

Solutions for longer lifecycles for electronic products
for the Ministry of the Environment in Finland:

NATIONAL UPKEEP PLAN & THE NATIONAL PROCUREMENT AGENCY

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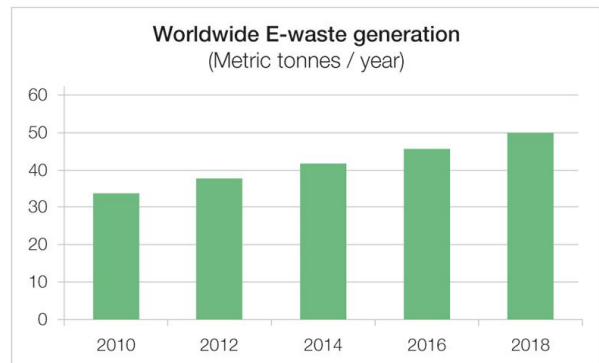
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PREFACE

Waste electrical and electronic equipments (WEEE) is today the most critical challenge for waste management. ¹ WEEE is the fastest growing sector of waste, growing globally 3-5% every year, resulting to 10 millions of tonnes increase each year. ⁵ EU is by far the largest producer of WEEE per capita, Finland being in the top 10 with the rest of Northern Europe. ²

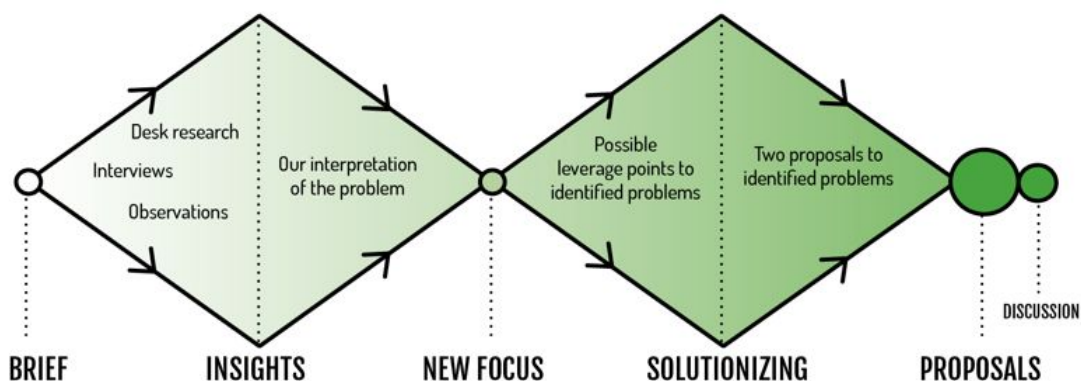
National and EU level policies have been implemented to gain control over WEEE, but with the growing amount of products with electronic implied, together with shortening lifecycles, the streams keep on growing. ^{1,2} New efforts are needed, not only in the waste management sector but before products turn into waste. Proposals presented in this report is a correspondence to a brief from the Ministry of Environment in Finland, to improve waste policy regarding **reduction of electronic waste through longer product lifecycles.** ¹



[1] E-waste generation reaches its record high year after year

New national waste plan is in development and is expected to be approved and implemented the next year, ^{3,4} and proposals in this report have been developed primarily to improve the new plan. The Finnish Environment Institute (SYKE) coordinates the preparation of the National Waste Plan (Valtsu) for the Ministry of the Environment, and waste electrical and electronic equipment is one of the main focuses in Valtsu 2017-2022. ⁴ Implementation of the National Waste Plan has high importance on both the National as well as the EU level, where the targets for waste management are set. ⁵

First we will present the main insights and findings that led us us to shift focus for waste policies. Secondly, we will elaborate two proposals which will work strategic as well as practical tools for waste prevention. They offer new possibilities to nudge consumers, public procurers as well as manufacturers towards longer lifecycles..



[2] Our working process towards solutions for longer lifecycles

INSIGHTS

Desk Research to current policies and their effects

Looking into the EU Directive on waste, it clearly emphasizes waste prevention as the top priority: ⁶ “**The purpose of this Directive is to contribute to sustainable production and consumption by, as a first priority, the prevention of WEEE**”. ^{5,6} However, practical implementations on national level have heavily focused on the processes in the end of cycle, after which the product is already discarded as waste and turned into an issue in the waste processing sector. ³ “*Given the difficulties of recycling electronics, extending lifecycles can be a better strategy.*” ¹ the brief also stated.



[3] Hierarchy within EU Directive 2008/98/EC on waste

Waste prevention through better quality products was the main goal of the EPR (Extended Producer Responsibility) scheme included in the Directive. In brief, “*the rationale behind EPR was that producers pay also for the post-consumer costs of their products and hence have an incentive to minimise those costs through better product design.*” ⁷ What seems to have happened is however the opposite: the lifecycles of products are ever shorter and volumes of waste increase rapidly year by year. ⁸ Hence, we can argue that direct incentive for more sustainable, durable products through this Directive and its national level implementations, has failed.

To develop something new, it is necessary to look into existing policies and why they failed: Regarding EPR, it fails to give support to those manufacturers and retailers that already take care of their producer responsibility. ⁷ To function better, the system should be designed so that it would charge a fee based on the quantity and quality of material the producers put on the market. However, this would demand resources and possibly eventually add costs. ¹⁰ Another undesired consequence is that the price of the recycling system based on producer responsibility has been externalized to the consumers - added to the consumer price of the electronic product. ⁷ As this is invisible for the buyer, the system does not encourage them to choose higher quality products, which was the original aim of the directive. Hence, the consumers need other support for choosing better products and also recycling them correctly. This is critical for waste prevention through extended lifecycles. ⁷

The EPR is based on the idea that it is the producers themselves who take care of the recycling. However, their business is to sell new products and not to use resources for communicating to the consumers how to deal with their old electronics. The less they receive waste, the less they have costs. Another unwanted consequence is that if they receive devices that are still functioning or can be easily repaired, they sell them to other markets outside of Finland and even the EU,^{9,12,13} what is against the scope of the EU directive.

