or be expected to comply with. The various standards and codes also must co-exist with national laws to which companies and their products must adhere. The ISO 26000 standard⁹⁴ “Guidance on Social Responsibility” provides a useful way to classify CSR instruments and tools based on the type of organization that created them as follows: 1) intergovernmental organization (IO) standards, derived from universal principles as recognized in international declarations and agreements; 2) multi-stakeholder initiative (MSI) standards; 3) industry association codes; and 4) individual company codes⁹⁵.

⁹⁰ Ibid.

⁹¹ Brown, Garrett (2009). "Global electronics industry: poster child of 21st century sweatshops and despoiler of the environment? The global electronics industry is squarely in the sights of environmental, labor rights and occupational health and safety organizations around the world." *EHS Today* Sept. 2009: 45+. [Accessed: 21 September 2016.]

⁹² Raj-Reichert, 2016.

⁹³ Brown, G., 2009. Op. cit.

⁹⁴ The International Organization for Standardization (ISO) is a worldwide federation of national standards bodies from some 100 countries.

⁹⁵ This section based on the guidance of the Inter-agency Working Group, 2011. “Promoting standards for responsible investment in value chains” Report to the High-Level Development Working Group, June 2011

Inter-governmental Organization Standards

The ILO played an early role in identifying the myriad of stakeholders and their responsibility within the global supply chain. In the 1960s and 1970s, the activities of multinational enterprises and their social impacts provoked intense discussions that resulted in efforts, for the ILO and concurrently the OECD, to draw up international instruments to regulate cross-border activities, and the behaviour of MNEs in relationship to their host country. The two instruments: The ILO Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy (“ILO MNE Declaration”) and the OECD Guidelines for Multinational Enterprises (“OECD Guidelines”) arrived at a time as neo-liberal policies were gaining strength in major markets and in guiding the global trade agenda.

The ILO MNE Declaration provides detailed guidance on how companies can maximize their positive contributions to economic and social development and minimize the negative impacts of their operations. It is addressed principally to foreign investors, but also speaks to domestic companies and covers employment promotion, skills development, conditions of work and life, and industrial relations. It highlights the importance of obeying the national law, and ensuring that company operations are in harmony with national development priorities. It explains what governments can do to create an enabling environment for companies to operate more responsibly and sustainably. While the ILO MNE Declaration itself has not been adopted by the electronics industry codes, the underlying ILO’s Fundamental Principles and Rights at Work (Core Labour Conventions) have been widely referenced, and the MNE Declaration underpins the Labour Chapter in the OECD Guidelines, which is widely referenced by the industry.

Last updated in 2011, the OECD Guidelines comprise a set of voluntary recommendations in all the major areas of corporate citizenship, including employment and industrial relations, human rights, environment, information disclosure, combating bribery, consumer interests, science and technology, competition, and taxation. Implementation of the Guidelines involves a combination of binding and voluntary elements. As a follow-up mechanism, the instrument provides for participating member countries to establish National Contact Points (NCPs). The NCPs are government offices that every adherent must establish to handle the instrument’s mediation and conciliation procedures (“specific instances”). By 2015, the OECD Guidelines were subscribed to by 46 countries, with 44 NCPs in place to support the Guidelines at a national level.

Another level of instrument in this category developed and administered by governments with a view to addressing issues of responsible business and widely referenced in the electronics industry codes of conduct is the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas⁹⁶. Due diligence is a process that companies are expected to undertake to ensure that the extraction and trade of mineral ores containing tin, tantalum, tungsten and gold support peace and development, not conflict. Under the OECD Due Diligence Guidance, companies must establish a “chain of custody”, a document trail, recording the sequence of companies and individuals which have custody of minerals as they move through a supply chain.

The most recent guidance instrument to emerge at this level is the UN Business and Human Rights Framework (2008) and Guiding Principles (2011)⁹⁷. The United Nations Guiding

⁹⁶ <http://www.oecd.org/corporate/mne/mining.htm>

⁹⁷ For more information, see: http://www.ohchr.org/Documents/Publications/GuidingPrinciplesBusinessHR_EN.pdf and <https://business-humanrights.org/en/un-guiding-principles>

Principles (UNGP) has emerged as the principle reference document and are now widely referenced in other instruments. The work is the outcome of a three-phase mandate by a special representative of the Director General, to identify an approach to address the growing impact of transnational economic activity on human rights. What is known as the “Protect, respect, and remedy” framework gives guidance to States (their obligation to protect citizens from Human Rights abuses) and Business (their obligation to respect the law, and not infringe on the human rights of others, and to carry out due-diligence that this also does not occur in their supply chains). Both States and Business must provide a mechanism to remedy (address the grievances of any one who should experience abuse). The UN Guiding Principles have had a significant impact on supply chain policies in subsequent years, particularly with respect to the expectation of due diligence. Both State actors and Enterprises have adopted these principles by introducing new legislation and including the principles in voluntary codes and initiatives.

Classified as a UN initiative, the Global Compact was developed in 2000 to support the MDGs (now the SDGs) by the UN Secretary-General, with support from different UN agencies, governments, and representatives of business, labour and other civil society bodies. The UN Global Compact is based on ten principles in the areas of human rights, labour standards, the environment, and anti-corruption which are derived from the Universal Declaration of Human Rights, the ILO's Core Labour Standards, the United Nations Convention against Corruption and - in the field of environmental protection - the Rio Declaration. As intergovernmental standards were written with states in mind, the Global Compact broadly consolidated the leading standards into a format for application to businesses. With more than 8000 members, the Global Compact's key strength is that it offers a policy framework for organizing and developing corporate sustainability strategies and an active platform to encourage initiatives and partnerships among civil society, governments and other stakeholders. As a follow-up mechanism, member companies are also required to file a regular “Communication of Progress” on how they are meeting commitments to the principles. The UN Global Compact also played a role in developing the UN Principles for Responsible Investment. Financial industry analysts often consider Global Compact participation by companies in their Environmental and Social Governance (ESG) analysis' of companies.

Private standards

Multi-stakeholder initiative standards

Multi-stakeholder groups are generally a mix of members from civil society, business, labour, consumers and other stakeholders and there are dozens of major international multi-stakeholder initiatives (MSIs) providing standards for the social and environmental practices of multinational enterprises, often by sector. The standards often address non-product-related process and production methods, i.e. issues related to how a product is produced, such as the environmental or social aspects of certain production methods, including labour standards (e.g. whether a product is produced using forced labour). Although MSI standards are mostly developed by private civil society actors, they are often built on the normative frameworks of international and national soft law.

The International Organization for Standardization (ISO) is a non-governmental organization whose members are the national standard setting bodies in countries around the world. Its standards are widely recognized and endorsed by international bodies (e.g. the WTO) and national governments. In 2010, following an extensive multi-stakeholder consultation process with more than 400 stakeholders, the ISO launched the ISO 26000 Guidance on Social Responsibility, based on IO standards. Unlike other ISO standards it is not intended for certification. More commonly cited in electronics industry codes is ISO 14001 an environmental

standard for certification, along with OHSAS 18001 (developed by a network of Standards Organization coordinated under the British Standards Organization) – a framework for an occupational health and safety management system aligned to internationally recognized best practice.

Although most MSI standards cross-reference IO standards, in some cases, IO standards also refer to MSI standards. One prominent example is the OECD Guidelines which make reference to the Global Reporting Initiative (GRI) standard.

Industry association codes

An industry-specific code typically involves the adoption of a code jointly developed by the leading companies within an industry to address social and/or environmental aspects of supply chains and international operations. While there are hundreds of industry codes for diverse sectors, there are only two prominent initiatives for the electronics industry, the Global e-Sustainability Initiative, founded in Europe in 2001, and the Electronics Industry Citizenship Coalition, founded in 2004 and having more than 110 international member companies. Both will be addressed in the next section, however, only the latter has an active Code of Conduct (EICC Code of Conduct) and is the major reference document for the largest brands and contract manufacturers.

