

# FAIR AND CIRCULAR ICT AT UGENT – TRANSITION PLAN

## 1. GENERAL FRAMEWORK

Ever-increasing production and consumption as well as population growth are putting the climate under pressure. The battle for scarce natural resources and worldwide degradation of habitats and biodiversity are leading to crises in various areas.

Therefore, on the one hand, a drastic reduction in our consumption and, on the other hand, the transition to a circular economy is necessary. In the circular economy, raw materials are not extracted again and again but continue to circulate in the economy as much as possible. This is possible through efficient and smart use of materials, with a preference for reusable raw materials. In addition, material cycles must be closed and new business models can lead to the sharing economy and product-service combinations.

Circular economy is therefore about more than recycling. It is about fundamentally rethinking products and systems: smart design, life extension, reusability, disassembly for repair and replacement, product-service combinations, supporting different consumption models based on shared use ...

These principles are included in UGent's sustainability policy, including the sharing of infrastructure, reuse, the search for circular products and a sustainable purchasing policy in which social and ecological criteria play a role in the choice evaluation.

## 2. A FAIR AND CIRCULAR ICT POLICY

ICT technologies are evolving at a rapid pace and are constantly offering new opportunities. But behind this innovative technology are supply chains and production processes that are extremely problematic. The production of ICT products such as smartphones, computers and laptops has a very large (hidden) impact on people and the environment. As a purchasing organisation of ICT hardware, UGent can play a role in making the ICT supply chain more sustainable.

After all, the ICT hardware sector is a prime example of the current dominant linear economic model: we mine or extract new natural resources, turn them into products and then - often after a relatively short time - throw them away again when they no longer work properly. The mining of metals and minerals needed for these products is often accompanied by human rights violations and ecological destruction, and the assembly of laptops and smartphones takes place in low-wage factories where labour rights are not respected.

The lifespan of ICT hardware is very short, which increases its impact exponentially. For example, smartphones in the EU last on average only 21 months. Laptops 4 years (private models even much shorter), while they should last much longer to be able to somewhat offset their carbon footprint (EEB, 2019). We often buy a new device quickly because there is a new model on the market or because software upgrades are no longer possible. ICT products are often very fragile and are designed in such a way that they are difficult to repair or upgrade. Batteries and screens break down quickly. It is not easy to add extra memory or to replace the battery. There is often planned obsolescence (Mikolajczak, C., 2020), which causes devices to break down at short notice (willingly or unwillingly). This creates a gigantic e-waste mountain (50 million tonnes in 2018 (WEF, 2019)).

Overall, the ICT industry accounts for 3.7% of global greenhouse gas emissions (The Shift project, 2019). With the current growth in demand and without a significant reduction in energy consumption by the ICT sector, this could rise to 14% (The Shift project, 2019).

The transition to a fair and circular economy can be a (partial) solution to the current climate crisis, raw material scarcity and all the resulting social effects. However, this requires major changes in the production methods and supply chains of our ICT hardware products.

As a major consumer of ICT hardware<sup>1</sup>, UGent can exert significant influence on ICT companies to make their production chain structurally more sustainable. It can also reduce its own use of materials and the ecological footprint of its organisation through a circular use of the required ICT.

### **3. STARTING POINTS**

With the policy plan, we want to create a clear framework in which objectives and clear policy choices are formulated, boundaries are defined and first steps are made concrete.

This approach, however, requires a number of supported principles:

**1. The project focuses on a sustainable ICT policy, not just a sustainable DICT policy:** The activities of DICT form a subset of what is happening within UGent concerning ICT. As an institution, UGent takes a commitment, which therefore implies that the sustainability of all ICT activities, central and decentralized, must be in scope. DICT is very transparent in its purchases and activities - which is very obvious for a central, service providing entity - and it is therefore obvious to take this as the starting point of this exercise. But sustainability does not end with DICT, and also the (perhaps less visible) decentralized ICT activities need to be evaluated and steered in order to be able to speak of sustainable ambitions of UGent as an institution. A two-speed exercise, in which the visible is treated with great attention but the less visible is completely disregarded, only sends the wrong message and takes us backwards instead of forwards in terms of policy.

