electronics watch

THE CLIMATE CRISIS AND THE ELECTRONICS INDUSTRY:

Labour Rights, Environmental Sustainability and the Role of Public Procurement

The climate crisis poses a challenge for public procurement, the purchasing of goods and services with public funds which drives a significant part of the global economy. The European Commission, the OECD, the United Nations, and many national governments have confirmed that public procurement should be a strategic tool to meet the most pressing social and environmental issues. Thus, public buyers on all levels should now use their procurement leverage to contribute to a liveable planet for generations to come.

This brief suggests an approach for public procurement of electronic products that uses the full innovation opportunities included in the EU Directive 2014/24/EU. Public procurement can drive market innovations facilitating production systems that are based on full respect for the rights of workers and environmental protections.

The climate crisis has galvanised public attention on carbon dioxide and other greenhouse gas emissions. But for workers in hazardous industries, such as the entire electronics supply chain, and for communities in harm's way, there is a broader health and environmental emergency impacting their daily lives. This immediate emergency should also be the target of public procurement. In using procurement leverage to support workers and communities here and now, public buyers will also help to address underlying causes of spiralling greenhouse gas emissions and the longer-term climate

crisis. The proposed focus on the organisation of production integrates short-term and long-term changes towards a socially, environmentally and economically sustainable production.

From workers' perspective, the environmental crisis is also a social crisis. Without a liveable environment people do not have access to a sustainable livelihood. Their labour and human rights here and now are in jeopardy. In the case of electronics manufacturing, Başkut Tunçak, the UN Special Rapporteur on human rights and toxics, notes that women, children and migrant workers are especially vulnerable to adverse impact caused by toxic substances at work. They are also the most vulnerable to the broader environmental crisis.[1] Environmental harm usually hits hardest against the most vulnerable individuals and communities, further restricting their opportunities for decent work and a life out of poverty. Thus, environmental and social impacts should be considered together. Public procurement should address the social dimensions of environmental issues to support a transition to sustainable development, a Just Transition.

The precautionary principle, included in Article 191 of the Treaty of the Functioning of the European Union, should anchor fundamental changes in how the industry protects workers and the environment. Requiring action when credible threats of harm exist, although some uncertainty may remain, aiming at prevention, and detecting harmful processes at the start should be guiding principles of the electronics industry and part of the public procurement demands on electronic suppliers.

Environmental and health and safety violations in electronics

The electronics industry has a largely clean public image. However, a closer look reveals that this young industry has had little respect for resources – either human or environmental – and is wasteful in its pursuit for the next market opportunity.

The manufacturing of semiconductor components, such as memories, processors and other components in electronics devices, is based on the most intricate and complex processes humankind has developed. Unfortunately, it is also one of the most toxic industrial processes. More than 400 chemical products are used in semiconductor manufacturing. More than 10% of the known chemical products contain carcinogens, such as sulfuric acid, catechol, and naphthalene.[2] At the same time an estimated 40% of chemical products in semiconductor manufacturing contain trade secrets substances,

1 Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes

2 Kim, Sinju et al. (2018), Chemical use in the semiconductor manufacturing industry, in: International Journal of Occupational and Environmental Health 24(1):1-10

leaving regulators and workers without any knowledge about possible carcinogens, mutagens and reproductive toxins.[3]

When companies weigh short-term profitability and output against worker health the risk is that worker health comes out on the losing side. For example, it has long been known that n-hexane and benzene are carcinogens, but these solvents were used for a long time wipe screens of tablets and other devices as they helped workers to wipe them faster.

(Semiconductor) Manufacturing impacting workers' health and the environment

The human toll of semiconductor manufacturing is known since at least the early 1980s. Scientists have linked miscarriages twice the expected rate and various aggressive forms of cancer and other lethal diseases with semiconductor factories in the US, UK, South Korea, Taiwan and Japan.[4] Chemicals that were banned in the United States 25 years ago are still being used in Asian semiconductor factories today. This is affecting not only the workers on the shop floor but also their children. It has taken workers years to get their illnesses recognized as work-related and to receive minor compensation.