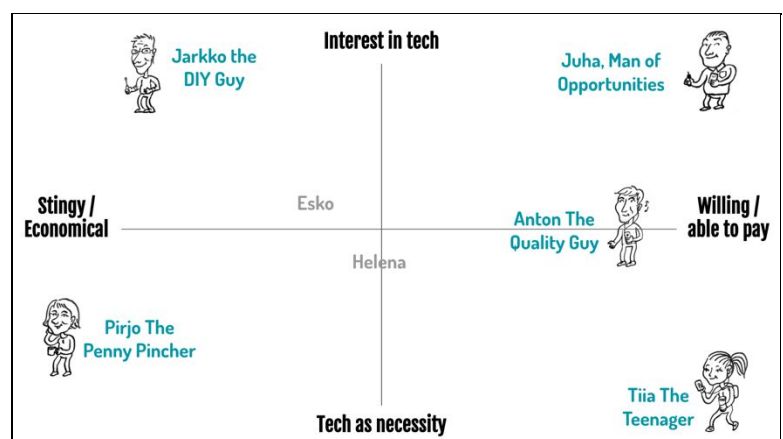
One critical aspect regarding the WEEE is that electronics are complex and contain various valuable and 'rare' earth minerals. Some of them are scarce and only imported to EU. This adds a political dimension to the problem. These minerals as well as harmful substances are not handled properly especially when waste processing is outsourced abroad, handled informally or illegally.¹ This is an issue also in Finland, as only roughly a half of WEEE is collected through official routes.^{2,9} The rest ends up into landfills in poor countries, where waste is handled in ways that are harmful for people's health and disastrous for the environment.⁹

The research we conducted confirms that the issues with WEEE will never be solved through waste management processes at the end of cycle. We need to prevent waste from happening. New incentives are urgently needed for consumers and manufacturers to choose more durable products. For that to happen, new methods are required in the policy making level to understand phenomenons taking place at *pre-waste* phase of the cycle.

Behavioral insights to understand actions behind waste

In addition to desk research, our background research focused on customer interviews across Finland to find out about customer behaviour; ethnography to empathise with the individual experience; a visit to Uusix workshop to find out about recycling, repairing and reselling old devices. We asked people how they purchase new products and with which criteria, how they have disposed of their old devices, what they know of the current recycling system, what is their relationship and interest level on technology, their interest on repair services and barriers on using them. We followed people going through a process of recycling an old mobile phone: how they went about it, what were the pain points of the experience and the overall easiness of the process.

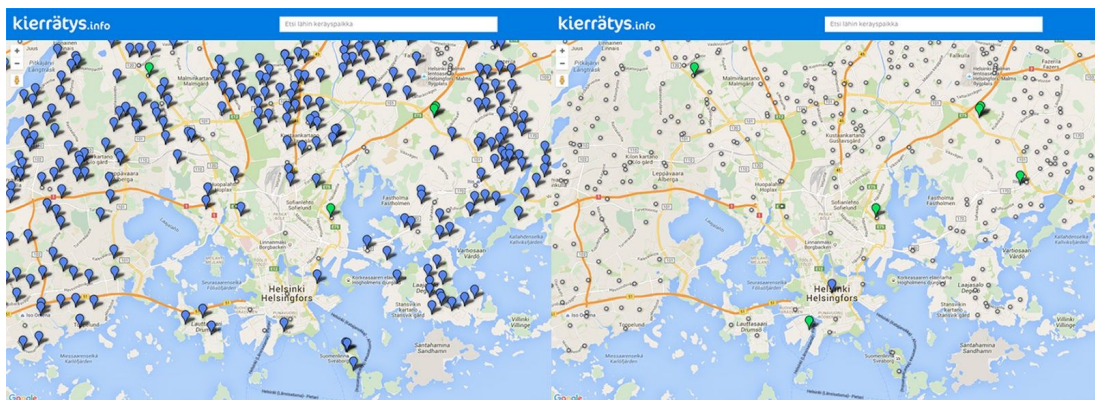
The customer research was analysed and communicated through building personas. These personas bring out the main issues of the customer experience in regards to technology and its lifecycle.



[4] Personas Matrix

The main behavioural insights we identified were:

- When it comes to small, personal electronics, people tend to hoard the devices (aka keep them in drawers). The devices might function but be out-fashioned or software outdated, or the devices might have only smaller flaws. They are mainly hoarded because they hold some personal value (such as photos, documents, memories) or could be taken back to use in case of emergency.
- People want durable devices, but devices are also connected to people's self expression: certain electronics are more inclined to be updated to newer and trendier models.
- Repairing is only an option when the device is expensive enough: diagnostics alone cost a lot, so diagnosing the problem and repairing the device shouldn't be more expensive than buying a new one.
- The information of recycling spots/places doesn't reach individuals properly, so the devices are disposed of in a multitude of ways - which are not all ideal.



[5] Consumer guidance on recycling places for paper vs. recycling places for WEEE, excluding household paper recycling possibilities

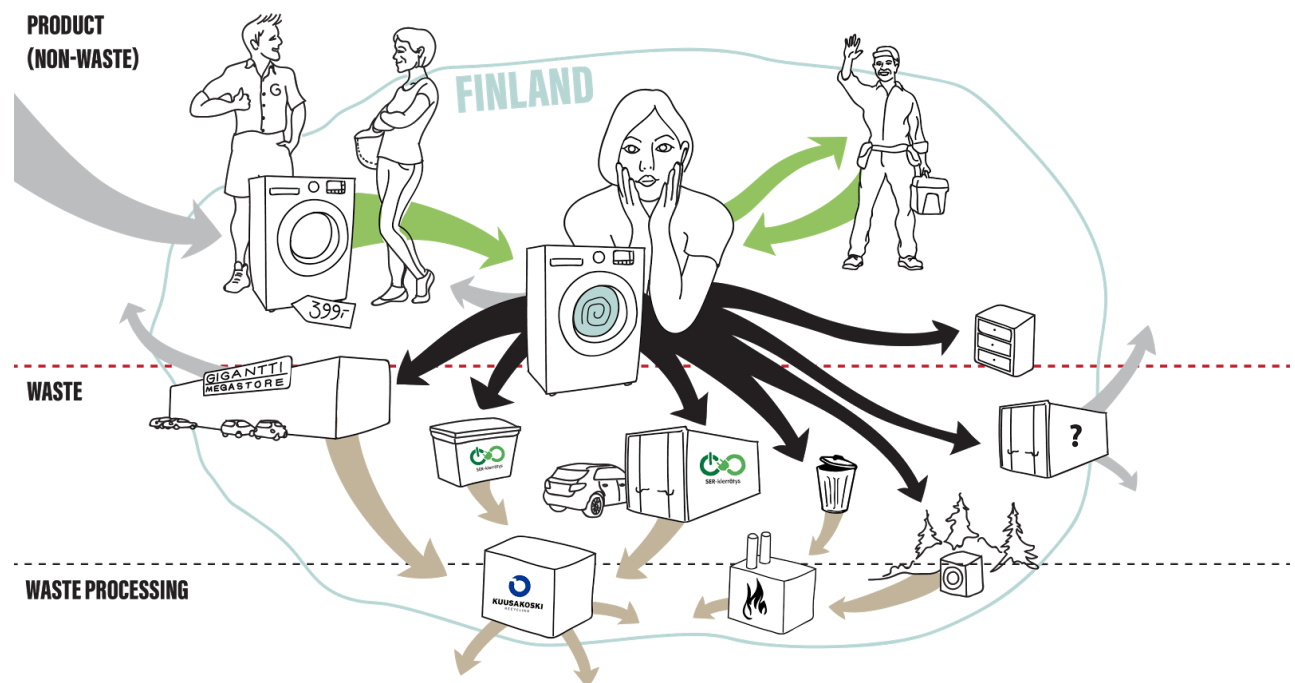
- The Extended Producer Responsibility has led to a situation where no one takes a full responsibility and the producers do the minimum to fulfill what is required of them. Recycling WEEE isn't considered as a possibility but a liability.
- There are huge mental distances at work: it's often a shorter distance physically to a repair shop or recycling center, but mentally it is a shorter route to buy a new one.
- Repair shops are scarce and places like Uusix workshop are situated randomly. In addition to that they aim at employment and not an effective process of repairing and reselling.