Individual company codes:

Even when participating in MSIs or Industry Initiatives, companies generally develop their own company codes to align with their values and operations. There are thousands of company codes, and they are especially common among large MNEs where more than 90 per cent have policies on social and environmental issues⁹⁸. Many of these codes have evolved over several decades, and have their origins in Performance Measurement Systems (PMS), in the context of measuring supply chain sustainability as part of an integrated corporate strategy. By the early 1980s, traditional measurement systems were expanded from solely focusing on financial indicators to include wider criteria (e.g. Balanced Scorecard, Six Sigma), eventually leading to Triple Bottom Line reporting, the first to incorporate environmental and social impacts⁹⁹. As information requirements have increased and given the complexity of finding comparable metrics for non-financial data, multi-stakeholder initiatives such as the Global Reporting Initiative play an increasing role in standardizing sustainability reporting, as do social auditing and assessment frameworks, such as SA 8000.

Electronic Industry Initiatives and Codes

Global e-Sustainability Initiative (GeSI)

Established in Europe in 2001, GeSI can be described as an Information and Communications Technology (ICT) industry association concerned with sustainability challenges for the industry that seeks to provide “impartial information, resources and best practices for achieving integrated social and environmental sustainability through ICT”¹⁰⁰. The

⁹⁸ UNCTAD (2010) Investment and Enterprise Responsibility Review. p.12, and UNCTAD (2008) Review of the implementation status of corporate governance disclosures: an examination of reporting practices among large enterprises in 10 emerging markets. p. 18.

⁹⁹ See ILO and University of Nottingham, 2012. Session 8 – Measuring and Communicating on Sustainable Supply Chain Performance, in *Introducing Sustainability into the Supply Chain*. ILO, Geneva.

¹⁰⁰ GeSI website: <http://gesi.org/>

organization aims to be “a globally recognized thought leader, partner of choice and proactive driver of the ICT sustainability agenda”. It currently has approximately 40 members and diverse partners, with the telecommunications industry highly represented. The group is involved in member initiatives to respond to issues such as climate change, energy efficiency, e-waste management and resource efficiency, responsible supply chain practices and human rights. With respect to social impact (human and labour rights) it partners with the Electronics Industry Citizenship Coalition with respect to an Industry Code of Conduct, and supply chain reporting. It initiated an electronic supply chain information-sharing platform, E-TASQ, jointly promoted to EICC members.

Electronics Industry Citizenship Coalition (EICC) and EICC Code of Conduct

Founded in 2004, the EICC is a non-profit coalition of electronics, retail, auto and toy companies “committed to supporting the rights and wellbeing of workers and communities worldwide affected by the global electronics supply chain”. To maintain membership, EICC members are required to publicly commit to a Code of Conduct and are encouraged to use a range of EICC training and assessment tools to “support continuous improvement in the social, environmental and ethical responsibility of their supply chains”¹⁰¹. Today the EICC has more than 100 member companies with combined annual revenue of over \$4.5 trillion, directly employing more than 6 million people. According to the EICC, an additional 3.5 million people in Tier 1 suppliers are reached by the Code.

The EICC Code of Conduct provides standards guidance on social, environmental and ethical issues in the electronics industry supply chain, broadly referencing international norms and standards including the Universal Declaration of Human Rights, ILO International Labour Standards, OECD Guidelines for Multinational Enterprises, ISO and SA standards, and others. The EICC Code of Conduct’s current version 5.1 went into effect on Jan. 1, 2016, updating the “Freely chosen employment” section to reflect new legislation in the US.

In recent years the code has been updated to take into account new legislation, such as Section 1502 of the US law known as the "Dodd-Frank Act" and US Federal Acquisition Regulation (US FAR). Dodd-Frank includes a requirement that companies using gold, tin, tungsten and tantalum make efforts to determine if those materials came from the Democratic Republic of Congo (DRC) or an adjoining country and, if so, to carry out a "due diligence" review of their supply chain to determine whether their mineral purchases are funding armed groups in eastern DRC.

The most recent update incorporates US FAR, legislation that promulgated detailed rules to put into action zero-tolerance with respect to severe forms of trafficking and forced labour. The new provisions require that companies ensure their entire supply chain is free from human trafficking and forced labour. Among the new code provisions relevant to the many workers in the Asian electronics industry, is the requirement that an employer, with only very limited exceptions, pay all fees associated with a workers engagement – particularly via agents.

Whereas members are required to adhere to a core set of requirements and are required to report on related progress to retain membership, the depth to which companies must implement the code remains quite open. Universal standards and various initiatives are listed as reference documents, but members are not obliged to incorporate the articles of these instruments into their codes.

Monitoring and Assessment

EICC members are required to commit publicly to and adopt the Code of Conduct for own operations and supply chains. Through the use of EICC Self-Assessment Questionnaires,

¹⁰¹ EICC website: <http://www.eiccoalition.org/standards/>

members must identify 100 per cent of their own high risk facilities and 80 per cent of their Tier 1 suppliers. They are furthermore expected to conduct audits on at least 25 per cent of their own high-risk facilities and 25 per cent of their suppliers' high risk facilities and must at a minimum require their next tier suppliers to acknowledge and implement the Code. They are required to report back and implement corrective action plans on priority findings.

Third-party organizations provide technical support, audit and oversight services to help the industry address concerns in their supply chain: Among those most cited by the industry are the U.K.-based Ethical Trading Initiative (ETI) and the Fair Labour Association (FLA).

Non-governmental Organization Advocacy Initiatives

The GoodElectronics Network

Focused exclusively on the electronics industry, the GoodElectronics Network (GEN) is a Civil Society umbrella organization comprised of some 90 members and hosted by SOMO, based in the Netherlands, and with core funding provided by the European Union. The network seeks to “accommodates networks, organisations and individuals that are concerned about human rights, including labour rights, and sustainability issues in the global electronics supply chain, including but not limited to trade unions, grass roots organisations, campaigning and research organisations, academia, and activists”. The GoodElectronics Network has a vision of a global electronics industry characterized by compliance with the highest international human rights and sustainability standards. Labour rights and environmental norms are respected throughout the entire production cycle, from the mining of minerals used in electronics products, to the manufacturing phase, and the recycling and disposal of electronics waste, both on the level of companies' own operations and in the supply chain¹⁰². The Good Electronics Network has included a number of important initiatives, including Electronics Watch that monitors working conditions in the electronics industry and advocates for responsible procurement in the public sector. A number of GEN local partners are engaged in research on working conditions in the electronics industry, and whose work is referenced herein.

Global Framework Agreements

An International Framework Agreement (IFA) or Global Framework Agreement (GFA) is an innovative instrument in advancing industrial relations to improve working conditions in global supply chains. The agreement is negotiated between a multinational enterprise and a Global Union Federation in order to establish an ongoing relationship between the parties and ensure that the company respects the same standards in all the countries where it operates. Currently global union IndustriALL has signed GFAs with Siemens, Bosch, and Electrolux¹⁰³.

Public Governance

New to global supply chain governance are a number of laws out of the United States, Britain and the European Union that for the first time put into the practice the ‘due diligence’ requirement for companies and their global supply chain. As from 2016, the European Union (EU Directive 2014/95/EU) requires that companies with more than 500 employees disclose in their management reports risks and outcomes related to environmental and social impacts, anti-corruption and bribery issues, as well as due diligence processes with respect to risk areas. In addition, EU Directive 2014/24/EU, with effect as of March 2016, provides that procurement

¹⁰² For more information, visit: <http://goodelectronics.org/>

¹⁰³ For more information, see IndustriALL: <http://www.industriall-union.org/search?issues=Global%20Framework%20Agreements>

policies of member countries can now include social aspects in certain circumstances (in addition to environmental aspects which have previously been allowed); contracting authorities can require certification labels or other equivalent evidence of social characteristics, further facilitating procurement of contracts with social objectives; and, contracting authorities can refer to factors directly linked to the production process.

New laws in the State of California and more recently, in the United States federal government, on human trafficking have significant influence, as they are legally enforceable with severe consequences for non-compliance (Britain has enacted a similar law on “Modern Day Slavery”). Arising from President Barack Obama’s Executive Order 13,627 mandate, the Federal Acquisition Regulation (FAR), which came into effect on March 2, 2015 was expected to have immediate and significant impact on companies, contractors, subcontractors and lower-tiered subcontractors, as the U.S. government is the world’s largest consumer of goods and services¹⁰⁴.

The FAR legislation is quite explicit in defining the evidence in human trafficking including such topics as misleading or fraudulent recruiting practices, charging recruitment fees, destroying, concealing, confiscating or otherwise denying employee access to his or her identity documents, failing to pay return transportation costs. Liability for non-compliance includes penalties under various criminal codes that include “false statement”, “Smuggling”, “Forced Labour Prohibitions”, and “False Claims Act”. The introduction of this new legislation has led to the rapid update of company codes and industry codes to very specifically address these requirements, including the most recent update to the Electronics Industry Citizenship Code of Conduct.