The impacts go beyond workplaces. Silicon Valley, once the manufacturing centre of the electronics industry, is one of the most polluted places in the United States, ever since chip manufacturers contaminated the ground water in the 1980s.[5] Little is known about the environmental impact of semiconductor manufacturing in locations like Taiwan, South Korea, China, Malaysia and the Philippines. However, the industry is known for poor disclosure of water use and local environmental regulations are known for being either weak or are not enforced.[6]

Semiconductor manufacturing also requires large amounts of purified water – a typical semiconductor manufacturing facility uses around 15 million litres of water per day, generating wastewater that contains heavy metals and toxic solvents. Standard fabs (semiconductor fabrication plants) use as much power as 50,000 homes while larger fabs use more energy than car plants or refineries.[7] And while the power consumption

3 Choi, Sangjun et al. (2018), Comprehensive Evaluation of Hazardous Chemical Exposure Control System at a Semiconductor Manufacturing Company in South Korea, in: International Journal of Environmental Research and Public Health 15(6), 1162

4 Schenker, M. B. 1992. "Epidemiologic Study of Reproductive and Other Health Effects among Workers Employed in the Manufacture of Semiconductors." Final Report. Semiconductor Industry Association, December; Schenker, M. B., E. B. Gold, J. J. Beaumont, B. Eskenazi, S. K. Hammond, B. L. Lasley, et al. 1995. "Association of Spontaneous Abortion and Other Reproductive Effects with Work in the the Semiconductor Industry," American Journal of Industrial Medicine 28:639–59; Elliott, R. C., J. R. Jones, D. M. McElvenny, et al. 1999. "Spontaneous Abortion in the British Semiconductor Industry: An HSE Investigation," American Journal of Industrial Medicine 36:557–72; Comment in American Journal of Industrial Medicine 36:584–586

5 Silicon Valley Is One of the Most Polluted Places in the Country, The Atlantic, 22.10.2019

6 Baskaran, Aiswarya (2017), Waste Not Want Not – Water Use in the Semiconductor Industry, Sustainalytics

7 McKinsey (2013), Bringing energy efficiency to the fab

of chips has been reduced significantly in the last few years, improvements in energy efficiency of the manufacturing process have lagged behind.

Beyond semiconductors, the production of components and the final assembly of electronics devices is often wasteful. Product development cycles are compressed and do not leave time for scrupulous planning of the production processes, with design changes sometimes introduced in the last minute. This results in very low yield rates and high rates of waste production as devices do not meet quality standards and are discarded. Additionally, late changes in the design of devices lead to production peaks that force workers to work long shifts without time off for extended periods of time.

The European Commission's Joint Research Centre 2019 report describes manufacturing of electronics as a "dominant contributor to Green House Potential impact."[8] A recent study of the German Federal Environmental Agency shows that the production phase is the part of the lifecycle of a laptop computer with the largest share in energy consumption.[9] While using our mobile devices is becoming more energy efficient, the production phase has not been scrutinized enough.

Mining – impacting communities, workers and the environment

The life cycle impact of the industry ranges from extraction and manufacturing to the disposal of the waste. Mining is the starting point of this supply chain, which is dependent on key elements such as barium, gold, silver, lithium, tin, nickel and cobalt. Many organisations have documented the state of conflict minerals in countries such as the Democratic Republic of Congo and Zambia and their link to war and human rights violations of workers and children. However, the mining of minerals necessary for the production of electronics also impacts workers and communities in other parts of the world, including Indonesia, Philippines, China and Latin America. Researchers have documented severe environmental and social impact in many of these mining regions as well, ranging from lowering of the groundwater level, salinization, and land grabbing to impoverishment, rape, child labour, forced labour, poor health and safety conditions, illegal overtime, and anti-union activities.[10]

Battery powered vehicles, smart power applications and smart city approaches promise a more environmentally friendly mobility and living. The critical discussion around these innovations are focusing rightly on batteries and minerals – their environmental

8 Alfieri, Felice et al. (2019), Revision of the EU Green Public Procurement (GPP) Criteria for Computers and Monitors. Technical Report v1.0: Draft criteria proposals, European Union