System Analysis to combine knowledge and find leverage points

Consumer Product Lifecycle Analysis

In the system analysis regarding consumer products, we drew the big picture based on our background research and interviews: How the products are chosen, how waste is created, how it flows in the waste system or if it ever enters the official system. Key findings regarding the system analysis were:

- The SER recycling system is full of loopholes where despite of consumers good intentions products leaks outside of the EU and end up in destinations where there is no waste management in place.
- Products stay and expire in people's personal storages, drawers.¹¹
- Within the EPR scheme no one takes the full responsibility of 1) maximizing consumer awareness on recycling and 2) minimizing the risk of electronics ending up in a wrong stream.
- The problem of electronic waste is of a systemic nature: there is no one single solution but action is needed on all levels of governance.
- Thinking about waste flows easily draws the attention to the downstream, not the upstream



[6] Simplified version of the product lifecycle analysis - focusing the consumer decision making

Possible solutions for longer lifecycles

Based on our insights we identified several possible leverage points that would improve some part of the problem.

A better communicated recycling system would make it easier for the consumers to know what to do with their old devices, as only so few seems to be aware of the possibility of bringing the old electronics back to the shop and SER collecting points being scarce.

New interpretation for the EPR scheme could be a solution for making the directive more efficient in achieving its goals: more sustainable products and efficiently working recycling system.

Sustainable public procurement would affect a large share of all electronic purchases in Finland and could potentially be a solution for extended life cycles. Public procurement covers 20% of all electronic purchases every year.

New leasing models for household appliances for big private and public lessees such as cities and SATO could also offer interesting new business opportunities, extended life-cycles and more easily manageable waste streams. The megatrend of changing ownership models could offer an interesting window of opportunity for this idea. However new leasing models had the problem of ownership: who should be the agent in this? We believe there is a big potential in business but it has to be a private company to initiate is, not the government.

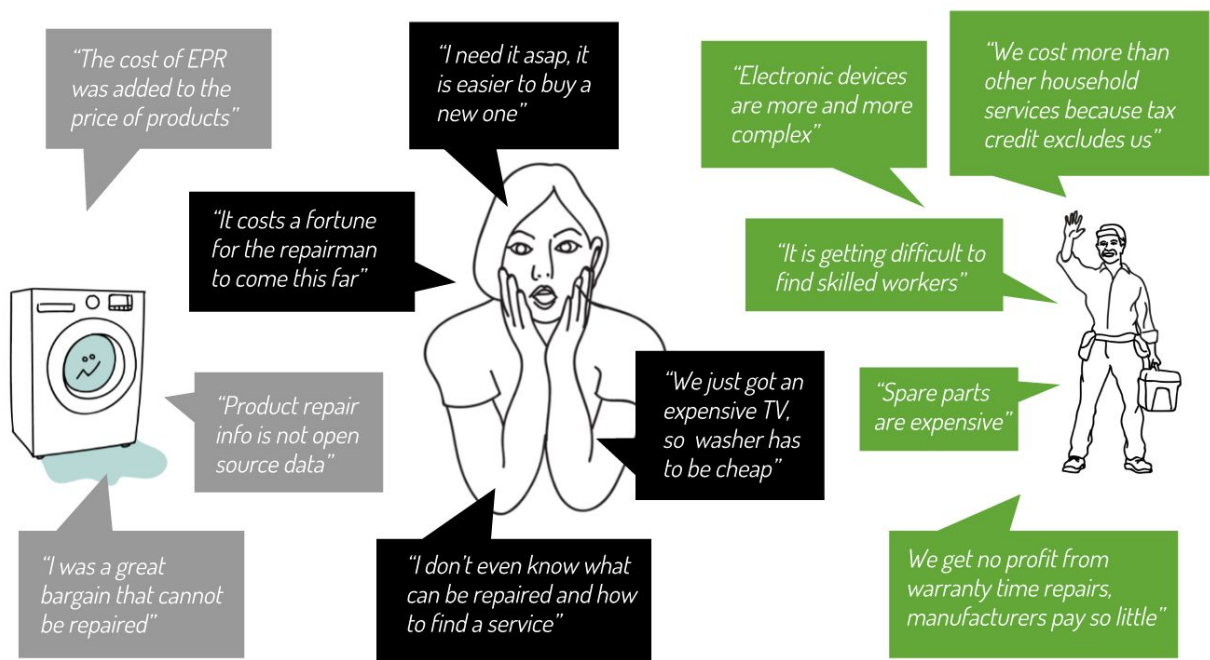
Durable and repairable products and repair services must be available and affordable for the consumers / procurers for longer lifecycles. Critical decisions about the life span of the product are made before the product enters the waste system. Finally it is also a matter of will: whether the consumers / procurers are willing to use these services or want to choose the better products.. If we want to extend the lifecycles of the products, we must influence the consumer / procurers' behaviour starting from the beginning of the product lifecycle, not the end.

Out of these option our teams chose two most promising ideas for further development: **enhancing durability and repairability** and **making public repair sustainable. Both of these ideas focus on prevention of waste, following the EU Waste Policy Hierarchy.**

Main findings regarding the durability & reparability of devices

There is not a one single solution to enhancing the durability of devices, but reparability plays a key role. The products must be repairable and the service must be available, appealing and affordable. Consumers must have the knowledge on what can and what can't be repaired. The effort of repairing should not be much more difficult than the effort of buying a new one. For products to be repairable, they must be designed so that they can be opened easily and the spare parts must be available and affordable. Also the repair data should not be closed.

Finland has limited opportunities to affect the product manufacturers to produce more durable and repairable products. This should be done at the EU level. However, there are many other measures to take at national and regional level that have an impact on the viability of repair. They should not be seen as individual policies but a more holistic approach is needed.



[7] Problems of different levels of product repairability

Table 1. Identified solutions for making repairing viable on different levels of decision-making

Level of Governance	Identified problem	Solution
EU	Energy label has led to weaker components Low quality components Non-repairable products Planned obsolescence Repair data not open source	Extended product label that indicates not only energy consumption but repairability, availability of spare parts and expected lifespan Open source repair data
NATIONAL	Repair is expensive Diagnosing the problem relatively very expensive Few professionals, no vocational education	Extended Tax Credit Vocational education Governmental support would create attention to the matter
LOCAL	Scarcity of services People are unaware of repair services in their area	Support for development and growth of repair services to developing new business models such as online diagnostics

Based on our analysis, current Valtu focuses heavily on the waste management phase of the product life-cycle and only little focus is dedicated to the waste prevention. At the same time, waste prevention is the top priority of the European Commission. Hence, we believe that there should be a shifted focus in the waste-policy making and a more holistic approach to life-cycles should be adopted. Waste prevention should not be a separate chapter in the national waste plan but it should be the underlying ethos of planning. We propose that waste prevention is given a top priority status in the waste plan. This means that instead focusing heavily on what happens to waste, we should focus on upkeep and maintaining.

