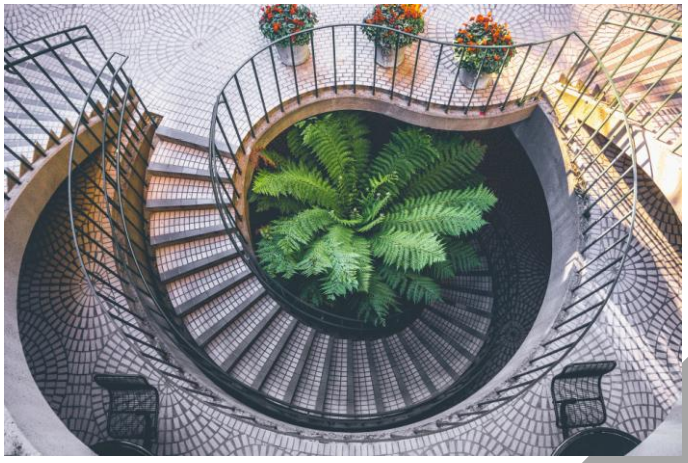
SPP REGIONS
REGIONAL NETWORKS FOR SUSTAINABLE PROCUREMENT

CASE STUDY COLLECTION



Circular Procurement

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Circular Procurement Case Study Collection

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About SPP Regions: SPP Regions promotes the creation and expansion of 7 European regional networks of municipalities working together on sustainable public procurement (SPP) and public procurement of innovation (PPI). The regional networks are collaborating directly on tendering for eco-innovative solutions, whilst building capacities and transferring skills and knowledge through their SPP and PPI activities. The 42 tenders within the project will achieve 54.3 GWH/year primary energy savings and trigger 45 GWh/year renewable energy. More information: www.sppregions.eu Email: info@sppregions.eu

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Best practice examples

Circular Procurement is still in its infancy. Not many experiences have been done so far. Below you can find a collection of best practices. The idea is to inspire procurement staff to look at products differently, ask different questions, analyze the needs in the organisations and challenge the market to a more circular supply of products and services.

Hopefully this collection of best practices can help make it clearer what Circular Procurement can be and what the potentials are. For an introduction and overview of circular procurement, download the accompanying Best Practice Report.

Circular procurement
Case Study 1

Construction

Circular procurement saves New Land Rover BAR Team Headquarters more than €2 million

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SUMMARY

What

Building of the € 27 million Land Rover BAR Team Headquarters and visitors' centre, Portsmouth, UK

How

Using BREEAM as a tender target and adopting circular principles into the procurement approach

Result

Close to 100 percent reuse or recycling of building materials, 25 percent improvement in water efficiency and up to € 2.7 million saved

BACKGROUND

Land Rover Ben Ainslie Racing (BAR) was awarded €8.75 million of Government funding to support the building of a €27 million base on the Camber in Portsmouth, UK, to house the Americas Cup UK racing yacht team. Construction work started in July 2014, with the new facility becoming fully operational from June 2015 and full site works completed late 2015 (Source: BAR).

The BAR team headquarters building combines design, workshop and office functions. As the team headquarters, the client's brief was for the building to exemplify the ethos of embedding sustainability into everything the team does. The base brings together designers, sailors, business support, communications and marketing, and the shore support team. It also provides a community visitor centre to encourage interest in yachting and related trades.

PROCUREMENT APPROACH

The procurement approach adopted circular principles to enable the new building to reduce impacts and make a statement about design, technology and sustainability. It was based on a competitive tender using the target of creating the first BREEAM[1] excellent building in Portsmouth which corresponds to a requirement of the local government planning consent.

Adopting circular principles in the overall procurement process enabled the client/occupier, designers, contractors and suppliers to work together from early stages and to understand and overcome impacts of design decisions and material choices.

The use of Building Information Modelling (BIM) in the development of the design promotes value creating collaboration through the entire life-cycle of an asset, underpinned by structured data. This encouraged circular thinking about procurement of construction materials and products. Questions were asked, such as how they will perform in-use, and what options are available at the end of their life in terms of reuse and/ or recycling.