9 Prakash, Siddharth et al. (2012), Timely replacement of a notebook under consideration of environmental aspects, Environmental Research of the Federal Ministry of the Environment, Nature Conservation and Nuclear Safety

10 Spohr, Maximilian (2016), Human Rights Risks in Mining A Baseline Study
OECD (2019), Interconnected supply chains: a comprehensive look at due diligence challenges and opportunities sourcing cobalt and copper from the Democratic Republic of the Congo

and human rights impacts. However, any battery and any smart application needs electronics to sense, measure, manage and communicate to improve the efficiency of these devices. The rise of batteries, smart applications and sustainable energy increases the number of semiconductor components and electronic devices in use. Public procurement should take both parts of the supply chains – manufacturing and mining – into account and push for improvement in how things are produced and how environmental impacts are addressed.

Missing voice of the affected

Many electronics companies report that they pay increasing attention to workers' voices in the supply chain. Yet, the workers who have become gravely ill or even died from exposure to toxic chemicals in the workplace bear mute testimony to their lack of a meaningful voice that would allow them to defend their rights and their safety at work. In the US and South Korea workers have had to resort to the courts to defend their rights and protect their health. Only after decades of struggle were these workers and their families granted any remediation and corporate acknowledgment of wrongdoings.

Workers who live in the vicinity of their factories or mines are also part of communities that endure the environmental impact of a poorly organized production. Making workers voices heard is making affected communities heard.

A meaningful workers' voice starts with meaningful transparency. When workers do not have or do not understand the relevant information about hazardous substances in their workplaces they can neither voice nor defend their rights. Experts argue that this lack of transparency could constitute exploitation by deception.[11]

A worker-driven transparency would also benefit the affected communities.

The goal has to be to move beyond compensation and remediation. Affected workers and communities must have a voice and the resources to enforce meaningful transparency and effective prevention of harm. However, in the meantime, the right to access to remedy needs to be strengthened.

Occupational health and safety committees can only be a first but important step towards a sustainable development. Democratic and independent unions and collective bargaining agreements are indispensable to a sustainable social, environmental and economic restructuring of factories and global supply chains.12

11 Baskut Tuncak, Alejandro González and Jonathan Örnberg (2018) Exploitation by deception the electronics industry, GoodElectronics

12 "Principle 10 – The right to safe and healthy work is inseparable from freedom of association, the right to organize and the right to collective bargaining.", Tuncak, B. (2019), Principles on human rights and the protection of workers from exposure to toxic substances, Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes, United Nations Human Rights Council

Silencing workers exacerbates wastefulness in production. Workers know where inefficiencies lie and waste is being produced. Including their knowledge in a re-design of the production processes is a source of immense wealth that should be made available to communities and workers and can also drive the greening of companies.

Just Transition!

The global electronics industry needs a Just Transition based on a broad and strong social dialogue. The ILO concept of Just Transition, backed by trade unions, civil society organisations and organisations like the OECD, calls for active and collaborative partnerships between workers, employers and governments. Community organisations, local and global civil society organisations, as well as investors focused on sustainable development have an important role in this process.

A Just Transition is a well-managed transition where workers have a meaningful voice and are endowed with the necessary resources to develop, voice and assert their rights and interests. Public procurement innovation can drive this process based on a long-term perspective on market development. Only with meaningful workers' voices can environmentally and socially sustainable jobs be developed in a sector that shifts towards a more sustainable production. For example, public buyers who verify compliance with sustainable and socially responsible production standards with worker-driven monitoring – rather than, or in addition to, desktop research or top-down social audits – help to strengthen workers' voices towards a Just Transition.

Public procurement – supporting Just Transition

Public procurement currently focuses on basic compliance with core labour standards in the electronics supply chains. However, a systemic perspective on a truly sustainable electronics industry suggests that public procurement should go beyond compliance. Public procurement should do more than asking for verification that no human, workers and environmental rights have been violated. The question of how things are produced, or how production is organized, should become an integral part of public procurement. The EU Directive 2014/24/EU on public procurement supports requirements focusing on the production processes and methods at any stage of the life cycle as part of technical specifications, award criteria and contract management.