Our proposal is a new paradigm for the policy-making and planning.



[8] The National Upkeep Plan

We suggest that when planning and conducting the upcoming National Waste Plan for 2017–2022, the focus should be widened from waste processing discussions to adding information and actions on how waste is prevented from happening in the first place. Hence we think that the National Waste Plan should be turned into a National Upkeep Plan that serves as a strategic tool developed for the use of the Finnish Ministry of Environment for changing the discussion and providing citizens tools for keeping up the value of electronic devices.

The goal of the tool is to mainstream upkeeping as part of our economic and environmental planning. Additionally, through this the tool is created to shift the future mindset of citizens so, that the focus would be on prevention of waste as well as maintaining our devices instead of consuming and wasting. The tool changes the current paradigm evolving around waste discussions and develops a new layer, which focuses on upkeeping, maintaining and repairing of electronic devices.

The National Upkeep Plan consists of three leading principles that summarize the purpose as well as main goals of the strategic tool.

FROM STREAMS TO UPKEEP

FROM WASTE TO REPAIR

FROM PROCESSING TO PREVENTION

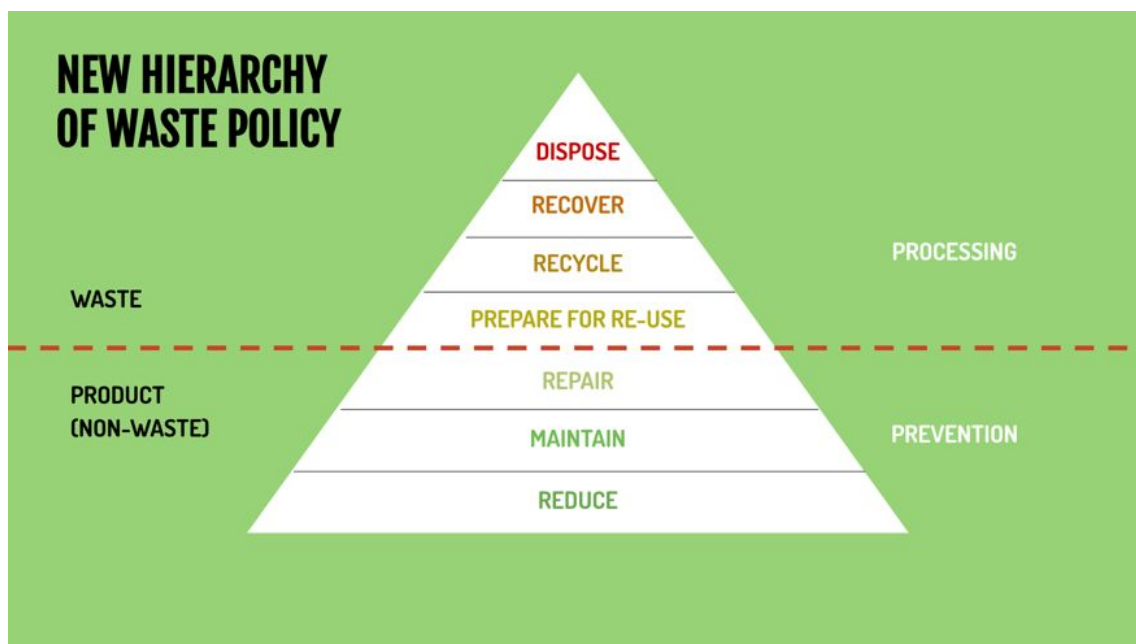
[8] The three leading principles of the National Upkeep Plan

Firstly it changes the focus from handling of waste streams to focusing on ways to support upkeeping and maintenance. Secondly it enriches the current discussions of waste by lowering the intensity by which just waste processes are discussed

and adds repair to be a viable term and alternative. And thirdly, it lifts waste prevention to the top priority of waste discussion and handling and makes actual waste processing only secondary to it.

New Hierarchy of Waste Policy as a guideline for Valtu

New hierarchy of waste policy is created based on the current waste hierarchy within EU Directive 2008/98/EC.⁴ In the new model, the triangle is turned upside down and waste prevention has been given a significantly larger role. The new model on waste hierarchy should be used when doing planning of future waste policies, the National Waste Plan as well as concrete actions on how the goals are reached.



[9] New Hierarchy of waste policy

Basically, waste prevention forms the foundation of the model so that reducing discarded devices becomes the first and utmost important step. Through this, maintaining our devices and repairing them become the second most important steps. These are the steps that the focus should currently lie on, as this provides the most opportunities for increasing the lifecycles of the products in general. Only when the devices cannot be maintained or repaired anymore, they cross the red waste line and become processable waste. Still even on this side, the repair for re-use, recycling and recovering form important steps through which the products, their materials or parts can be returned to use in some form. Finally the smallest part becomes actual waste and can no longer be used in other steps. The model also uses color coding to highlight the importance and desirability of each action so, that green is the most desirable and red to least desirable action.

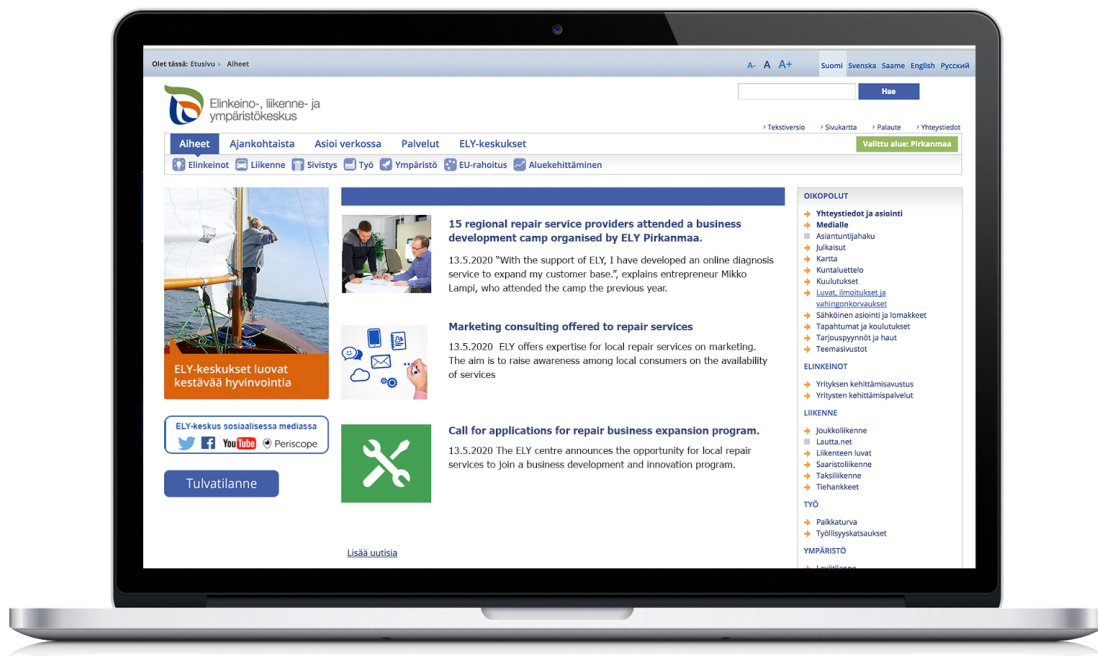
Steering actions within the National Upkeep Plan

This section provides examples of concrete actions related to the National Upkeep Plan that would help to steer the lifecycles of products to a more longer path.

