Billions of people regularly use electronic devices yet most are end-users in a global web of supply chains. China is home to most of the producers. They supply a minority (8%) of FTA members that specialise in electronics, the majority of whom participate in the Business Social Compliance Initiative (BSCI). Several also participate in the Business Environmental Performance Initiative (BEPI).

With respect to FTA members and their supply chains, the electronics industry covers:

- Audio visual equipment (e.g. digital cameras, USB flash drives);
- Computing (e.g. desktops, video games);
- Mobile phones (e.g. smartphones, applications); and
- Safety/security technology (e.g. alarm systems, ‘smart devices’).

This report on the electronics industry examines trade and sustainability risks. It broadly focuses on Chinese electronic producers - at tier 1 - that currently engage in BSCI 2.0. It assesses six material issues and looks at emerging trends.

### TRADE ISSUES

**Business volume:** In 2015, global electronics machinery and equipment exports exceeded US $2.3 trillion. The International Trade Centre also reports that China (including Hong Kong) accounted for over 35% of the total. Chinese exports were worth more than those from the next five countries combined (see Chart 1).

<table>
<thead>
<tr>
<th>Country</th>
<th>Value (US billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>849.5</td>
</tr>
<tr>
<td>U.S.</td>
<td>169.7</td>
</tr>
<tr>
<td>South Korea</td>
<td>138.3</td>
</tr>
<tr>
<td>Germany</td>
<td>131.2</td>
</tr>
<tr>
<td>Singapore</td>
<td>118.2</td>
</tr>
<tr>
<td>Taiwan</td>
<td>116</td>
</tr>
</tbody>
</table>

Chart 1: 2015 electronics export volumes in US$ billion: top 6 countries (source: International Trade Centre/Trade Map)

**Regulatory environment:** The latest Chinese regulation on electronics: ‘Management Methods for the Restriction of the Use of Hazardous Substances in Electrical and Electronic Products’ came into effect in July 2016. The legislation is commonly referred to as “China RoHS 2,” owing to similarities with EU regulation.

China RoHS 2 compels producers and importers to know the origins of the hazardous substances being used in manufacturing (see Articles 12-14 in the English translation). Non-compliance can lead to punitive measures, which are defined by the competent government authority (see Section III: Article 19). It builds on other Chinese legislation, which promotes clean/green manufacturing; seeks to prevent solid waste pollution; and specifies how to recycle and dispose of electrical and electronic waste.
Similarly, at the EU level, the regulation: ‘Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations (RoHS)’ follows a precautionary approach. Meanwhile, the ‘Waste Electrical and Electronic Equipment (WEEE)’ regulations instruct manufacturers, sellers and distributors to responsibly recycle unwanted electrical and electronic equipment.

At the global level, under the World Trade Organization (WTO), the Information Technology Agreement (ITA) is setting the stage for increasing trade and eliminating tariffs on a wide range of products such as electronics and multimedia (see products listed in a EU press release and for more information, see WTO ITA website).

Trade defence: Import tariffs on Chinese electronics are already relatively low by industry standards. For instance, PC tablets entering the EU Single Market have no duty whatsoever.

SUSTAINABILITY ISSUES

In BSCI, over 98% of active electronics producers are based in China. Between May 2015 and October 2016, a total of 206 were audited in China under BSCI 2.0. Most (72%) received an audit rating of: Acceptable (C).

The audits took place in 30 different Chinese cities. Almost half (47%) were conducted in Shenzhen alone. Another 15% were carried out in Dongguan. The remaining 37% took place in 28 other cities. In Shenzhen and Dongguan, which are both in Guangdong province, there was a higher proportion of insufficient/unacceptable ratings (D or E) than in the country as a whole (see Chart 2).

SOCIAL RISKS

The BSCI 2.0 audits in the electronics industry highlight two major social risks at the first tier of production:

- Low awareness of the BSCI Code of Conduct’s potential to protect workers’ rights; and
- Low awareness of workers’ health risks especially concerning the use of chemicals.

1. LOW AWARENESS OF THE BSCI CODE OF CONDUCT’S POTENTIAL TO PROTECT WORKERS’ RIGHTS

Findings: Nearly half (46%) of the audited producers demonstrated low worker protection. Most (59%) in Dongguan; however, need to make considerable improvements (see Chart 3). In many of the factories, the managers, workers and workers’ representatives were unfamiliar with the BSCI Code of Conduct.