The European RoHs regulation differs, in that it establishes a minimum standard on several hazardous chemicals used in the production of electronics goods and prohibits the import of non-compliant goods to the European Union. Research by Raj-Reichert (2015) found this legislation had proven effective even at lower tiers of electronics suppliers¹⁰⁵.

Table 3. Public Instruments governing Supply Chains

Stakeholder	Instrument	Compliance Mechanism	Main Provisions
European Union	EU Directive 2014/95/EU	Companies with more than 500 employees must disclose in their management reports	Due diligence on human rights; policies, risks, and outcomes environmental and social impacts; anti-corruption and bribery
European Union	Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement	Contracting authorities can require certification/labels or other equivalent evidence of social/environmental characteristics	Social, environmental and innovative criteria are now principles of procurement and on an equal footing with transparency, equal treatment and non-discrimination
European Union	EU Directive on the Restriction of Hazardous Substances (RoHs) in the electronics industry	Restricts market access for goods found to be produced with these chemicals	Sets low threshold levels for several hazardous chemicals, including lead, mercury, cadmium, hexavalent chromium, and brominated flame retardants; reduces hazardous waste and improves worker safety

¹⁰⁴ Bloomberg BNA. 2015. Federal Contracts Report, 103 FCR 188, 01/24/2015.

¹⁰⁵ Raj-Reichert in ILO, 2016.

United States	Dodd-Frank Wall Street Reform and Consumer Protection Act (2012)	Disclosure of origin for all products containing tin, tungsten, tantalum and gold	Prevent trade in conflict minerals from the DRC and neighbouring countries, associated with human rights violations
	California Transparency in Supply Chain Act (CTSCA) – (2012)	Requires due diligence reporting on any risk of slavery and human trafficking	Aims to address human rights violations in supply chains of companies (with \$100 million).
	Federal Acquisition Regulation – FAR (2015)	Requires mandatory self-reporting if any information found; must have detailed compliance plan; file annual certifications for contracts exceeding \$500,000. Criminal penalties.	Requires companies to ensure that their entire supply chain is free from human trafficking and forced labour.
United Kingdom	Modern Slavery Act (2015)	Requires yearly reporting on actions taken to prevent slavery and human trafficking	Prevention of slavery and human trafficking in global supply chains, and reparation for victims

5. Conclusions: Responsible Procurement – What Works?

Private Sector Approaches

Though late to face scrutiny, there are signs that the electronics industry is beginning to take seriously concerns about procurement practices in their industry. Pursued by civil society activists and consumer awareness campaigns, some 100 companies now belong to the EICC, including most leading brands. In terms of the direct impact that the code adoption has had on workers, with the exception of recent benchmarking studies by civil society, it is difficult to find industry-wide data.

The predominant pattern that emerges is that the codes are not updated in anticipation of issues that may arise but are eventually updated to meet the minimum standard once an issue has been repeatedly brought forward by rights campaigners or into the public eye via the media. Topics such as the exploitation of student workers (through underpaid or unpaid work), the evidence of human trafficking and forced labour including through the role of labour brokers, and the dangers of exposure of hazardous chemicals have required external pressure to elevate code standards.

Furthermore, while the EICC basic code makes reference to universal principles, international standards and instruments, it does not explicitly adopt the articles of conventions of these standards, and does not bind its members to endorse the principles. How the Code is implemented at firm level is highly variable, even in the implementation of one of the basic provisions (working hours), as compared among the four largest electronics firms:

Table 4. EICC Guidance Implementation Examples

Code	Maximum Hours	Specific Guidance for Monitoring
Apple Supplier Code of Conduct 4.2; and, Supplier Responsibility Standards 4.2; January 1, 2016	60, including overtime except in emergency or unusual situations	Yes. <i>The official working hours records system shall be capable of identifying workers who are scheduled to exceed the 60-hour and day of rest requirements, as well as track the total work hours per week and days of rest for each worker. The system shall provide summary reports and warnings to management prior to exceeding these requirements.</i>
Foxconn Global Code of Conduct: Social and Environmental Responsibility (SER), January 1, 2016	60, including overtime, except in emergency under some unusual situations (ref to EICC)	Limited. <i>Foxconn shall also comply with local laws...and develop gap-closing and improvement plans on a continuous basis that are made known to the business group management. Foxconn shall also conduct review/discussion sessions with key stakeholders including employees, law enforcement agencies and relevant customers to ensure legal observance globally and locally.</i>
HP Electronic Industry Code of Conduct, version 5.0, effective April 1, 2015 (most recent on line)	60, including overtime except in emergency or unusual situations; Students, no more than 40 hours (8 hours per day), no overtime	Limited for regular workers. <i>Suppliers shall adopt or establish a system to manage the elements of this Code: No specific guidance on tracking hours in the system.</i> Student and Dispatch Workers: HP Student and Dispatch Worker Standard for Supplier Facilities in the People’s Republic of China – detailed guidance document outlining terms of employment.
Samsung Business Conduct Guidelines 2016	None specified: “conform to EICC”	No. <i>“Working hours are decided according to the characteristics of each work area and the related regulations in each country.”</i>

Source: Supplier Codes of Conduct as per company websites, October 2016

What defines an emergency or unusual situation is perhaps an area of the code also to be considered. Harris reports of 10,000 workers being awoken at midnight in their dormitory to conduct 12-hour shifts to replace faulty screens on the electronics devices they are assembling¹⁰⁶. Is this an emergency or business as usual in the high pressure, highly competitive technology industry? While scanners improve compliance tracking, does this approach tackle the right questions, when workers willingly seek out more hours beyond 60 hours to compensate for low wages, and later suffer the consequences through breakdowns¹⁰⁷? What are the human considerations when calculating wages that result in Mexican workers earning USD \$6 or \$7 per day, almost 10 times less than minimum wage workers across the border in the United States?¹⁰⁸

An analysis of multiple studies found that suppliers are more likely to comply with labour standards in buyer codes of conduct set by buyer firms when they are located in countries that participate actively in ILO standards, have strong labour laws and high levels of press freedom, and whose buyers originate from countries whose consumers are wealthy and socially conscious¹⁰⁹. The analysis found that numerous studies affirm the need to have in place multiple regulatory regimes and mechanisms – public, private and public-private – which include the

¹⁰⁶ Harris, 2014, op. cit.

¹⁰⁷ Oster, 2016, op. cit.

¹⁰⁸ Wages as per CEREAL study, 2016.

¹⁰⁹ Toffel, Short and Quellet (2015) study of 12 industries in 47 countries (including 578 electronics factories), in Raj-Reichert, 2016.

involvement of state regulations and non-state actor initiatives¹¹⁰. Locke, Rissing and Pal (2013) using qualitative and quantitative methods to assess HP's practices in Mexico and the Czech Republic, found private interventions are affected by state and non-governmental actors: depending on national context and specific issues being addressed, private and public regulation is found to interact in different ways – sometimes as complements; other times as substitutes¹¹¹.

Researchers often draw on stakeholder theory when exploring the drivers of socially and environmentally responsible procurement in supply chains¹¹². In a comprehensive study on Socially and Environmentally Responsible Procurement (SERP), Hoejmoose and Adrien-Kirby explore what constrains codes of conduct: Among other shortcomings that are seen to limit the effectiveness of codes of conduct is generally the lack of rewards (or penalties) for compliance (or failure to comply) with the codes, failure to deal with underlying problems, and lack of monitoring efforts¹¹³. Company values and a focus on costs (and a perception that SERP is costly) is seen as a significant barrier, as is the trust relationship between Buyer and Supplier¹¹⁴.

With respect to fair treatment of suppliers, customer pressure and government legislation have been identified as the leading *external* pressures for companies taking action¹¹⁵. For example, after sustained campaigns, a recent breakthrough includes Samsung's 2014 apology and 2016 mediated agreement to payout financial claims in a settlement for occupational illness to families of 150 former employees in South Korea¹¹⁶ though additional claims remain contested and ongoing¹¹⁷. Lead firms are no longer considered as powerful as they once were over their supply chains, (consider Foxconn, with \$131 billion in turnover and 1,290,000 employees¹¹⁸); more stakeholder pressure directly at the supplier level could yield higher results. If contract manufacturers were compelled to influence and have more power in negotiations over labour governance in their factories, their experience and knowledge over factors that lead to labour violations could result in more effective governance¹¹⁹.