Regional Administration as the support provider for maintenance businesses

Regional administration in Finland, such as the ELY centers, currently provide several different programs for the support of local business development and growth.¹⁴ As the repair and maintenance businesses are struggling currently in finding new customers and marketing their services,¹⁵ they would be in need of support from regional administrations. This support could be given in the form of already existing business programs. Regional administrations would need to reach out for these businesses in order to get them participating to the programs. Support is needed for innovative business models such as online-diagnostics and marketing.

This could be done in a form of a small marketing campaign from the administrations that contacted the businesses and encouraged them to take part. The key role of regional administrations would also add the visibility of the issue to the public.



[10] An example of a campaign targeting repair and maintenance businesses by regional administration

Extension of the current Domestic Tax Credit of Services

The current domestic tax credit of services should be extended to cover the repair and maintenance of electronic devices. This would provide an incentive for the consumers, as the domestic tax credit could cover as much as 45%¹⁶ of the repair cost of the device.



[11] An example of the results of domestic tax credit on repair services

Most importantly it would lower the current barrier of repair to average consumers and encourage them to maintain and repair their devices in the future. This would also provide a push to the existing industry by creating a new customer base for them. Extending the domestic tax credit to repair services could also increase the public spending on repair and maintenance service in general. Through the growth of the industry, employment rates could be influenced as these companies would need new work force. However, the most important consequence would be that the tax credit extension bring, would be lifting the issue up for visible and general public discussion, and thus underlining in the importance of the issue to citizens and the public.

Product Label that encourages sustainable purchases

Finally the consumer would also need support in their purchases and in making sustainable choices on their electronic devices. The support could be offered to consumers in the form of a product label that emphasized durability, reparability and energy usage of the device. This product label would be inspired by the current EU energy label of devices but it would be added with extra qualities to make manufacturers focus on the development of more durable products. The current EU energy label emphasizes the energy usage of the product^[1], but it is not enough to cover the whole lifecycle. Therefore it would be suggested to widen the current label so that it would also cover these crucial elements for growing the product life cycles. The extended product label could also be found useful in procurement processes, which currently utilize a variety of eco-certificates.

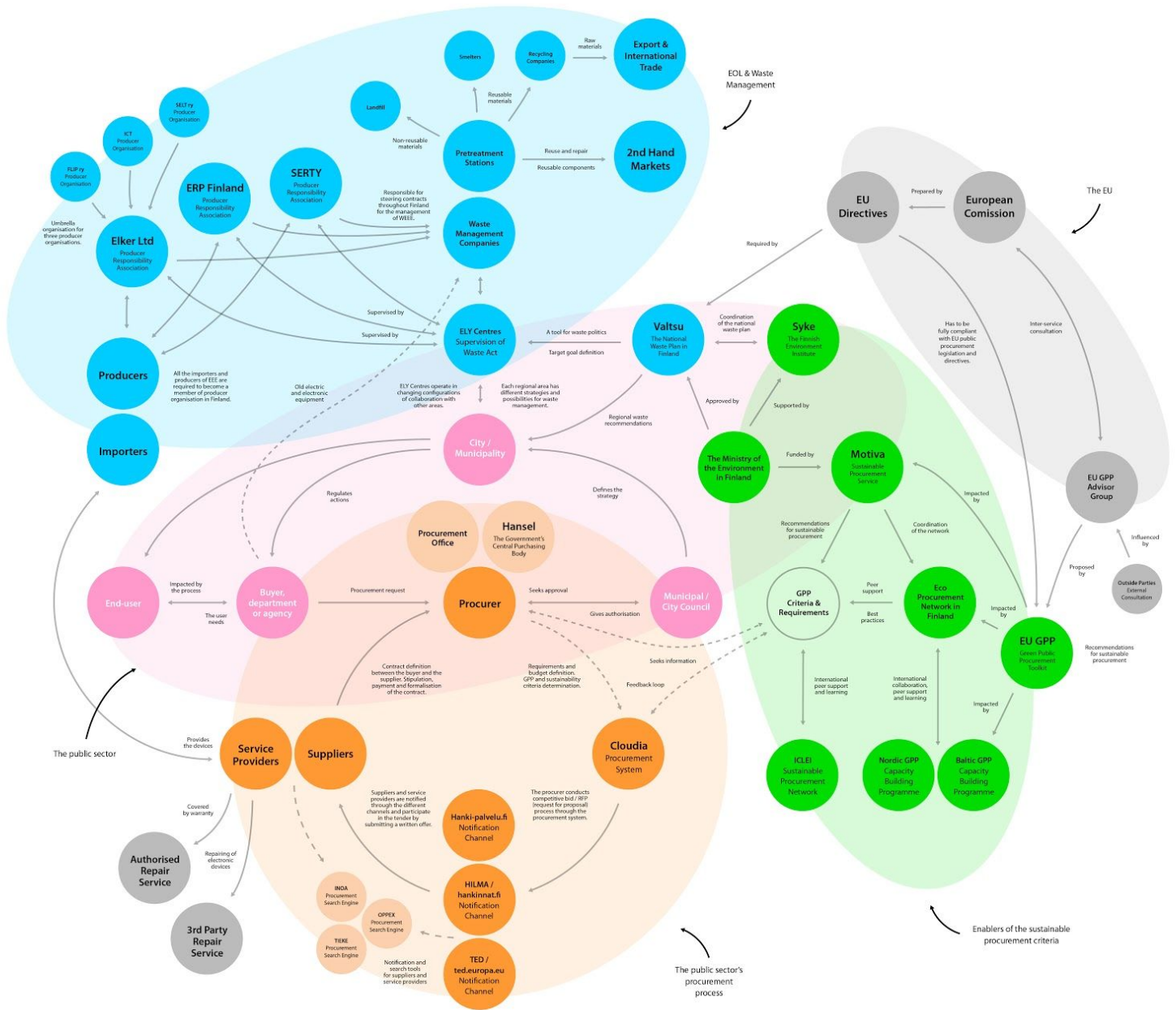


[12] An example of a potential product label emphasizing durability and reparability of devices