Impacts: At dozens of the Chinese factories, the lack of knowledge about the BSCI Code of Conduct partially explains low levels of communication around social compliance. The absence of information also limits their potential for defining long-term goals to protect workers’ rights. Limited training activity also reinforces gaps in knowledge amid unfulfilled social commitments.
**Recommendations:** FTA members can anonymously draw on producers’ good practices in approaching weaker links in the supply chain. Good practices are sometimes noted in the audit/findings report under a particular performance area such as workers’ involvement and protection. More can be learned through follow-up exchanges with producers, other business partners and the auditors themselves. Highlighting best practices can encourage transparency and consistency in the supply chain. For example, a Chinese electronics producer has been disclosing a summary of its social performance to workers through an internal website. It has also issued the report on an annual basis to its business partners as well as other key stakeholders. Such voluntary disclosure allows members to see the extent to which the BSCI Code of Conduct is being applied. It promotes reliability and shared commitments.

**Finding:** Most Chinese producers have good occupational health and safety (OHS) policies and practices though 36% have high OHS risks. Proportionally, factories in Dongguan require the most remediation (see Chart 4). Across the country, many need to address concerns over workers’ health and chemical use.

**Chart 4: Percentage of electronics factories with high occupational health and safety risks (May 2015 - October 2016)**

**Impacts:** In the absence of health exams to monitor workers who use hazardous chemicals such as those in soldering, questions over ingesting chemical residue or dust are left unanswered. Inappropriate or absent personal protective equipment (PPE) compounds health risks. In many Chinese electronic factories, workers had the wrong kind of mask or were missing it altogether to prevent soldering from tin smoke.

Many areas marked by chemical use were missing warning signs, lacked hazard testing and had ineffective alarm systems. Such critical gaps further constrain risk assessments, which often neglected young workers and pregnant women. In those cases, the worker is often left without knowing what PPE to use or how best to use it. In addition, some PPE needs to be customised for vulnerable groups. Follow-up health checks may end up inconclusive if the substances being used in the working environment are somewhat unknown or unexplained. Emergency agreements with nearby hospitals or medical facilities rely on qualified medical practitioners who can grasp the cause of the health issue in order to administer the treatment. Such concerns are multiplied when workers have no accident or injury insurance.

**Recommendations:** Through their communication channels to producers, FTA members can convey the importance of documenting chemical use. Key questions arise such as:

- What chemicals are being used?
- What is the composition and underlying risk(s)?
- Who uses them and how?

This form of communication implies closer collaboration between management and workers. It entails much closer scrutiny of OHS procedures and workers’ health. Electronics producers/suppliers should be aware of international standards as well as applicable law.

For producers in particular, knowing how to make use of materials safety data sheets (MSDS) should be widespread. They too should be made familiar with the international chemical safety cards (ICSC). More information on MSDS, ICSC and chemical management can be found at: www.inchem.org. In addition, BEPI can provide wide-ranging support to members in this critical area.

Buyers must be diligent when sourcing electronics products especially where workers may be at their most vulnerable such as in the conflict minerals trade. For instance, tin, tungsten and tantalum are frequently extracted without effective traceability from volatile areas in Central Africa. Reviewing and following industry guidelines offers a way to start mitigating the risks.

The ‘Chinese Due Diligence Guidance for Responsible Mineral Supply Chains’ was developed by the Chinese Chamber of Commerce for Metals, Minerals and Chemicals (CCCMC) in cooperation with the OECD (see CCCMC Guidance overview). It applies to all Chinese companies that extract or use minerals in the supply chain. The initial focus is on tin, tungsten and tantalum but the CCCMC Guidance will cover many other minerals. It also aligns with the OECD Due Diligence Guidance (see summary, and related OECD reports).
The new EU regulation on conflict minerals goes several steps further to ensure "sustainable sourcing for 95 percent of all EU imports of tin, tantalum, tungsten and gold" through provisions of due diligence as of January 2021 [see EU Press release issued 22 November 2016]. The U.S. Security and Exchanges Commission (SEC) adopted its disclosure rule in August 2012 concerning sourcing minerals such as tantalum, tin, gold, or tungsten in the Democratic Republic of the Congo and adjoining countries [see SEC Fact Sheet).

ENVIRONMENTAL RISKS

Almost three quarters of the Chinese electronics producers audited between May 2015 and October 2016 demonstrated good environmental policies and procedures. Those with low protection of the environment (27%) are spread relatively evenly among the two main cities and the others (see Chart 5).