Responsible Procurement Evaluation

Private sector buyers can take a pro-active role to mitigate the impacts of fluctuations in demand on suppliers and workers. Better planning and better communication, for example,

¹¹⁰ Ibid.

¹¹¹ Locke, R. M., Rissing, B. A. and Pal, T. (2013), Complements or Substitutes? Private Codes, State Regulation and the Enforcement of Labour Standards in Global Supply Chains. *British Journal of Industrial Relations*, 51: 519–552. doi:10.1111/bjir.12003

¹¹² Hoejmoose, S.U. Adrien-Kirby, A.J., 2012.

¹¹³ Kolk and van Tulder (2002, 2004) Pedersen and Andersen (2006) in Hoejmoose and Adrien-Kirby (2012).

¹¹⁴ Bowen et al, 2001; Welford and Frost, 2006, Cooper et al, 2000; in Hoejmoose and Adrien-Kirby (2012).

¹¹⁵ Min and Galle, 2001; Carter and Jennings, 2004; Salam, 2009, Worthington, 2009, Worthington et al 2008, in Hoejmoose and Adrien-Kirby, 2012.

¹¹⁶ <https://www.theguardian.com/technology/2016/jan/12/workers-cancer-compensation-dispute-final-settlement-samsung>

¹¹⁷ http://www.huffingtonpost.ca/2016/08/10/samsung-workers-sick-dying_n_11424158.html

¹¹⁸ Foxconn revenue data 2013, employees 2014; from Raj-Reichert (2015) "Exercising power over labour governance in the electronics industry." *Geoforum* 67 (2015): 89-92.

¹¹⁹ Ibid, page 90.

though sharing centralized demand information with suppliers can help eliminate the bullwhip effect¹²⁰. Codes of conduct, when backed by appropriate forecasting tools and management systems are seen as effective mechanisms. Increasingly, failure to have such measures in place is also considered an unacceptable business risk as evaluated by investor analysts¹²¹. Ideally, a company would have established a link between its incentive pay policies for company executives and the effective management of its social and environmental impacts, yet less than a quarter of leading corporations do so¹²².

As this study draws to a conclusion, there are also signs that the breakneck pace of the electronics industry is slowing, with unit sales declining. For example, as Apple moves to refresh 1 billion mobile handsets, it is reaching the limit on critical components, in this case OLED monitors (a new display technology) for next generation iPhones – and to avoid market disappointment, it will need to adjust consumer expectations in advance of announcing new products¹²³. This form of planning and early communication can begin to address the wildest fluctuations in demand if it leads consumers to moderate expectations.

Given the disbursed nature of the business and difficulty in following the supply chain of every major electronics manufacturer, it is difficult to have a broad view of how companies are performing on social commitments to industry codes. However, two recent electronics industry assessments by civil society organizations provide meaningful insights into how the industry is performing with respect to global procurement and impacts on workers.

Know the Chain

The Business and Human Rights Resource Center and Sustainalytics (2016) recently conducted an assessment of 20 leading electronics companies to benchmark their performance in addressing forced labour. The study then outlines guidance on where these businesses need to improve. Based on the visibility of forced labour, including the new legislation (California Supply Chains Transparency Act, U.S. FAR, and the Modern Slavery Act in the UK), a high level of awareness for the issue was anticipated. The researchers used a range of indicators around seven major themes: Commitment and Governance, Traceability and Risk Assessment, Purchasing Practices, Recruitment, Worker Voice, Monitoring, and Remedy (or corrective action plan).

Among the seven areas, companies scored most poorly in providing worker voice (average of 16 out of 100), and on recruitment fees (19 out of 100). With respect to worker voice, this refers directly to “enabling freedom of association even in contexts where there are barriers to overcome (particularly for migrant workers) and ensuring access to trusted, effective worker grievance mechanisms”. With regard to recruitment fees, “the majority of benchmarked ICT

¹²⁰ Kaipia et al, in ILO 2014, op. cit.

¹²¹ For more information, the UN Principles on Responsible Investment, including <https://www.unpri.org/page/investors-see-benefit-of-sustainability-but-at-odds-with-business-leaders-on-measuring-its-value>

¹²² Ceres and Sustainalytics, 2014. Gaining Ground: Corporate Progress on the Ceres Roadmap for Sustainability. In a study of 613 publicly traded companies, 24 percent of companies linked executive pay to environmental, social and governance (ESG) performance indicators, up from 15 per cent in 2012. However, only 3 per cent of leading companies went beyond legal compliance to include voluntary targets. <https://www.ceres.org/resources/reports/gaining-ground-corporate-progress-on-the-ceres-roadmap-for-sustainability/view>.

¹²³ Gurman, M. and Lee, J. (2016): Apple wants OLED in iPhones, but most suppliers aren't ready. Bloomberg Technology, <https://www.bloomberg.com/news/articles/2016-11-17/apple-wants-oled-in-iphones-but-most-suppliers-aren-t-ready-yet> [accessed 24 November 2016].

companies lack an approach to recruitment that mitigates the risk of human trafficking and forced labour”. Two companies provided evidence that they ensure suppliers reimburse recruitment fees when the no-fees policy has been violated by disclosing the total amount of fees that have been reimbursed.

On a more positive note, the study revealed that ICT companies are taking steps to trace their supply chains beyond first-tier suppliers, demonstrating that tracing supply chains to the commodity-level is possible. The report’s authors attribute this to the important role of transparency regulations in driving change, in particular, the US Dodd-Frank Act disclosure regulations around conflict minerals.

Specific to purchasing practices, the average company score was 43 out of 100. This theme assessed a “company’s awareness and action on purchasing practices that can exacerbate forced labour risks and its process for selecting suppliers, integrating supply chain standards into supplier contracts, and cascading them down the supply chain”. The study found:

- Three of the benchmarked companies acknowledge that certain purchasing practices, such as fluctuating demand and short-term contracts, can increase the risk of forced labour in their supply chains.
- Half of the companies reported that they integrate their supply chain standards into their contracts with suppliers; and,
- 12 companies stated that they require suppliers to ensure that their own suppliers adhere to codes that are in line with the company’s standards, though only one company described a process by which this is done.

A few companies were singled out for good purchasing practices specifically aimed at addressing the impact on workers of fluctuating demand: One company, Ericsson, reported that it “strives to provide medium- to long-term forecasts to its suppliers to allow for long-term planning and an even work load”. HP reported that it “provides tools and information to support suppliers in managing their capacity to meet fluctuating demands, such as providing key suppliers with a rolling 12+ week forecast. Meetings are scheduled weekly to review this forecast, analyse demand against supplier capacity based only on a 60-hour work week, and confirm production plans”¹²⁴.

The Truth Behind the Barcode¹²⁵

This study assessed 56 electronics industry companies based on their relative efforts and provided grades as an indication of the extent to which these companies have developed a set of management systems that theoretically prevent abuses. The companies are evaluated on the existence of policies to protect against exploitation, child and forced labour. The researchers looked at codes of conduct, procurement practices, and sub-contracting policies and found:

- **Codes of Conduct:** A key indicator used was alignment with ILO Fundamental Principles and Rights at Work. The majority (two-thirds) of companies have policies that at minimum align with the ILO Fundamental Principles and Rights at Work. 45 per cent based their code on the EICC.

¹²⁴ For more details, refer to the whole report: Know the Chain (2016): <https://knowthechain.org/benchmarks/1/>

¹²⁵ Nimbalkar, G., Mawson, J., and Wrinkle H. (2016). The Truth Behind the Barcode: Electronic Industry Trends.

-
- **Responsible Purchasing:** The indicator was based on the degree to which brands deliberately foster intense competition as this was seen to cascade to working conditions as suppliers depress labour costs to win contracts. Only six of the companies assessed guarantee a decent price to their suppliers; or otherwise financially enable their suppliers to comply with code standards.
 - **Sub-contracting Policies:** The assessment was based on the extent to which suppliers subcontract out parts of companies' orders to un-authorized, unmonitored facilities where workers may be left without any redress in the event of abuse. 38 per cent of the companies assessed say they are taking some steps to ensure that code of conduct standards are implemented in subcontracting arrangements.