THE NATIONAL PROCUREMENT AGENCY

The public procurement process

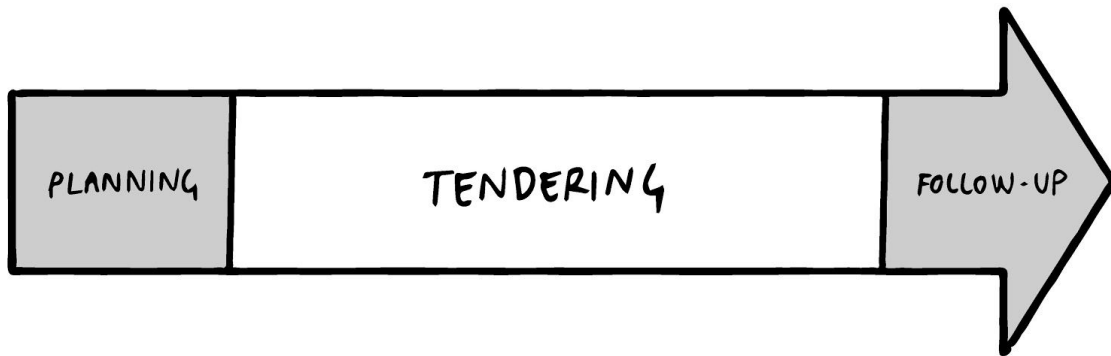
In the system analysis of sustainable public procurement, we drew the big picture based on our background research and expert interviews: in the middle is the procurer initiating the procurement process, the tools and channels he will use, the interactions between him, suppliers and the buyer department, and the cloud of support there is for sustainable procurement. We have also illustrated how the waste system links to the procurement system, the municipal actors connected to both of those, and how the EU is connected to all of these. Mapping out the system led to a key insight of realizing how the actors focused on supporting sustainable or green procurement are separated from the actual, practical process of procurement. This includes the online tools and channels currently at use as well as the supplier-side. The illustration of a green cloud with organizations only loosely linked to each other and to the procurement process is an apt demonstration of the reality where sustainability is not deeply integrated to the average process.



[13] Public Procurement System Map

The ideal procurement process is three-fold: in **the planning phase** the markets ought to be assessed to identify especially the more sustainable options available in the markets. In electronic devices, for example the technical developments as well as the availability of repair services and spare parts are crucial at this phase. Planning is followed by **the tendering phase**, where the process is opened up for competition between suppliers. In this phase, the procurer needs to set the basic qualification level - the minimum requirements for the product or service to be accepted to the competition. On top of this, the procurer needs to decide on which technical and other requirements the product or service gets advantage from by getting more points in the final assessment of the tenders. For this assessment, a scoring system needs to be chosen. An alternative for the scoring system is to choose the winner based on the minimum qualification level together with the cheapest purchasing price - in this case, other features don't have any weight in the decision. The third and final

phase after the planning and tendering phases is **the follow-up phase**, where the chosen product or service is assessed after it has been in use. The technical features as well as the promised sustainability aspects should be analysed and documented so that future procurement processes could build on what has been learned. The suppliers will be challenged to deliver on their sustainability promises, and the new procurement notices could be even stricter in their requirements based on this learning experience.



Main findings regarding the sustainability of public procurement

The following key problems regarding the sustainable public procurement were identified in our research:

- Procurement processes are not balanced: too much emphasis goes into the tendering phase, while the planning phase and the follow-up phase don't get enough weight. This leaves most of the procurements isolated, and there is no learning from past decisions nor continuum to the next ones.^{17, 18, 19}
- Procurers lack practical tools to help them evaluate the devices they are tendering out.^{17, 19}
- Multiple actors on different governmental levels and the private sector offer guides and services connected to procurement, and they end up doing overlapping work.
- The field of support for procurers is scattered and incoherent. Most of the guidelines online are the end-products of projects and the contents are often outdated and links broken.

The main building blocks for sustainable public procurement do in fact exist in Finland. The challenge, however, lies in connecting the right actors with each other and channeling the existing information on sustainable procurement practices in a meaningful way to the procurers. This will ease the process so that sustainability will be a norm in every procurement. Currently, over half of the procurement notices both in the EU level and in Finland, give the cheapest purchasing price a clear vantage.²¹

The emphasis in the procurement process is much more on the tendering phase in comparison to the planning and follow-up phases. This is the situation because, firstly, there is **a lack of practical tools and support** for the procurers in their tightly scheduled jobs. There are no clear tools for including the environmental requirements in the procurement notices. Secondly, there is **a lack of continuity and learning**. There are not many case studies readily available online, or other peer-to-peer learning opportunities to build on what has been done before. Thirdly, there is **a lack of coherence**

between the different organizations and actors, since the existing actors and organizations are not connected to each other and end up doing partly duplicated work. This further complicates the work of procurers. Because of the fragmented field, there is **a lack of ownership** in keeping up with the technical developments as well as the changes in EU directives regarding the sustainability requirements of the devices leading to lower credibility. The recommended requirements considering key aspects for longer life cycles of electronic devices, such as warranty time or repairability, are thus very loose. This doesn't give the markets a clear and strong signal on the demand for more durable devices or maintenance and repair services.

Why public procurement?

Every year, public procurement accounts to approximately 35 billion euros^{21,22} spent by governmental agencies, municipalities and other public authorities on work, goods and services. Out of this expenditure, an average of 20 %, so 7 billion euros, is spent on IT equipment²³. There is a clear need and opportunity for the public sector to take a strong leadership role in demanding more durable devices and considering maintenance and repair services of electronic equipment as a norm. However, the processes of public procurement of any goods and services follow relatively closely the same patterns and practices. In order to reduce the amounts of electronic waste through influencing the public procurement, our view needs to be more holistic and strategic. Procurement processes and working practices regardless of the type of product or service being purchased need to be assessed and partly re-designed to ensure both sustainability and efficiency in the whole scope of influence of public procurement.

At the EU level, the need to promote sustainable practices in public procurement has already been noted to some extent, as the 2014 EU directive on public procurement introduced most economically advantageous tender as an alternative criterion for the cheapest price²⁴. The Finnish law on public procurement is under revision, but after the new law will come into effect (in summer 2016), using the cheapest price criterion will always require an explanation.²⁵ However, this will not cover the procurement of goods, and in practice this requirement can be fulfilled by a simple, short and very general explanation.

As discussed earlier, the main problems identified in green procurement are the lack of practical tools and support, lack of continuity and the lack of coherence. We also noted earlier, that the right pieces to tackle these problems do exist in Finland: information, case studies, experience and stakeholder organizations. Our plan, The National Procurement Agency, brings all those pieces together for effective use and support. Together they will form a coherent field for continuous procurement work. The goal of this plan is to ensure that sustainability is a priority in public procurement processes.