The BSCI 2.0 audits in the electronics industry highlight two major environmental risks:

- Some producers are not taking enough precautions to manage hazardous waste; and
- A growing list of environmental requirements must be met by robust procedures.

1. SOME PRODUCERS ARE NOT TAKING ENOUGH PRECAUTIONS TO MANAGE HAZARDOUS WASTE

Findings: Some factories’ environmental procedures do not currently go far enough in identifying and separating the waste being generated.

Impacts: The surrounding environment remains at risk when factories have not yet defined handling requirements or created necessary awareness among workers. Environmental impact assessments may have gaps when a factory has not done enough to monitor or report on hazardous waste disposal.

FTA members should also revisit the BSCI System Manual: section 3.4, Act Diligently, p. 33-34 with a view on anticipating risks. They should understand stakeholder expectations, assess supply chain information and set priorities based in part on available resources. They need to be prepared for detecting human rights abuses. Members may want to consider working in collaboration with their Chinese business partners to conduct a due diligence process to start gaining better visibility in their supply chains.

Without assurances about the ways in which the factory’s hazardous waste is used, buyers may find the risks and consequences hard to judge. They may have to seriously question the composition and origins of the electronic devices on offer. Partial answers may not satisfy customers or other key stakeholders.

Recommendations: FTA members should encourage producers to carefully consider how to deal with hazardous waste. For instance, chemical storage areas must be closely monitored to prevent any leaks. The resilience of all means of transporting hazardous materials must be regularly tested and proven (containers, pipes and so on). Proper ventilation, labelling and PPE provide additional assurances.

BEPI’s Supply Chain Chemical Management module has been designed to support members in addressing chemical issues in their supply chains within a collaborative framework with common tools and standards. The module provides BEPI participants the platform and tools to communicate with their producers in all tiers, improve their chemical management and respond to detox concerns.

Members can also take a long-term view by identifying electronic product lifecycles. They can begin to analyse the stages at which sustainability risks could be addressed in the supply chain.
2. A GROWING LIST OF ENVIRONMENTAL REQUIREMENTS MUST BE MET BY ROBUST PROCEDURES

Findings: Several producers have not aligned environmental policies and procedures to core business strategy.

Impacts: Meeting stakeholder expectations, such as those from government, can fall short if policies like handling hazardous waste or tracking water use are not well-defined. If policies are unclear, procedures tend to be incomplete as well. Core business strategy is undermined when underdeveloped procedures do not address potential risks to the business, the well-being of workers, or towards the environment itself.

In the absence of a diligent approach to create robust procedures and recordkeeping, an electronics factory or even its buyer might end up facing serious environmental or social problems. Critics can voice their opinion quickly on social media platforms, or through an active presence when working with NGOs, regulators and/or others. Each has their own agenda.

Recommendations: FTA members should always stress the need for standardised procedures backed up by documented and responsible policies. Producers should have these linked to certain environmental requirements they might face concerning hazardous waste, tracing minerals, government policies, etc.

Members should also consider how to anticipate external pressures and stakeholders. In this respect, one prime example is Greenpeace. Its international [detox campaign] puts e-waste and chemicals front and centre. It has focused on phones, laptops and televisions.

As far back as 2005, Greenpeace launched its ‘Toxic Tech Campaign.’ Between 2006 and 2012, it published 18 editions of its ‘Guide to Greener Electronics’ [see campaign timeline]. Although it has focused on big multinationals, Greenpeace’s potential new push into the electronics industry could delve deeper in terms of products, tactics and supply chains.

MATERIAL ISSUES AND TRENDS IN THE SUPPLY CHAIN

This report has looked at trade and sustainability risks in the electronics industry by focusing on audited producers in China. The audit findings provide an indication of both risks and areas for improvement.

The six material issues covered in this report are major risks for FTA members in the electronics industry:

- **Trade**: Sourcing Country Trade Regulation; EU Trade Regulation;
- **Social**: Low Worker Involvement & Protection; Occupational Health and Safety (OHS); and
- **Environmental**: Limited Capacity to Manage Impacts; Limited Capacity to Manage Requirements.

As shown in the graph below, these risks can be broadly classified according to their likelihood of happening in the supply chain and their potential impact:

Materiality Assessment of the Electronics Supply Chain
Main Trends in Trade

EU trade regulations present major risks for the electronics industry. Given the lucrative single market, producers, importers and other companies can ill afford to ignore regulations such as WEEE and RoHS. The EU digital economy agenda and growing IT concerns such as hacking and cyber-attacks will likely focus lawmakers’ attention on the industry as a whole.