The research initiative had previously been conducted in 2014, and on the positive side, the researchers found that 64 per cent of companies had made progress in their performance with significant improvement found in 9 per cent of companies. Nevertheless, the median grade for all companies reviewed was a C-, and none received an A.

Public Procurement

Activists and researchers are increasingly looking to public procurement to promote responsible business and improved working conditions in global supply chains. Public procurement contracts worldwide are estimated to be worth one thousand billion euros annually, with governments of OECD member states spending on average 12 per cent of their gross domestic product on public procurement, rising to an average of 16 per cent in the EU¹²⁶. Electronic goods comprise a significant portion of public purchases, are often high value items and are procured in large volumes, with annual procurement estimated at nearly Euro 100 billion¹²⁷. Given the buying power associated with public procurement contracts, they are seen to also hold the potential for significant leverage in social and sustainability issues. Progress in leveraging this power is now underway as new reporting requirements related to environmental and social impacts in global supply chains are starting to be incorporated in public procurement.

There is strong evidence that business adapts promptly when government regulation is further supported by government procurement practices. The United States is the world's largest consumer of goods and services, and does business with more than 300,000 companies. The Federal Acquisition Regulations (FAR) against human trafficking is seen to be a "seismic" shift for the compliance community, with far-reaching effects on suppliers and their sub-contractors¹²⁸. The implementation of EU Directive 2014/24/EU, as from this year, marks a similar breakthrough in public procurement that has the potential for wide-reaching impact on social aspects of the production process.

Conclusion

The narrative cases highlighted in this study aim to highlight challenges in attaining 'good procurement practices' in the sector. A variety of stakeholders, individually and collectively, are required to drive change and enforce standards. The graphic below illustrates a range of the key stakeholders in the electronics industry value chain and how these stakeholders may influence

¹²⁶ Martin-Ortega et al, 2015.

¹²⁷ From Electronics Watch, 2014. \$94 billion (2007): Latest figure available; European Union (2012): Guidelines for Public Procurement of ICT Goods and Services, note on p. 4, <http://cordis.europa.eu/fp7/ict/ssai/docs/study-action23/d4-impactassessment-prep.pdf>

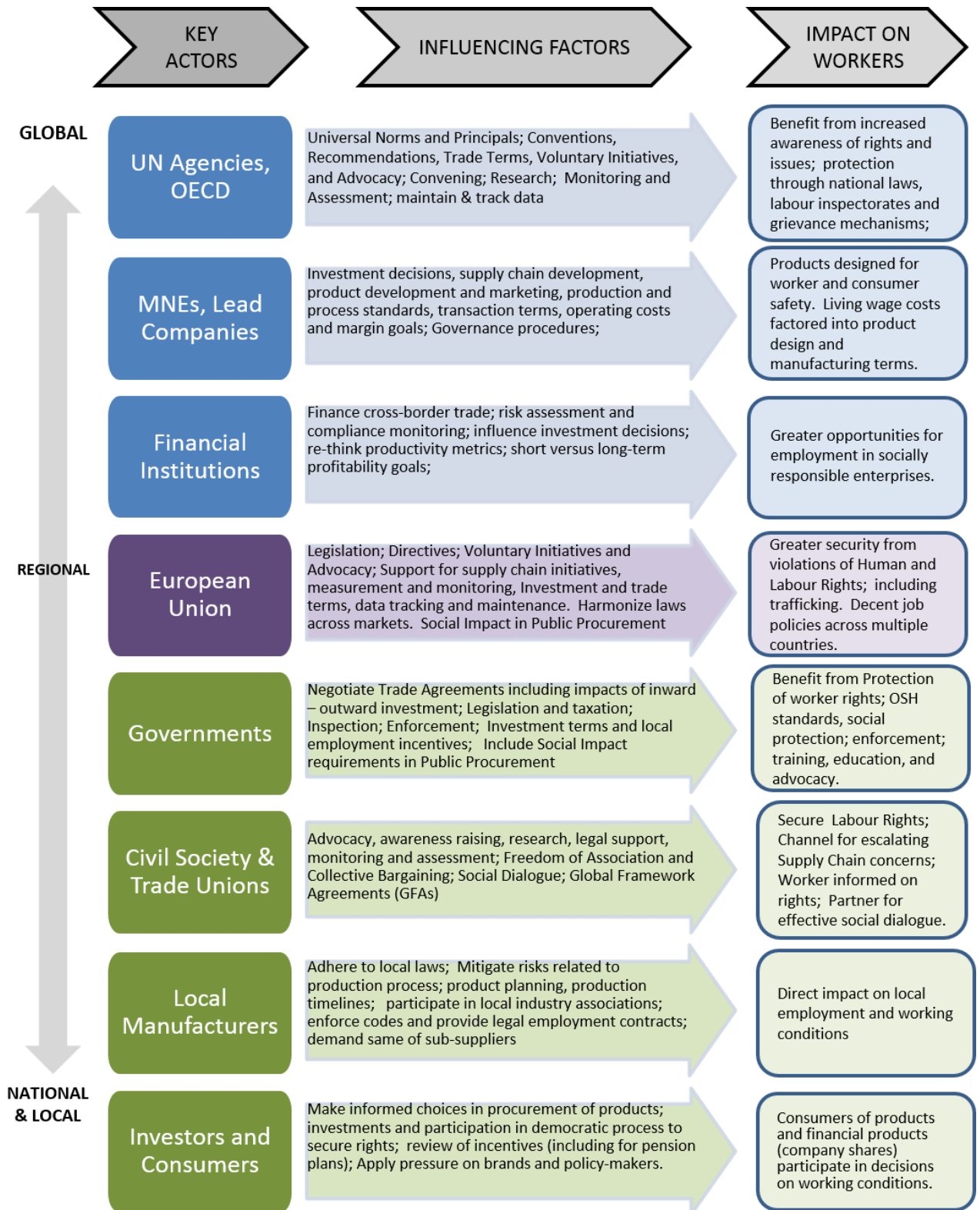
¹²⁸ Federal Contracts Report 103 FCR 188, 2015. The Bureau of National Affairs, Inc.

chain governance and ultimately outcomes for workers. Whilst this study touched the roles of these actors, the discourse would benefit from additional studies to examine the role of each stakeholder as well as their inter-connectedness in greater detail.

At the ILO's 2014 Global Dialogue Forum on the Adaptability of Companies to Deal with Fluctuating Demands and the Incidence of Temporary and Other Forms of Employment in Electronics, there was consensus among participating stakeholders on a number of key recommendations for governments, employer and worker organizations, and the ILO. The recommendations engage all stakeholders and include a combined emphasis on ensuring appropriate labour legislation and social protection is in place to protect temporary workers from fluctuations, supported by awareness raising, social dialogue, and joint commitments to promoting long-lasting employment relationships where possible.

The current evidence would indicate that the overall incentives (or penalties) for procurement practices that would share more of the gains or at minimum mitigate the harm to workers, are currently inadequate. However, it may be that sustained attention to the issues raised here are leading to more decisive action by policy-makers to implement laws that extend down the global supply chain, as evidenced by new reporting legislation and changes to public procurement practices. More consumers can help by mandating certain conditions in procurement policies – and the recent steps taken to do so by some of the largest purchasers of electronics goods is a good step forward.

Figure 4. Stakeholder Approach to Responsible Procurement



Source: Author

Addendum

Table 5. Voluntary Standards and Codes

Stakeholder	Instrument	Compliance; Reporting Requirement	Topics Addressed
International Organizations (IO)	ILO Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy (ILO MNE Declaration)	*Follow-up mechanism for workers, employers, and governments	ILO Labour Standards, Responsible Investment; Guidance on employment promotion, skills development, conditions of work and life, and industrial relations; adherence to National Law.
	OECD Guidelines for Multinational Enterprises (OECD Guidelines)	National Contact Points (NCPs); Complaints mechanism	Human Rights, Labour Rights, Governance: employment and industrial relations, human rights, environment, information disclosure, combating bribery, consumer interests, science and technology, competition, and taxation.
	OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas	Alignment assessment tool being piloted (expected complete in 2017)	Guidance to help companies respect human rights, observe applicable rules of international humanitarian law in situations of armed conflict, avoid contributing to conflict and cultivate transparent mineral supply chains and sustainable corporate engagement in the mineral sector.
	UN Global Compact	Company annual reporting requirement for members	Ten principles in the areas of human rights, labour standards, the environment, and anti-corruption derived from universal principles.
	UN Guiding Principles on Business and Human Rights (UNGPR)	*Not for certification	Three pillar “protect, respect, remedy” framework to provide due diligence guidance on implementation of Human Rights and Labour Rights.
Multi-stakeholder Initiatives (MSIs)	ISO 260000 Guidance on Social Responsibility	Not intended for certification	Makes reference to some 134 different universal principles and international standards related to Human Rights, Labour Practices, and Environment.
	Social Accountability International – SA 8000	Certification by independent auditors	Auditing tool based on UN Universal Declaration of Human Rights, ILO Labour Conventions and Recommendations, UN Children’s Rights Convention and others.
	OHSAS 18001	Certification by standards auditors	Health and Safety Guidance and Standards. Created via a number of leading national standards bodies, certification bodies, and specialist consultancies to remove confusion from the proliferation of certifiable OH&S specifications.
	Good Electronics Network (GEN) – Electronics Watch	Under development; currently advocates for a “list of demands”	Electronics Watch Code under development: Network of Trade Unions, NGOs, Academics monitoring human rights and working conditions in the electronics industry.
	Global Reporting Initiative – Sustainability Reporting Guidelines	Sustainability reporting audits by independent auditors	Network-based organization to mainstream disclosure on environmental, social and governance performance.