The plan is divided into three levels. The first part is the Procurer Assistant, which offers practical support and information for the procurer. The second part is the Mentoring Program, which offers peer-support, collaboration and peer-learning possibilities. The third part is the National Procurement Agency, taking the ownership of these changes and ensuring a continuous development work.

The Procurer Assistant

The Procurer Assistant brings together existing knowledge on developing environmental requirements from Motiva, Hansel and Kuntahankinnat and combines this in the form of an online tool. These requirements are constantly updated by expert groups in line with the changes in EU directives as well as with the technical developments in the supply side.

The Procurer Assistant comes with two features, a sustainable requirement library which is a procurer's tool for choosing suitable requirements for tendering, and a follow-up tool for case studies, which helps the procurer to analyse previous procurements and see what other procurers have done and how their requirements have worked in action. The Procurer Assistant will help in determining whether a scoring system for requirements is necessary, or if the basic requirement level is strict enough to let the procurer make their decision based on the cheapest price.

Sustainable Requirement Library

The sustainable requirement library contains practical information about the requirements for sustainable procurement. The requirements vary in their requirement level (from basic to high demands) and comparisons between the levels are easy to make. A wide variety of requirements are offered for consideration from energy efficiency to the materials used, so that the procurer does not only consider the life cycle of the device in his buying department's use, but also the value of the device in the second hand markets. The sustainable requirement library offers a step-by-step guide for including the latest sustainable requirements into procurement notices.



Basic Requirements for Computers

Listed below are the basic environmental requirements based on your selections. You can get more information by clicking on each requirement.



Energy Efficiency

Points will be awarded/price reduction will be applied for the tender that fulfills the criteria that offered products are more energy efficient than Energy Star for Computers version 6.0 chapter 3, based on the TEC-value (kWh/year).

Verification

Download



Warranty

Additional points will be awarded if the supplier can provide an adequate warranty and ensure spare part availability. These qualification requirements can be used as a vehicle for improving the potential usable lifetime of the IT equipment.

Verification

Download



Repairability

Additional points will be awarded if the supplier takes durability, longevity and reparability into consideration. These qualification requirements can be used as a vehicle for improving the potential usable lifetime of the IT equipment.

Verification

Download



Recyclability

Additional points will be awarded if the supplier takes re-use and recycling at the end of the life-cycle into consideration. IT products such as computers contain hazardous materials, as well as valuable elements that be recycled for reuse.

Verification

Download

[14] The library shows the basic requirements for IT procurement. The user can easily see the relevance of the different requirements and download them instantly.

Follow-Up Tool for Case Studies

After the tendering has been done, the procurer uses the follow-up tool for case studies. The tool allows the procurer to generate a case study that guides him in the reflection of the usefulness of the environmental requirements and whether the requirements were met during the contract period.

Case: City of Helsinki

Environmentally-friendly office IT equipment in Helsinki

Procurement Objectives

In 2016, The City of Helsinki introduced stringent new environmental requirements for purchasing computers. The new stipulations include energy efficiency, longer warranty periods, reparability, recyclability, the use of recycled plastic in new products and eliminating lead, mercury and halogenated flame retardants from new computers.

The City owns about 40,000 desktop and laptop computers. It will be one of the first major Finnish enterprises to have longer lifecycles in both laptops and desktop computers.

Used Requirements

The new stipulations include energy efficiency, longer warranty periods, reparability, recyclability, the use of recycled plastic and eliminating lead, mercury and halogenated flame retardants from new computers.



Energy Efficiency



Recyclability



Reparability



Longer Warranty

Environmental Impacts

The application of the latest Energy Star criteria (5.0) results in energy savings during the use phase over older, less efficient models. Computers meeting the TCO criteria 05 or above diminish energy consumption and limit the use of potentially harmful substances, such as lead, cadmium and mercury.

City of Helsinki owns about 40,000 computers (about 25% of all the computers in the county), and is renewing it on a rolling basis. By the end of 2014, the City expects to have lessened the climate impact of its computers - including during their use phase - by 40%, reduced the weight of hazardous substances by eight million kilograms and cut the City's carbon dioxide emissions by two million kilograms.

Lessons Learned

It proved difficult for suppliers to meet all of the sustainability requirements. This shows that some remain unprepared when faced with ambitious sustainability requests. However, while there is room for improvement, there is also potential for customer satisfaction as numerous suppliers were able to meet, not all, but many of the requirements. The winning supplier did succeed in fulfilling all of the requirements. As other suppliers are likely to take steps to meet the sustainability requirements indicated in the tender, City of Helsinki would employ the same procedure again.

[15] In this case example the City of Helsinki has purchased environmentally-friendly office IT equipment in Helsinki, where the procurement objectives, used sustainable requirements, environmental impacts and lessons learned are described in an easily understandable format.

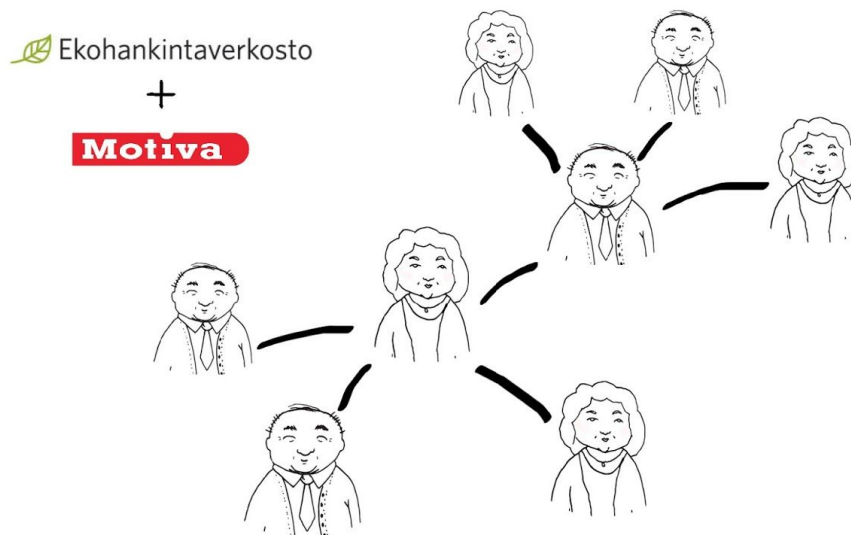
The generated case study is saved in the library of best practices on successful procurement processes that other procurers are free to use in their own work. Standardisation in documenting the cases makes comparing different case studies more time-efficient and meaningful. The formats follow the same pattern, and the same, relevant questions are given answers to in each study. Searches can be marked out to show only the studies relevant for the user, for example in terms of product categories, sizes of purchases or certain actors doing procurement.

The Procurer Assistant thus provides the procurer with the needed practical support with the easy-to-use requirement tool and brings continuity to the field by fostering learning from other procurers through the case studies. The coherence between different actors will be strengthened since the different organisations won't develop their requirements and recommendations in isolation but together.