Following the waste hierarchy, the first principle of the procurement approach was to reduce the impact of the materials (type, quantity and location); energy and water. This approach started with the demolition and recycling of existing materials, e.g. concrete, on the site.

The approach also considered where impacts would occur across the whole life, for example construction, operation and deconstruction/end of life. In considering the carbon impacts the design also recognised that 84% of total carbon output stems from the operational phase of a typical commercial building using ISO14040 standard[2].

[1] Building Research Establishment Environmental Assessment Methodology. Buildings are rated and certified on a scale of 'Pass', 'Good', 'Very Good', 'Excellent' and 'Outstanding' by setting and implementing sustainability benchmarks and targets beyond those of regulatory requirements.
[2] Hue, S 2010 LCA of Materials and Construction in Commercial Buildings. Massachusetts Institute of Technology

Tender specifications

Design and construction was tendered and delivered between 2014 and 2015. The table below provides some key specifications, all aimed at achieving a BREEAM Excellent rating. BREEAM is the longest established method of assessing, rating, and certifying the sustainability of buildings with over one million buildings registered for certification in more than 50 countries around the world.

Award criteria was based on a combination of environmental performance and cost depending on the construction element (cladding, roof, plinth etc.) being procured.

TECHNICAL SPECIFICATION	AWARD CRITERIA
Wall cladding – 2300m^2 100% recyclable and a U-Value of down to 0.23 w/m²k.	BREEAM 'A' rating
Steelwork – Steelwork materials 100% recyclable if the building is dismantled. Waste reduction in cellular beams to minimise lifetime costs and environmental impact associated with construction.	BREEAM 'A' rating
Concrete plinth - 1676 m^2 Materials used can be recycled, crushed down and used in future construction projects.	BREEAM 'A+' rating

VERIFICATION

Wall cladding - ISO 9001: 2008, ISO 6946: 2007 and full Environmental Product Declaration (EPD). Supplier accredited with: CHAS and Construction line.
Concrete plinth - Fully certified to BES6001 and IOS9001
Roofing - Authority European Technical Approval ETA-03/0049 enables the system to be CE Marked
Glazing - ISO 14025, ISO 21930, & ISO9001

RESULTS

Environmental impacts

Key elements of the environmental performance achieved by BAR facility are shown in Figure 1. These include 100% of demolition concrete reused in foundations as secondary materials; over 97% recycling of all demolition materials from the site; specification of natural and low energy (LED) lighting; renewable (solar) energy; rainwater harvesting and 25% improvement in water efficiency over existing UK building regulation standards.