Stakeholder	Instrument	Compliance; Reporting Requirement	Topics Addressed
Industry Initiatives	Electronic Industry Citizenship Coalition Code of Conduct v. 5.1 (2016)	Reporting requirement for membership	ILO Declaration on Fundamental Principles and Rights at Work; UN Universal Declaration of Human Rights; ILO Code of Practice in Safety and Health; ISO 14001; OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-affected and High-Risk Areas; United Nations Convention against Corruption; United Nations Global Compact; SA 8000; United Nations Convention Against Corruption; Dodd-Frank Wall Street Reform and Consumer Protection Act (USA); US Federal Acquisition Regulation.
	Global e-Sustainability Initiative (GeSI)	Sustainability Assessment Standard Framework (pilot phase only)	Promotes CSR supplier data sharing among members: covers 21 criteria across four themes of Environment, Fair labour practices, ethics/fair business practices, and supply chain. References: Global Reporting Initiative, the United Nations Global Compact, and the ISO 26000. Collaborates with EICC on code.
Individual Company Codes of Conduct	Brand or Contract Manufacturers	Optional (required for EICC member companies)	Individual Company Codes requiring specific supplier compliance. EICC members are to actively refer to code; may select from "reference" instruments.

References

- Anisul Huq, F., Stevenson, M., and Zorzini, M. (2014). "Social sustainability in developing country suppliers", *International Journal of Operations & Production Management*, Vol. 34 Iss 5 pp. 610-638.
- Anner, M. (2015). Worker resistance in global supply chains: Wildcat strikes, international accords and transnational campaigns. *International Journal of Labour Research*, 2015, Vol. 7, Issue 1-2.
- Anner, M., Bair, J., and Blasi, J. (2013). "Toward joint liability in global supply chains: addressing the root causes of labor violations in international subcontracting networks." *Comparative Labor Law & Policy Journal* Fall 2013: 1-43. [*Academic OneFile*. Web. 22 Aug. 2016.]
- Auret, D., Barrientos, S., (2004). Participatory social auditing – A practical guide to developing a gender sensitive approach. IDS Working Paper no. 237, Institute of Development Studies, University of Sussex, Brighton.
- Barrientos, S. (2013). Corporate purchasing practices in global production networks: a socially contested terrain, *Geoforum*, 44, pp. 44-51.
- Barrientos S. (2013). 'Labour Chains': Analysing the Role of Labour Contractors in Global Production Networks, *The Journal of Development Studies*, 2013, Vol.49(8), pp. 1058-1071.
- Barrientos, S., Gereffi, G., and Rossi, A. (2011). Economic and social upgrading in global production networks: A new paradigm for a changing world. *International Labour Review*, Vol. 150, No. 3-4.
- Barrientos S., Mayer, F., Pickles J. and Posthuma, A. (2011). Decent Work in Global Production Networks: Framing the Policy Debate. *International Labour Review*, 150, (3–4).
- Bernardt, T., Milberg, W. (2011). Economic and social upgrading in global value chains: Analysis of horticulture, apparel, tourism and mobile phones. [Online] *Capturing the Gains*. Working Paper 6. p. 1-113 [Accessed:].
- Better Work (2010). *Electronics Feasibility Study: Executive Summary*, August 2010. www.betterwork.org [accessed 20 November 2016]
- Blanding, M., White, H. (2015). How China is Screwing Over its Poisoned Factory Workers, 4 June, *Wired* <https://www.wired.com/2015/04/inside-chinese-factories/> [Accessed: 21 September 2016].
- Bormann, S., Krishnan, P., Neuner, M.E. (2010). Migration in a digital age. Migrant workers in the Malaysian electronics industry: Case studies on Jabil Circuit and Flextronics. *World Econ., Ecol. Develop.* (Berlin).
- Brown, Garrett (2009). "Global electronics industry: poster child of 21st century sweatshops and despoiler of the environment? The global electronics industry is squarely in the sights of environmental, labor rights and occupational health and safety organizations around the world." *EHS Today* Sept. 2009: 45+. [Accessed: 21 September 2016.]
- CEREAL, (2016). Beyond voluntary codes and audits: A challenge for the electronic Industry; Seventh report on working conditions in the Mexican Electronics Industry. Center for Reflection and Action on Labour Issues (CEREAL). *Good electronics*. July 2016
- CFSI, (2015). Five Practical Steps to Support SEC Conflict Mineral Disclosure. White Paper 2.0. February 2015. Conflict Free Mineral Initiative. www.Conflictfreemineralinitiative.org. [Accessed: 22 September 2016]
- Chakraborty, A. (2013). The Woman Who Nearly Died Making Your iPad, 5 August. *The Guardian* [Accessed: 21 September 2016].

Chan, J. (2013). A suicide survivor: the life of a Chinese worker. In: *New Technology, Work and Employment*, vol. 28(2), pp. 84–99.

Chan, Debby, (2010). "Activist perspective: the social cost hidden in the Apple products." *Journal of Workplace Rights* 15.3-4 (2010): 363-365. (*Academic OneFile*. Web. 16 Sept. 2016.)

China Labor Watch, (2015). Analyzing Labor Conditions of Pegatron and Foxconn: Apple's Low-Cost Reality (accessed 31 August 2015).

Coe, N.M., Jones, K. and Ward K. (2010). "The business of temporary staffing: A developing research agenda", in *Geography Compass*, Vol. 4, No. 8, 2010, pp. 1055–68.

De Hann, E. (2012). Freedom of Association in the electronics industry. [Online] SOMO Paper. Available from <http://www.goodelectronics.org> [Accessed: 19 September 21, 2016]

Delautre, G. (2016, Forthcoming). The distribution of value added among firms and countries: The case of the ICT manufacturing sector. ILO Research. Geneva.

Distelhorst, G., Locke, R. M., Pal, T. and Samel, H. (2015). Production goes global, compliance stays local: Private regulation in the global electronics industry. *Regulation & Governance*, 9: 224–242. doi:10.1111/regg.12096

Drahokoupil, J., Andrijasevic, R. and Sacchetto (2016). Flexible workforces and low profit margins: electronics assembly between Europe and China. ETUI, Brussels.

EICC, (2015) (a). Working to Eradicate Forced Labor in the Electronics Supply Chain. Position Paper. Electronics Industry Citizenship Coalition. January 7, 2015. [Accessed: 21 September 2016]

EICC, (2015) (b). Protecting Workers from Hazardous Chemical Exposure in the Electronics Supply Chain. Electronics Industry Citizenship Coalition, August 17, 2015. [Accessed: 21 September 2016]

EICC, (2016). EICC Annual Report 2014-15. Electronics Industry Citizenship Coalition, April 27, 2016. [Accessed: 22 September 2016]

Electronics Watch, (2014). Winds of Change: Public procurement's potential for improving labour conditions in the global electronics industry. Electronics Watch Consortium, Berlin.

European Commission, (2012). ICT Sector Guide on Implementing the UN Guiding Principles on Business and Human Rights. Brussels, European Commission.

European Parliament, (2015). Conflict Minerals: MEPs Ask for Mandatory Certification of EU Importers, 20 May (accessed 21 September 2016).