The Mentoring Program

Instead of the procurers only having to rely on the internet and outdated guidebooks, the Mentoring Program allows them to gain more tacit and previously hidden knowledge on the best sustainable practices from other, more experienced

procurers. On top of this, the peer support community is developed further by allocating resources to *procurer exchanges* among city agencies and neighboring municipalities.



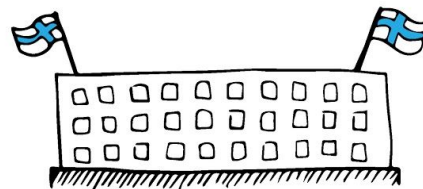
Motiva has coordinated experiments on international procurer exchanges with very positive results. Without continuous financing, however, the exchanges remained as experiments and this learning method hasn't continued or scaled up.¹⁹ On the other hand, exchanges between agencies in the same city, or exchanges between neighbouring municipalities, haven't been tried out. The Mentoring Program will focus on exchanges with closer distances on a municipal and national level. With this model, the costs of the exchanges will remain low and the national procurement network in Finland will be strengthened through this professional collaboration. Motiva is also already facilitating panel discussions with suppliers and procurers, but this collaboration is rather small-scale. The Eco Procurement Network is already offering peer support among procurers but lacks resources and formalization and thus currently only reaches a minority of the procurers. Project-based funding has led to only small-scale impacts. Experimenting without paying attention to the excellent outcomes eventually leads to wasted resources. Motiva and the Eco Procurement Network and their initiatives are strengthened by connecting them and ensuring the financial resources needed for strategic, on-going networking and learning.

The Mentoring Program will bring continuity to the field as the procurers will learn and share best practices and understand first-hand what the markets have to offer, and can then incorporate this into their next procurement notice. And again, harnessing the existing initiatives and giving them momentum will contribute to an increased coherence in the procurement field.

The National Procurement Agency

We propose that a new National Procurement Agency is set up to connect and empower the existing resources. This agency will ensure efficiency - there won't be overlapping work anymore. Resources are allocated where they are needed in order to keep sustainability as a priority in public procurement. By reappropriating professionals from different stakeholder organisations, such as Hansel, all the existing expertise and best practices will be harnessed in an efficient way to ensure a new kind of openness and transparency.

All of the chosen key partners have relevant knowledge, experience and legal, political or social power regarding public procurement and/or the sustainability of procurement. The Ministry of the Environment is in charge of approving the National Waste Plan Valtso, where goals for procurement as well as practical ways to achieve these targets are stated. The Ministry also funds environmental research. The Ministry of Employment and the Economy prepares and accepts the procurement laws. Tekes develops innovative public procurement projects. Hansel has experience in developing new environmental, and other requirements for the procurement notices. Motiva acts as a facilitator for collaboration and support, and also develops environmental requirement recommendations. The Eco Procurement Network (Ekohankintaverkosto) is an agile actor working on the practical level of offering peer-to-peer support.



The National Procurement Agency



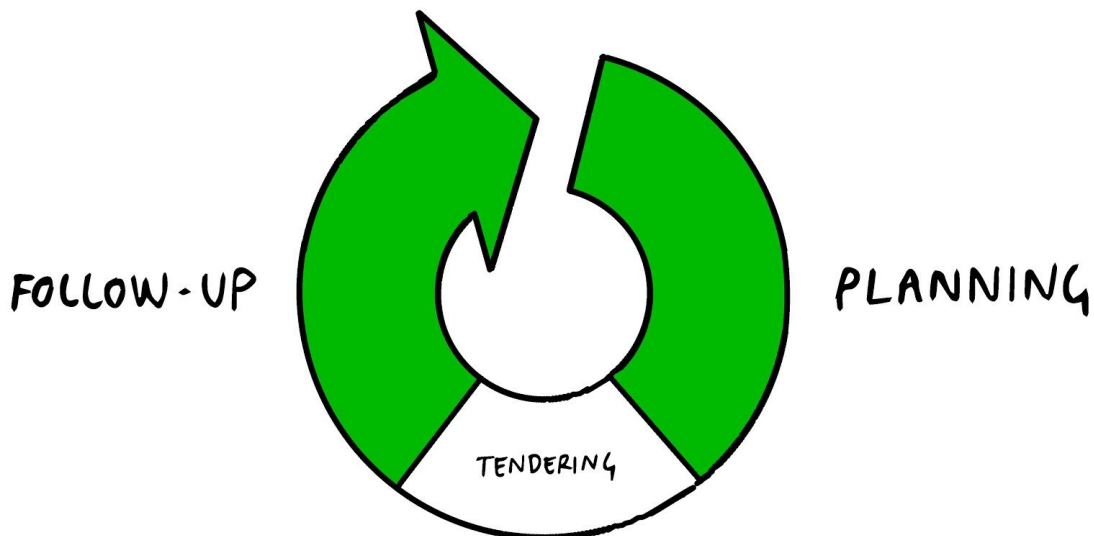
Effects

Currently, the procurers often lack time and resources in order to make more sustainable choices and follow-up on implementation of their decisions. The current procurement process has a particular emphasis on the tendering process that is being driven by a lowest cost mentality.

In the new model, the planning process is supported by the Procurer Assistant and Mentoring Program, and with a mandate from the National Procurement Agency it will result in a balanced and a continuous process. Being up to date with the environmental requirements and building a well-functioning support network fosters learning starting from the thousands of individuals dealing with procurement. With time and by consistently utilising these tools and network, this learning will scale up to significantly improve the nation-wide capacity to successfully respond to the pressing environmental challenges of today.

The work of the Agency will give markets a clear signal that they will have to start offering longer-lasting electronics - longer guarantee times, more services for maintenance and repairing, proper recyclability, etc.

Altogether, the Procurer Assistant, the Mentoring Program and the National Procurement Agency ensure that sustainability is not dealt with superficially but rather a deeper understanding of the relevance for specific sustainability aspects in each procurement process and case is developed.



Discussion

The aim of our two proposals has been to contribute to waste prevention, as is being prioritized in the EU Waste Act. Both viability of repair and supporting sustainable public procurement are concrete ways to prolonging the life cycles of electronic products. However, as we highlighted, it is important that these measures are not considered as individual policies but a more holistic approach is needed, as illustrated with the example of a strategic National Upkeep Plan. Circular economy should not be seen only as streams of materials being recycled but the value of the products should be maintained as the first priority.

When this paradigm shift from waste to upkeep is adopted, a unified approach on waste prevention and management on different levels of governance can be obtained more easily. The list stakeholders to be listened in the planning phase should be more comprehensive and green procurement resources secured. In addition, changing the focus points of the current paradigm as well as current procurement systems will signal the need for more longer lasting electronic products and help to shape the way these markets operate at the moment. Both solutions will offer concrete tools to citizens and government as well as public officers in finding ways to obtain better quality products and contribute in reducing the amounts of electronic waste in the future.



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