A well organised production process that centres on the values of decent work, resource efficiency, and economic sustainability, and where workers' voices are ingrained in its logic, will lower the need for third-party monitoring. Supply chains based on a production system that contains all parts necessary to prevent rights violations are fundamental to sustainable development.

Public procurement can call for and support fundamental changes in business models, industry organisation and the innovation model of the electronics industry. Developing a market that provides incentives for this transformation and providing a roadmap for these changes lowers risk. The inclusion of labour rights criteria for supply chains is the first step to lower risk. But now public buyers should introduce a more systemic perspective on responsible production. Here are some practical suggestions:

Models of procurement that go well beyond certifications as an easy band-aid

- Ecological certificates have up until now mostly focused on the use phase of ICT products – for example, demanding energy efficiency, battery durability, recyclability, and reducing noise pollution. While resource efficiency has been the focus of some environmental certifications, the most important resources – the health of workers and the communities and their expertise – have been left out. Public buyers can start by supporting the development of systemic socio-ecological and industry-independent monitoring schemes that place workers' and affected communities' perspectives in the centre.

Focus on OHS as the intersection of human and environmental issues

- Electronics Watch is developing a code on occupational health and safety that extends worker-driven transparency and promotes worker involvement to create safer workplaces and communities. By adopting the code public buyers can facilitate the enforcement of the required OHS and environmental standards that will lead towards the development of a sustainable electronics industry.
- Some brands and manufacturers have begun to reduce use of hazardous chemicals. However, these improvements need to be both broader and faster. This can be facilitated by signalling a change in procurement requirements. Reducing the use of hazardous chemical through public procurement can begin with institutional policies, signalling to suppliers upcoming changes in tenders.
- Public buyers can signal these requirements for change by taking the necessary steps in their procurement. A good starting point will be the Electronics Watch guide on protecting workers against chemical hazards in electronics supply chains that is currently being developed. The guide will explain how to conduct a risk assessment and suggest procurement strategies from the pretender phase to contract management to protect workers.

Strengthen voices of affected workers and communities public buyers' supply chains

- Public buyers will need criteria that incentivise contractors to strengthen workers voice in their supply chains. Such criteria need to be developed in cooperation with local civil society as regulatory frameworks and baseline for improvements are locally varied. An important first step would be to require the set-up of independent worker-led committees working on occupational health and safety issues. Others include independent workers' grievance mechanisms and committees.

True Life-cycle Costing to include social and environmental cost

- Life-cycle costing (LCC) is gaining prominence in the discussions of public procurement. Sustainable LCC approaches have to include externalities of the production phase. This is already made possible by the 2014 EU procurement rules as cost of externalities – such as greenhouse gas emissions13 and social cost – may be included. Methods of estimating the social cost of exposures to chemicals in the production process and the impact on the regional environment and communities should be developed. Going further, measuring the cost of repression of worker rights should also become an integral part of LCC. Public buyers using LCC should start thinking about how to establish sector wide standards for calculation methods and the data to be provided by tenderers in their procurement documents.

Making the electronics sector socially, environmentally and economically sustainable will be a long-term effort. Acknowledging the decades long technology development processes that are at the base of its innovation process it is important. Public buyers should take this into account when developing a roadmap of short, mid and long-term changes and operationalize it with the respective incentives that public procurement can provide.

13 Estevan, Helena, Bettina Schaefer and Aure Adell (2018), Life Cycle Costing. State of the art report, ICLEI – Local Governments for Sustainability, European Secretariat

Electronics Watch Policy Briefs

The Electronics Watch Policy Briefs offer insights and ideas on issues related to socially responsible and sustainable public procurement based on Electronics Watch's perspective as a labour rights monitoring organisation that places workers at the centre of its activities. The Policy Briefs aim to bring worker perspectives to the forefront of public debates and to contribute to more sustainable and just global supply chains in electronics and other areas.

Electronics Watch is an independent monitoring organisation that helps public sector buyers work together to meet their responsibility to protect the labour rights and safety of workers in their global electronics supply chains.

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