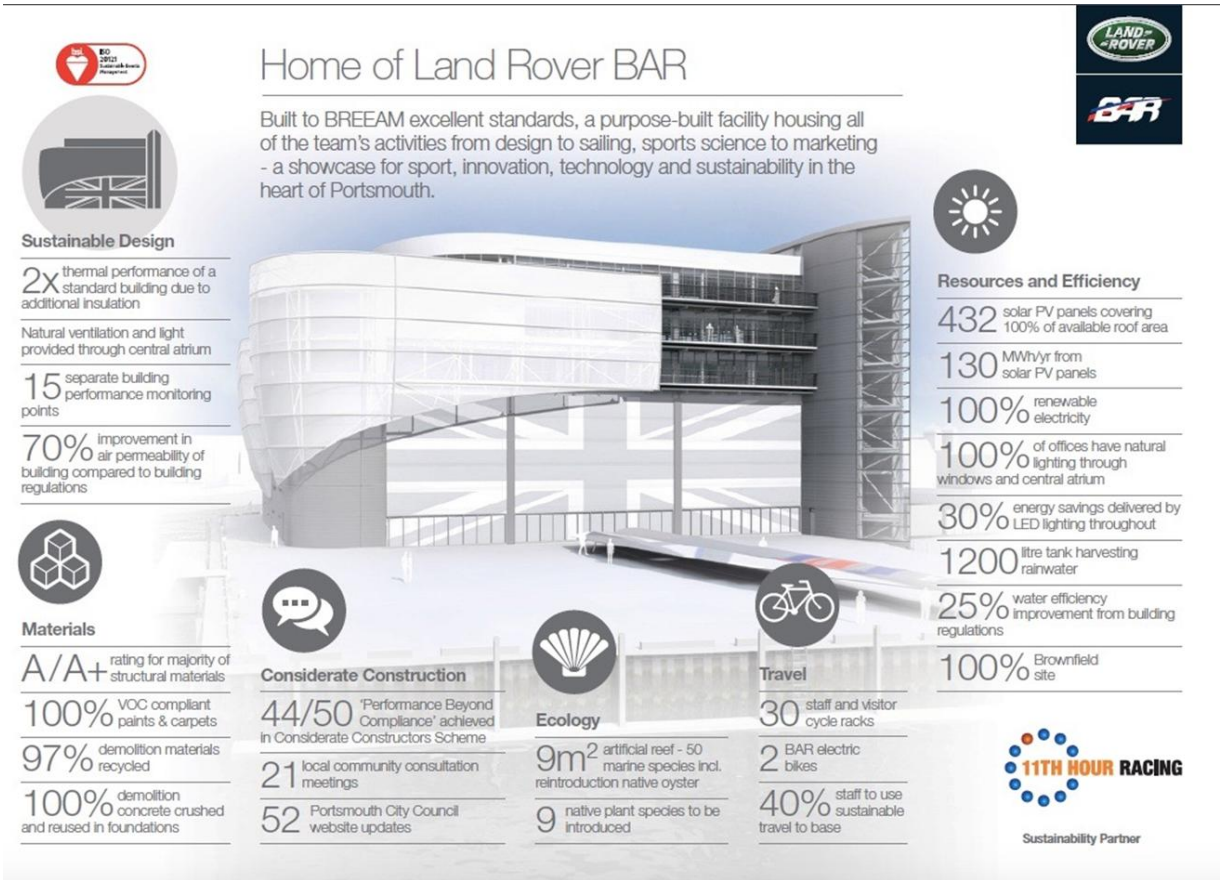

Figure 1 Summary of BAR project environmental performance

The whole life thinking means that operational efficiency has been incorporated into the day-to-day management of the facility. A bespoke building management system monitors 15 different points including energy and water consumption, renewable energy generation and waste arising.

Financial impacts

An estimated €2-2.7 million savings have been achieved through the implementation of sustainability measures. Some savings are direct through waste prevention and materials substitution. E.g. recycled content displacing virgin materials.

Market response

The procurement process has been relatively quick, which at times has impacted on availability of materials and products within the specifications provided. However market response has been good, particularly in terms of maintaining or exceeding the quality standards required to achieve the BREEAM Excellent rating - the first building in Portsmouth City to accomplish such performance.

Lessons learned

The stipulation by the local authority to demonstrate environmental benefits of the project has acted as a driver for the project in terms of thinking about a more circular solution – including in-use and end-of-life considerations as well as sourcing of materials. Using planning consent for new and refurbished buildings can improve replication potential and raise performance levels beyond the minimum standard requirements of national building regulations by encouraging the adoption of more circular procurement. It also encourages greater collaboration between the client, design team and contractors in achieving a common target – in this case a BREEAM Excellent rated building.

Collaboration between the designers and product suppliers has also demonstrated the importance of market dialogue to ensure that solutions offered through the tender stage met environmental performance as well as cost levels.

Challenges and solutions

Challenge

Timing can be a critical issue on construction projects like the BAR project. Where projects are specifying particular environmental performance targets, it can lead to increases in costs due to shortage of supply or availability of products options.

The achievement of a BREEAM rating for a mixed use facility was relatively rare and therefore the BAR facility had to overcome a number of challenges in verification of the BREEAM criteria. This however has made the process easier for other mixed use facilities that wish to aim for higher standards.

A number of suppliers noted that they could provide greater levels of recycled content, e.g. to meet concrete specifications, however market prices meant that additional recycled material would be at a cost premium. This highlights the challenge faced by secondary materials when competing on price with virgin materials. Complying with additional waste regulations can add additional costs that make virgin materials more cost effective, all other variables being equal.

Solution

Where possible, initiating market dialogue earlier in the procurement will enable suppliers to offer higher levels of environmental performance from products as part of their tender response. This can also help where sourcing additional quantities of recycled material are required and may help alleviate short term price fluctuations due to supply and demand imbalances.