Evermann, A. (2014). The ICT sector in the spotlight Leverage of public procurement decisions on working conditions in the supply chain. Electronics Watch Consortium, Berlin, Germany.

Freeman, C., and De Haan, E. (2014). Using Grievance Mechanisms Accessibility, predictability, legitimacy and workers' complaint experiences in the Electronics Sector. March, 2014. SOMO. Netherlands.

George, E., Chattopadhyay, P. (2015). Non-standard work and workers: organizational implications; International Labour Office, Inclusive Labour Markets, Labour Relations and Working Conditions Branch. Geneva: ILO, 2015.

Gentry, R.J., Elms, H. (2009). Firm partial modularity and performance in the electronic manufacturing services industry. *Indust. Innov.* 16 (6), 575–592.

Gereffi, G. (1999). International trade and industrial upgrading in the apparel commodity chain. *Journal of International Economics*, 48 (1), pp.37-70.

-
- Gereffi, G., Humphrey, J., & Sturgeon, T. (2005). The governance of global value chains, *Review of International Political Economy*, 12:1, 78-104, DOI: 10.1080/09692290500049805
- Gereffi, G., Lee, J. (2012). *Why the World Suddenly Cares About Global Supply Chains*. *Journal of Supply Chain Management*, 48: 24–32. doi: 10.1111/j.1745-493X.2012.03271.x
- Gereffi, G., Korzeniewicz, M. (Eds.). (1994) *Commodity chains and global capitalism*. Westport, CT: Praeger.
- Giuliani, E. (with Fiaschi D., Nieri, F.) (2013). BRIC companies seeking legitimacy through corporate social responsibility. *UNCTAD Transnational Corporations*, 22 (3): pp. 5-42.
- Giuliani, E. (2016) Human Rights and Corporate Social Responsibility in Developing Countries' Industrial Clusters, *Journal of Business Ethics*, 133 (1): pp. 39-54.
- Gurman, M. and Lee, J. (2016): Apple wants OLED in iPhones, but most suppliers aren't ready. *Bloomberg Technology*, <https://www.bloomberg.com/news/articles/2016-11-17/apple-wants-oled-in-iphones-but-most-suppliers-aren-t-ready-yet> [accessed 24 November 2016]
- Harney, A. (2008). *The China Price – The true cost of competitive advantage*. London: Penguin Press.
- Harris, A. (2014). Dragging out the best deal: How billion dollar margins are played out on the backs of electronics workers. *Goodelectronics*, The Netherlands.
- Hoejmose, S. and Adrien-Kirby, A.J. (2012). Socially and Environmentally responsible procurement: A literature review and future research agenda of a managerial issue in the 21st century. *Journal of Purchasing & Supply Management* 18 (2012), 232-242.
- Holdcroft, J. (2015). Transforming Supply Chains Industrial Relations. *International Journal of Labour Research*, 2015, Volume 7, Issue 1-2.
- Holst H., Nachtwey O. and Dörre, K. (2010): “The strategic use of temporary agency work – Functional change of a non-standard form of employment”, in *International Journal of Action Research*, Vol. 6, No. 1, 2010, pp. 108–138.
- Howcroft, D., and Taylor, P. (2013). Editorial: 'Harvesting a bitter fruit'-work and labour in China's consumer electronics supply chain." *New Technology, Work and Employment* 28.2 (2013): 83. [*Academic OneFile*. Web. 22 Aug. 2016]
- Humphrey, J. (1995). Special issue on industrial organization and manufacturing competitiveness in developing countries. *World Development*, 23 (1).
- ILO, (2014) *Ups and downs in the electronics industry: Fluctuating production and the use of temporary and other forms of employment*, Issues paper for discussion at the Global Dialogue Forum on the Adaptability of Companies to Deal with Fluctuating Demands and the Incidence of Temporary and Other Forms of Employment in Electronics, Geneva, 9–11 December 2014, International Labour Office, Sectoral Policies Department, Geneva, ILO, 2014.
- ILO, (2015). Non-standard forms of employment. Report for discussion at the Meeting of Experts on Non-Standard Forms of Employment (Geneva, 16–19 February 2015) / International Labour Office, Conditions of Work and Equality Department, Geneva, 2015.
- ILO, (2016). Sectoral Studies for Social and Economic Upgrading, *Decent Work in Global Supply Chains: Comparative Analysis of Opportunities and Challenges*. International Labour Office, Sectoral Policies Department (SECTOR), Geneva, 2016.

[International Business Times \(U.S. ed.\)](#). (2013). Hewlett-Packard makes effort to limit student workers in China; IBT Media, formerly dba International Business Times, February 10, 2013 <http://www.ibtimes.com/> [accessed 16 September, 2016]

Jiaong, X., Milberg, W. (2013). Capturing the jobs from Globalization: Trade and employment in global value chains. [Online] Capturing the Gains. Working Paper 30. P.1-12. Available from <http://www.capturingthegains.org> [Accessed: December 20, 2016]

Kaplinsky, R. (2010). The role of standards in Global Value Chains. Policy Research Working Paper 5396. The World Bank, Washington, D.C. [accessed September 25, 2016]

Kaplinsky, R. (2016). Inclusive and Sustainable Growth: The SDG Value Chains Nexus. International Centre for Trade and Sustainable Development (ICTSD), Geneva.

Kirchoff, Jon F., Omar, A., and Fugate, B. (2016) "A behavioral theory of sustainable supply chain management decision making in non-exemplar firms." *Journal of Supply Chain Management* Jan. 2016: 41+. *Academic OneFile*. Web. 22 Aug. 2016. URL <http://go.galegroup.com.ezproxy.bibliottawalibrary.ca/ps/i.do?id=GALE%7CA442780830&v=2.1&u=otta35732&it=r&p=AONE&sw=w&asid=a794b8a2fb3fa15385055b1fa5077b55>

Know the Chain, (2016). ICT Benchmark Findings Report. June, 2016. San Francisco, CA. [accessed on line October 1, 2016]

Labour Action China (LAC), Labour Education and Services Network (LESN), and Centre for Research of Multinational Corporations (SOMO), 2016. The Poisonous Pearl Occupational chemical poisoning in the electronics industry in the Pearl River Delta, People's Republic of China. Netherlands, 2016. <https://www.somo.nl/poisonous-pearl/> [Accessed 18 October 2016].

Lazare, Sarah, (2016). "Challenging the Chip: Labor Rights and Environmental Justice in the Global Electronics Industry." *Multinational Monitor* 27.3: 52. [Accessed via *Academic OneFile*. Web. 7 Sept. 2016].

Lenovo, 2015. FY (2014/15). Annual Results Announcement. Levy, D.L., 2008. Political contestation in global production networks. *Acad. Manage. Rev.* 33 (4), 943–963.

Locke, R., QIN, F., Brause, A. (2007). Does monitoring improve labour standards? Lessons from Nike. *Industrial and labour Relations Review*. (61) 1 p. 1-31.

Locke, R.M., Romid, M. (2007). Improving work conditions in global supply chains. *MIT Sloan Management Review*, 48(2), 54-62.

Locke, R.M. (2013). *The Promise and Limits of Private Power: Promoting Labor Standards in a Global Economy*. Cambridge University Press, Cambridge.

Locke, R.M., Rissing, B. A. and Pal, T. (2013). Complements or Substitutes? Private Codes, State Regulation and the Enforcement of Labour Standards in Global Supply Chains. *British Journal of Industrial Relations*, 51: 519–552. doi:10.1111/bjir.12003

Luethje, B., Huertgen, S., Pawlicki, P., Sproll, M. (2013). From Silicon Valley to Shenzhen: Global Production and Work in the IT industry.

Lund-Thomsen, P., Coe, N. (2013). CSR and labor agency: The case of Nike in Pakistan. Working Paper, 2/2013. Center for Corporate Social Responsibility, Copenhagen Business School, Copenhagen.

Lund-Thomsen, P., Lindgreen, A. (2014). Corporate Social Responsibility in Global Value Chains: Where are we now and where are we going?, *Journal of Business Ethics*, 123:11-22.