**2. Respect for the role of DICT as operator of the ICT production environment of UGent:** The ICT environment of UGent is not an experimental environment, but a necessary engine for education, research and administration for the 61,000 users we support on it. The primary role of DICT is to manage the risks in this very large and complex environment, with a potentially serious impact on the functioning, the legal responsibilities or the image of UGent. The input that DICT gives from this perspective, even though it might be an impediment to big(er) ambitions, should be given a place within the transition plan. Possible actions must be sufficiently matured, developed, elaborated and substantiated before they can be released on the UGent production environment. Within this framework, however, one can count on all good will and a maximum effort from DICT to achieve noble results. This does not mean, however, that it can sometimes be useful to first experiment on a smaller scale to see whether something works, and then to draw lessons from this for a broader approach.

**3. The result of this exercise should be a policy approved by the Board.** DICT likes to commit itself to a clear and balanced mission. When we as a board get caught in a crossfire of unaligned or even conflicting ambitions from different angles, we can only work inefficiently and produce disappointing results. It is also tempting to zoom in on very specific cases and start tweaking on a case-by-case basis. In our view, given the volume of activities, this too is an inefficient and not very fundamental way to move forward, and at best leads to a handful of symbol dossiers rather than a systemic, institution-wide sustainable approach. DICT therefore wants to help build a fully-fledged policy that is broadly applicable and implies a real commitment on the part of the institution. To this end, we want to collaborate on the design, and also endorse and defend it to the various policy bodies. But the goal must be to have it adopted at the level of the institution, with the board's blessing.

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<sup>1</sup>In 2019, UGent purchased approximately € 10 m of ICT equipment. Of this, € 7 mio was ordered from Dell. The obligatory nature of the new framework contract will increase this amount even more.

## 4. OBJECTIVES

With a policy on fair and circular ICT, UGent pursues the following objectives:

1. For new or renewed framework agreements, the best available sustainability criteria are integrated. The purchasing power of UGent is used for more chain transparency in order to increase social and ecological sustainability in all phases of the purchasing process.
2. Maximum extension of the current average lifespan is sought, either through internal processes or North-South cooperation.
3. All UGent ICT material is mapped and recycled in the waste phase.
4. UGent wants to play a social role in making ICT sustainable and is working on changing behaviour among staff and students.

## 5. ACTION PLAN

To achieve the above objectives, an ambitious action plan is needed. This is built around 3 pillars, viz:

- sustainable procurement
- lifetime
- increasing the collection rate and optimising the recycling of e-waste
- communication and strengthening of internal support

### **Pillar I: Sustainable procurement**

UGent pursues a sustainable purchasing policy. Sustainability criteria are integrated, where relevant, in new or renewed framework agreements. Social, ecological and economic criteria must be fully taken into account in all phases of the procurement process.

To achieve this for ICT procurement, the following steps are needed:

1. Initiate **dialogue with suppliers** on sustainability and respect for human rights in their supply chain. Contacts with suppliers cannot be limited to the moments when specifications are put on the market. The demand for more transparency and clearer sustainability ambitions are crucial in this regard. This is a dialogue that must be conducted continuously in order to enable proper follow-up, remediation and evaluation.
2. **Integrate human rights clauses and/or sustainability criteria in tender specifications** and follow up the implementation during the contract (cf. Point 1). Ecolabels can help, but are not always the most 'ambitious' option.
3. **Affiliate with Electronics Watch: That way** you increase leverage as an organisation. Combining the purchasing power of UGent with hundreds of other public actors in the EU and UK ensures that greater impact can be generated to bring about structural changes in the chain. Electronics Watch goes beyond eco-labels by doing worker-driven monitoring in the factories and thus provides a more realistic picture of the working conditions of workers in the factories.