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Circular procurement
Case Study 2

Infrastructure

Circular road reconstruction saves Holland up to 9,000 tonnes of CO2 and € 21.8 million

Image: Neushorn, Wikipedia, CC BY-SA 3.0

SUMMARY

What

Reconstruction of 19 km of the A12 motorway between Ede and Grisjoord junction in Holland

How

Favouring the suppliers that reduce CO2 emissions and using an environmental costs indicator value (ECI) to assess and monetize the product quality.
Design, Build, Maintain and Finance (DBFM) contract.

Result

Nearly 9,000 tonnes of CO2 will be saved during a 50 year lifetime.
Overall environmental benefit monetized as € 21.8 million.

SUMMARY

The Rijkswaterstaat is part of the Dutch Ministry of Infrastructure and the Environment in the Netherlands. It is responsible for the reconstruction project of 19 km of the A12 near Arnhem. The project is a Design, Build, Maintain and Finance (DBFM) contract that demonstrates the benefits that circular thinking and procurement practices can enable in large scale infrastructure projects.

The A12 refurbishment project is in two parts. The first part comprised the reconstruction of the A12 motorway between Ede and Grisjoord junction. Civil engineering works included widening, adaptation and re-laying of carriageways; mitigation works (including noise reduction) and ongoing maintenance of infrastructure over 16 years. The second part of the DBFM contract is an 18 year contract for the regular maintenance of the A12 between Ede and Veenendal. This includes the availability of the infrastructure and technical facilities such as emergency lanes, connections and lighting.

PROCUREMENT APPROACH

Construction projects, especially infrastructure projects, have the potential to be highly circular through incorporation of recycled content, maintenance, repair and operation and at end of life, through deconstruction, reuse and closed loop recycling. Circular procurement is not a replacement for sustainable public procurement. It does however extend existing SPP principles to consider use and disposal alongside sourcing.

Design, Build, Finance and Maintain (DBFM)[3] models provide examples of alternative procurements to asset ownership and maintenance.

The procurement approach followed a standard dialogue procedure following pre-selection of 5 potential providers. The two-phase approach enabled 3 potential suppliers to bid following the second phase of dialogue. In the evaluation of the tenders the Most Economically Advantageous Tender (MEAT) approach was used which included a bidding price and description of the quality and sustainability offered. This enabled the Rijkswaterstaat to select the bid that offered the best ratio of price to quality including assessment of CO_2 mitigation and reduction of environmental impacts.

Tender specification and award criteria

The Rijkswaterstaat embedded sustainability within the MEAT process through:

- the CO_2 Performance Ladder[4] which monetizes the working processes of tenderers, favouring those suppliers that reduce CO_2 emissions; and

[3] Also known as Design, Build, Fund and Operate (DBFO) in some countries

[4] The CO_2 performance ladder distinguishes five 'maturity levels'. A company can reach the next level through implementing incremental improvements in its existing processes, and through innovations in technologies and methods.

- an 'environmental costs indicator value' (ECI) which assesses and monetizes product quality, favoring solutions that offer low environmental impacts, including CO_2 reduction. The ECI is based on the life cycle assessment (LCA) of all the materials that are used in the construction and maintenance operations.

The evaluation criteria then awards marks for the ECI value relative to a target cost – the lower the cost the better the environmental performance of the proposed tender. In this case the target value was €3.7 - €2.8 million over a design life of 50 years. Marks are also awarded for the achievement of levels on the CO_2 performance ladder. Alongside sustainability, evaluation criteria within the MEAT assessment also included:

- Organisation
- Disruption to road and rail traffic
- Impact on nature

Results

Environmental impacts

In the A12 reconstruction project, CO_2 emission reductions were achieved through design and materials choices, e.g. road surfacing materials that extended the standard expected product lifetime. Optimising product lifetime is a key element of creating more circular resource consumption leading to greater whole embodied carbon benefits when compared with standard practices. The estimated environmental impact reduction from the tender exercise are summarised in Figure 1 below.