Similarly, in China, the regulatory framework is already well-established amid the very tightly controlled internet and media environment. Exporters, not exclusively Chinese, will almost certainly follow developments very closely in the world’s largest market for electronics manufacturing.

Main Social Trends

High OHS risks remain common though steady improvements are slowly making these the exception rather than the rule. Impacts are higher in some areas than others especially where chemicals are present and when specialised PPE is necessary.

Low worker involvement and protection remains quite frequent. Potential impacts do not necessarily ripple across the supply chain. They often concern low engagement between management and workers at individual factories. This tendency of low communication also reinforces the partial implementation of the BSCI Code of Conduct to safeguard workers’ rights as a whole.

Main Environmental Trends

Being unprepared to manage environmental requirements is quite likely. It can also have various consequences in the electronics supply chain. Staying on top of recordkeeping to meet stakeholder expectations presents particular challenges.

Being unable to manage environmental impacts is less likely than mismanaging the requirements but the potential impact of meeting requirements is greater. It will remain critical to understand the chemicals and all other inputs involved in manufacturing. This tendency of understanding inputs should inform responsible handling procedures.

Outlook for the Industry

In assessing the near-term outlook for the electronics industry, FTA foresees:

> Stable conditions but uncertainties loom over the medium-term in the trade sphere;
> Incremental progress in the social sphere; and
> Ongoing changes in the environmental sphere.

Stable Conditions but Uncertainties Loom Over the Medium-term in the Trade Sphere

Based on current conditions, the electronics trade will likely continue to see solid growth. In this respect, the WTO’s IT agreement provides one hopeful avenue as do pre-existing low tariff levels and burgeoning demand worldwide especially for smartphones. However, changes are expected in coming years.

The new U.S. Administration will likely downplay free trade more than the Obama Administration. Trade relations between the U.S. and China going forward remain uncertain at best. The enormous levels of debt in Chinese business sectors also underline major risks regardless of government intervention.

Incremental Progress in the Social Sphere

As awareness builds in China over working conditions, incremental progress is likely. This is particularly the case when giant companies such as Apple and giant suppliers such as Foxconn remain in the media spotlight. Steady wage growth amid high global demand may reinforce workers’ assertiveness. However, investment in technologies like robotics raise questions over the medium-term.

Ongoing Changes in the Environmental Sphere

In China and worldwide, there is an increasingly strong focus on mitigating adverse environmental impacts, despite the stated intentions of U.S. President Donald Trump. This is arising from all corners not least civil society such as Greenpeace’s campaigns.

Most notably, the Paris Agreement on climate change entered into force on 4 November ahead of schedule. And the global agreement on hydrofluorocarbons (HFCs) was reached on 15 October under the Montreal Protocol. Although the Trump Administration raises significant questions over the short-term, the medium to long-term outlook is for significant changes to take place in dealing with environmental risks.
The Foreign Trade Association has invited the China Electronics Standardization Association (CESA) to provide an independent assessment of the issues discussed in this report. CESA is the national federation of the ICT industry in China which is under the guidance of the Ministry of Industry & Information Technology. It aims to provide services to modernise China's ICT industry and advocate the concept of corporate social responsibility and sustainable supply chains in the industry.

The information and communication technology (ICT) industry is the world’s most active player in innovation, the strongest leading force and has the most extensive market penetration among industries. It has become an important driving force of the world’s economic and social development. The report assesses the responsibility and risk in the supply chain of the current electronics manufacturing industry, and it has a good reference value for enhancing the industry’s capacity of sustainable development.

As requested by the Chinese Ministry of Industry and Information Technology, CESA-CSR (Committee on Social Responsibility) has developed the electronics industry standard, SJ / T 16000-2016 “Guidance on Social Responsibility of Information and Communication Technology Industry”, which guides electronics information enterprises to promote corporate responsibility and good governance within their company and along their supply chains. It also guides enterprises to consider suppliers’ social responsibility policies, practices and impacts brought by the policies and practices enacted during the selection and management of their suppliers. Through enhancing the collaboration of supply chain partners, we can establish a transparent and responsible supply chain management system to achieve green procurement and to build sustainable supply chains, shared responsibility as well as shared-value.

CESA looks forward to working with FTA to create a responsible manufacturing and sustainable value chain.