UGent, and by extension UZGent, AUGent and UA, concluded a new framework agreement with Dell for the purchase of PCs. Hereby a supplier of TCO-certified devices was searched for. TCO Certified is the most comprehensive certification system for ICT products. TCO takes the entire life cycle of a product into consideration, from the extraction of raw materials to recycling. The label is based on a set of minimum requirements covering the environment (e.g. energy consumption, recycling options, service life), social sustainability (e.g. respect for ILO conventions, minimum wages, responsible sourcing of minerals) and consumer welfare (e.g. ergonomic design, noise standards). Verification is done by independent verification bodies<sup>2</sup>.

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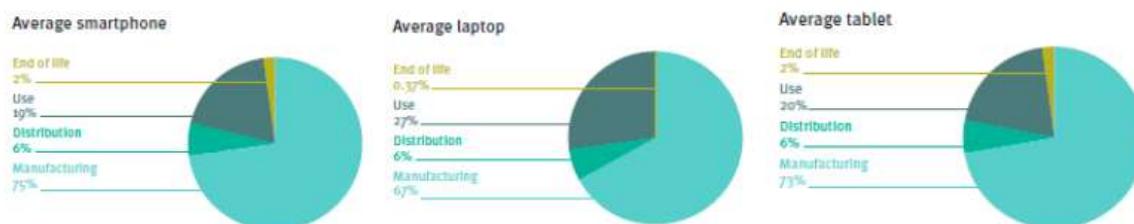
<sup>2</sup> See <https://tcocertified.com/verification-of-compliance-in-tco-certified/>

In addition, a dialogue will be started with the supplier to map out the risks of human rights violations and to work on improvement. The ICT department will collaborate on this with several UGent experts on circular economy and human rights, Fair ICT Flanders, the working group Fair and Circular IT of Transitie UGent and Electronics Watch.

The imposition of these conditions will also be thoroughly considered in future tenders for IT equipment and infrastructure. The publication 'Standards, certifications and monitoring systems for a more sustainable ICT sector', written for purchasers and other professionals who want to get started with sustainable ICT within their organisation, will serve as a guide in this regard. It provides guidance on the way to sustainable ICT procurement, discusses the advantages and disadvantages of certificates and standards applicable to ICT products and discusses possible alternatives to certificates. The publication is made available on the website [www.fairictflanders.be/toolbox](http://www.fairictflanders.be/toolbox).

## Pillar II: Extension of life span

Contrary to popular belief, it is not the use phase of electronics that has the most (CO<sub>2</sub>) impact, but the production phase. The different phases, from extraction to production and assembly of ICT hardware require more energy than the actual use of ICT devices: 60-85 % of the ecological impact and CO<sub>2</sub> emissions come from the production phase (for smartphones - Alessi, M. et al. 2019, and for mobile devices see Green Alliance, 2015) (see Fig. 2).



CO<sub>2</sub>-emissions per fases - Bron: © Green Alliance, 2015, p 29.

Fig. 2: CO<sub>2</sub> emissions per phase in electronics

As a purchasing organisation, the best strategy is therefore to set up a policy that aims to extend the lifespan of ICT products (Prakash et al. (2012). Extending the lifespan of devices in use is always preferable to purchasing new, more energy-efficient devices. There are various ways of doing this:

- products for a longer period of time;
  - extend its use through maintenance and upgrades;
- repairing broken products by means of repair, refurbishment or remanufacturing.

In order to extend the life span, the ICT manager of the fac. WE made a first draft of the paths that an end-of-use computer can take. The intention is to analyse these trajectories and work on improvements (optimising internal end-of-use flow).

In parallel, the decision of the BC dated 6 September 2019 on the sustainable outflow of ICT material, especially in the context of North-South cooperation, can be built on. In this process, reusable material is initially donated by UGent to partner universities in the global South for UGent projects of VLIR-UOS. If the available material cannot be used within the objectives of the current projects, it is in the second instance donated to the organisation Close The Gap for use in their projects.