-
- Marginson, P. (2016). Governing Work and Employment Relations in an internationalized economy: The institutional challenge. *ILR Review*, 69(5), October 2016, pp. 1033 –1055 DOI: 10.1177/001979391665489
- Martin-Ortega, O., Outhwaite, O., and Rook, W. (2015). Buying power and human rights in the supply chain: legal options for socially responsible public procurement of electronic goods. *The International Journal of Human Rights*, 2015 Vol. 19, No. 3, 341–368, <http://dx.doi.org/10.1080/13642987.2015.1029295>
- Milberg, W., Amengual, M. (2008). Economic development and working conditions in export processing zones: A survey of trends. *Social Dialogue Working Paper 3* Geneva, ILO.
- Milberg, W., Winkler, D. (2011). Economic and social upgrading in global production networks: Problems of Theory and Measurement. *International Labour Review*, 150, (3–4).
- Milberg, W., JIANG, X., & Gereffi, G. (2013). Industrial policy in the era of vertically specialized industrialization. *Industrial Policy for Economic Development: Lessons from Country Experiences*.
- Miller, J. (2013). After Horror, Change? *Dollars & Sense*, Sep/Oct 2014, Issue 314, pp. 9-11.
- Moore, M. (2012). 'Mass suicide' protest at Apple manufacturer Foxconn factory. *The Daily Telegraph*, 11 January 2012 [accessed 20 November 2016]
- Nadvi, K. and Raj-Reichert, G. (2015). Governing health and safety at lower tiers of the computer industry global value chain. *Regulation & Governance*, 9: 243–258. doi:10.1111/rego.12079
- Navas-Aleman, L. and Guerrero, T. (2016). Procurement practices and SMEs in global supply chains: what do we know so far? : A literature review / Lizbeth Navas-Aleman, Tamara Guerrero; International Labour Office, Enterprises Department. Geneva: ILO, 2016.
- Nimbalker, G., Mawson, J., and Wrinkle H. (2016). The Truth Behind the Barcode: Electronic Industry Trends. Baptist World Aid Australia. www.behindthebarcode.org [accessed November 20, 2016]
- OECD, (2011): OECD Guide to Measuring the Information Society 2011. OECD Publishing, Paris
- OECD, (2016): OECD Due Diligence Guidance for Responsible supply Chains of Minerals from Conflict-Affected and High-Risk Areas, 3rd Edition, OECD Publishing, Paris.
- OECD (2016, Forthcoming): Practical Actions for Companies to Identify and Address the Worst Forms of Child Labour in The Mineral Supply Chain. Draft Document, OECD, Paris. May, 2016. <http://mneguidelines.oecd.org/OECD-Practical-Actions-for-WFCL-in-Mining.pdf> [Accessed: 22 September 2016]
- OECD, WTO and World Bank Group, (2014). Global Value Chains: Challenges, Opportunities, and implications for policy. Report prepared for submission to the G20 Trade Ministers Meeting. Sydney, Australia, 19 July 2014.
- OECD and World Bank Group, (2015). Inclusive Global Value Chains. Policy options in trade and complementary areas for GVC Integration by small and medium enterprises and low-income developing countries. Report prepared for submission to G20 Trade Ministers Meeting. Istanbul, Turkey, 6 October 2015.
- Oka, C. (2010). Channels of buyer influence and labor standard compliance: The case of Cambodia's Garment Sector. *Advances in Industrial and Labor Relations*, Volume 17, 153–183, 2010, Emerald Group Publishing, doi:10.1108/S0742-6186(2010)0000017008
- Oster, S. (2016). Inside of one of the World's most Secretive iPhone Factories: An exclusive look into a plant where Apple addressed claims of excessive overtime. *Bloomberg*, April 24, 2016 <http://www.bloomberg.com/news/features/2016-04-24/inside-one-of-the-world-s-most-secretive-iphone-factories> [accessed 16 September, 2016]

-
- Pickles, J., Zhu, S. (2013). The California Transparency in Supply Chains Act, Capturing the Gains, Working Paper 15. University of Manchester: Manchester.
- Plank, L., Staritz, C. (2013). Precarious upgrading in electronics global production networks in Central and Eastern Europe: The case of Hungary and Romania. Capturing the Gains: Working Paper 31, April 2013. <http://www.capturingthegains.org/pdf/ctg-wp-2013-31.pdf>. [accessed October 13, 2016]
- Ponte, S., Sturgeon, T. (2014). Explaining governance in global value chains: a modular-theory building effort. *Rev. Int. Polit. Econ.* 21 (1), 195–223.
- Raj-Reichert, G. (2011). The Electronic Industry Code of Conduct: Private Governance in a Competitive and Contested Global Production Network. *Competition and Change*, Vol. 15, No. 3, August, 2011, 221–38.
- Raj-Reichert, G. (2013). Safeguarding labour in distant factories: health and safety governance in an electronics global production network. *Geoforum* 44, 23–31.
- Raj-Reichert, G. (2015). "Exercising power over labour governance in the electronics industry." *Geoforum* 67 (2015): 89+.
- Rawling, M. (2015). Legislative regulation of global value chains to protect workers: A preliminary assessment. *The Economic and Labour Relations Review* 2015, Vol. 26(4), 660–677.
- Rotter J.P., Airike P.E., Mark-Herbert C. (2014), Exploring Political Corporate Social Responsibility in Global Supply Chains. *Journal of Business Ethics* (2014) 125:581–599 DOI 10.1007/s10551-013-1927-4
- Rowan & Littlefield, Lanham. Luk, L. (2014). Foxconn sells communications technology patents to Google. *Wall Street J.*, 25 April.
- SOMO, (2014). *Socially Responsible Procurement Fact Sheet*. Socially Responsible Public Procurement of Garments and Textiles: Focus on the role of European governments and organisations in the public and semi-public sectors. December, 2014. [Accessed: 21 September 2016]
- Simpson, C. (2013). An iPhone Tester Caught in Apple's Supply Chain, 7 November. Bloomberg Businessweek.
- Sims, G. (2014). Foxconn's Little Known Secret – InFocus, [www. androidauthority.com](http://www.androidauthority.com)
- Shingal, A. (2015). Labour market effects of integration into GVCs: Review of literature. R4D Working Paper 2015/10. Bern: World Trade Institute. Available from: <http://www.r4d-employment.com/wp-content/uploads/2014/09/GVC.pdf>. [Accessed: September 25, 2016].
- Smith, A. (2003). Power relations, industrial clusters, and regional transformations: Pan-European integration and outward processing in the Slovak clothing industry. *Econ. Geogr.* 70 (1), 17–40.
- Sodhi, M. S., and Tang, C. (2014). Supply Chain Research Opportunities with the Poor as Suppliers or Distributors in Developing Countries, *Production and Operations Management*, Vol. 23,(9), pp. 1483–1494.
- Spence, M. and Hlatshwayo, S. (2012). "The evolving structure of the American economy and the employment challenge." *Comparative Economic Studies* 54.4: 703+. *Academic OneFile*. Web. 22 Aug. 2016.
- Sturgeon, T. (2002). Modular production networks: a new American model of industrial organisation. *Industrial Corp. Change* 11 (3), 451–496.
- Sturgeon, J.T., Kawakami, M. (2010). Global Value Chains in the Electronics Industry. Was the Crisis a Window of Opportunity for Developing Countries? Policy Research Working Paper 5417. The World Bank. S.C.

Tejani, S., Milberg, W. (2010). Industrial Upgrading, Deindustrialization and the Defeminization of Manufacturing Employment. SCEPA Working Paper, The New School.

Wad, P. (2012), '[Revitalizing the Malaysian Trade Union Movement: The Case of the Electronics Industry](#)' *Journal of Industrial Relations*, vol. 54, no. 4, pp. 494-509., [10.1177/0022185612449135](#)

Womack, B. (2016). PC shipments drop 3.9 percent as declines slow before holiday shopping. Bloomberg Technology, October 11, 2016. [accessed 20 November, 2016]

UNIDO, (2011). Industrial Value Chain Diagnostics: An Integrated Tool. United Nations Industrial Development Organization (UNIDO). Vienna, Austria.

Verité, (2014). Forced Labor in the Production of Electronic Goods in Malaysia: A Comprehensive Study of Scope and Characteristics. Amherst, Verité.

Verité, (2015). Strengthening Protections Against Trafficking in Persons in Federal and Corporate Supply Chains.

Yeung, H.W. (2014). Governing the market in a globalizing era: developmental states, global production networks and inter-firm dynamics

Yihui Su. (2010). "Student workers in the Foxconn empire: the commodification of education and labor in China." *Journal of Workplace Rights* 15.3-4 (2010): 341-362. *Academic OneFile*. Web. 16 Sept. 2016.