Cooperation will also be sought with the Ghent Repair Cafés. Together with the City of Ghent, Digipolis, the Ghent Solidarity Fund and the OCMW, they started a collection campaign of laptops and

smartphones, where volunteers repair and upgrade old and broken devices. The repaired laptops and mobile phones are given away free of charge to vulnerable families or individuals.



|                                  | Usable | Outdated / slow | Broken |
|----------------------------------|--------|-----------------|--------|
| User continues to use device     | x      |                 |        |
| Device changes hands             | x      |                 |        |
| Reserve pool of research group   | x      |                 |        |
| Reserve pool of department       | x      |                 |        |
| Routine work / Device control PC | x      | x               |        |
| Stock for spare parts            |        | x               | x      |
| Recovery                         |        | x               | x      |
| Close the gap                    |        | x               | x      |
| Recupel                          |        |                 | x      |

Fig. 3: Flowchart about use of ICT within UGent

### **Pillar III: Increasing the collection rate and recycling of e-waste**

Worldwide, only 20% of e-waste is recycled appropriately. Even in the EU, only 35% of e-waste is properly recycled, which is a small proportion for a world region that is known to be at the forefront of this field (World Economic Forum, 2019). 80% of e-waste ends up in illegal dumps in Ghana, Nigeria, China or India, where it poses serious environmental and health risks (Hickey, 2018; World Economic Forum, 2019). For example, the electronic devices are burned to extract the metals and people (often children) are exposed to toxic smoke and substances during this work (Hickey, 2018; World Economic Forum, 2019). In Europe, it is estimated that only between 12 and 15% of smartphones are recycled (Alessi, M. et al. 2019). The majority of the metals present in the devices are thus not reused, which is a missed opportunity. One of the reasons for this low recycling rate in smartphones is that users tend to leave defective devices in their drawers (for personal reasons such as fear of data leakage, as a backup device, emotional attachment etc.) (Recupel, 2019). More awareness and encouragement is needed here.

Since 2013, there have been collection points for old mobile phones. The 'nature calls you' campaign drew attention to the raw materials issue and encouraged staff and students to leave their old mobile phones at a collection point. DICT took care of the correct handling. Green Office Gent wants to increase the attention and knowledge about fair and circular ICT and urban mining again, and thus increase the share of collection and recycling.

It is also suggested that the purchased ICT material be better mapped out (which is now possible due to the obligatory nature of the framework contract) and centralised upon disposal, so that the best end-of-life application can be chosen.

### **Pillar IV: Communication and reinforcement of internal support**

It is important to communicate and raise awareness about the steps taken. In this way, UGent profiles itself as a sustainable actor to the outside world and creates internal support within its own organisation. The circular policy also forms part of UGent's climate plan.

There are possible options for this:

*Expertise, commitment and policy: joining forces*

The think tank Transitie UGent is an open innovation network of more than 200 knowledge workers, policy makers, dreamers and doers from all sections of UGent. The group bundles commitment and expertise and tries to make the system changes needed for the transition to a more sustainable university and society discussable and visible with a memorandum, small-scale experiments, actions, ... Since 2019, we also work on fair and circular ICT. Policy staff (DICT, faculty ICT officers, DFIN procurement policy), UGent experts (circular economy, human rights), external experts (Fair ICT Flanders) and committed staff and students formulate suggestions, create support, enthusiasm and pressure to take new policy steps. They take up this role further.

*Become an official pilot organisation within Fair ICT Flanders (free of charge)*

Fair ICT Flanders wants to support 6 pilot organisations in working on a fair and circular ICT purchase and use policy for their project objectives. A cooperation agreement is being drawn up for this purpose. KULeuven, VUB and the City of Ghent are also preparing this. See attached the cooperation agreement, with the fields of work on the last page. This cooperation agreement summarises the efforts of the organisation and will not entail extra work. It is rather a commitment by the pilot organisation to take concrete steps towards a fair and circular ICT policy. As a pilot, one receives free individual support and access to expertise and information.

*Participate in Fair ICT Awards to gain public interest in UGent's efforts in this area*

The Fair ICT Awards reward public institutions and private companies in Flanders that work towards a fair and/or circular management of ICT: [fairictflanders.be/fairictawards](https://fairictflanders.be/fairictawards)  
The winner will receive public attention for their efforts.

*Sensitising action on urban mining and hardware collection*

This way, the theme is brought to the attention of the wider public.