	CO_2e emissions	Energy consumption
Low Carbon Solution	552.9 t CO_2e/year	157.8 toe/year
Last Tender/or „worst case"	731.8 t CO_2e/year	208.6 toe/year
Annual savings	178.9 t CO_2e/year	50.8 toe/year
Total savings (50 years)	8,944 t CO_2e	2,549 toe

Figure 1 Summary of 'Best Case' and 'Worst Case' CO_2 and energy savings potential

Financial impacts

The procurement team initially estimate the range of monetized impacts based on information available to them. The potential suppliers respond by estimating their own ECI based on their proposed solutions and evidence. The ECI is then deducted from the estimated total cost which

means the fewer impacts, the lower the bid cost. The ECI value offered by the winning bidder was €2.72 million – better than the expected value of €3.7 - €2.8 million over a design life of 50 years. This enabled the contractor to received maximum marks for this component. Coupled with achieving the top level of the CO_2 performance ladder, the final calculated bid price was €61.9 million compared with the 'ceiling price' of €83.7 million. This effectively monetized the overall environmental benefit of the preferred tender as 21.8 million.

Social impacts

Construction projects can have high impacts as well as benefits on local communities.

The A12 reconstruction runs through the natural wildlife reserve area known as the Veluwe. One of the 4 MEAT criteria, in addition to sustainability, was reducing the impact on nature to protect the biodiversity and habitats co-located with the cities of Ede and Veenendal and the Grisoord junction.

Market response

The market normally responds well to early engagement and competitive dialogue which was also the case in the A12 project.

Lessons learned

Setting a target for environmental performance is one way of ensuring that circularity is embedded earlier on within the procurement phases, particularly when considering long term contracts that include maintenance and in-use management and disposal of assets and infrastructure. The ECI however, was probably underestimated given the winning bid ECI value of €2.73 million was below the invitation to tender estimation (€2.8-3.7 million). The procuring client therefore must have a well-thought out reference design and an understanding of where there is scope for improvement when considering circular procurement options. Future projects could therefore potentially be more ambitious when setting an estimated range.

Collaboration is an important principle in circular procurement thinking e.g. through early market engagement and competitive dialogue. Bidders can develop their own solutions based on performance specifications in the tender that can encourage innovation within the market rather than relying on prescriptive specifications.

Setting the right targets within tenders can impact on the scale of savings. The Rijkswaterstaat acknowledged that it might have achieved greater savings in CO_2 and energy as well as materials reduction and recycling if it had set a higher criteria standard for sustainability. This learning will be taken forward in drafting future tenders.

The deficiency in the standard model within long term construction projects is that everything is financed, with the exception of demolition and recycling. Structures are built to last significant periods of time and when the time comes to replace them, the community or the new investor will typically pay the price. Considering whole life impacts using circular procurement principles, as the Dutch Rijkswaterstaat did on the A12 project, can address this deficiency and mitigate the

environmental impacts and often economic and social consequences of others picking up the waste management bill.

The A12 project, along with other infrastructure projects, could have helped closed material and product loops by specifying targets for recycled content to displace virgin materials. Setting minimum levels of recycled content is commercially sensible, good for the environment and achievable at no additional cost[5]. It helps create demand for higher quality, more circular recycling systems. This in turn helps in achieving the EU Waste Framework Directive (Directive 2008/98/EC) goal of reducing waste to landfill.

Construction typically accounts for a significant percentage of the top ten spend categories. In the UK construction, refurbishment and maintenance related categories account for 4 of the top ten categories. Construction also typically has the highest materials and energy consumption and waste levels in national economies. The replication potential of circular procurement principles is potentially very high where projects of the size and complexity of the A12 reconstruction project consider aspects such as:

- Design for waste prevention.
- Design for recyclability.
- Inclusion of recycled content in targets and specifications to create demand for recyclable materials and components.
- Specification for refurbishment and reuse of materials and components, where applicable, to extend product life (lifetime optimisation).
- Specification for reuse of demolition materials at end of life, e.g. through soft-strip and recycling options.

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Further details of the A12 reconstruction GPP2020 case study: http://tinyurl.com/z2eo7kw
Further tender information (in Dutch): http://tinyurl.com/mkyjdcv

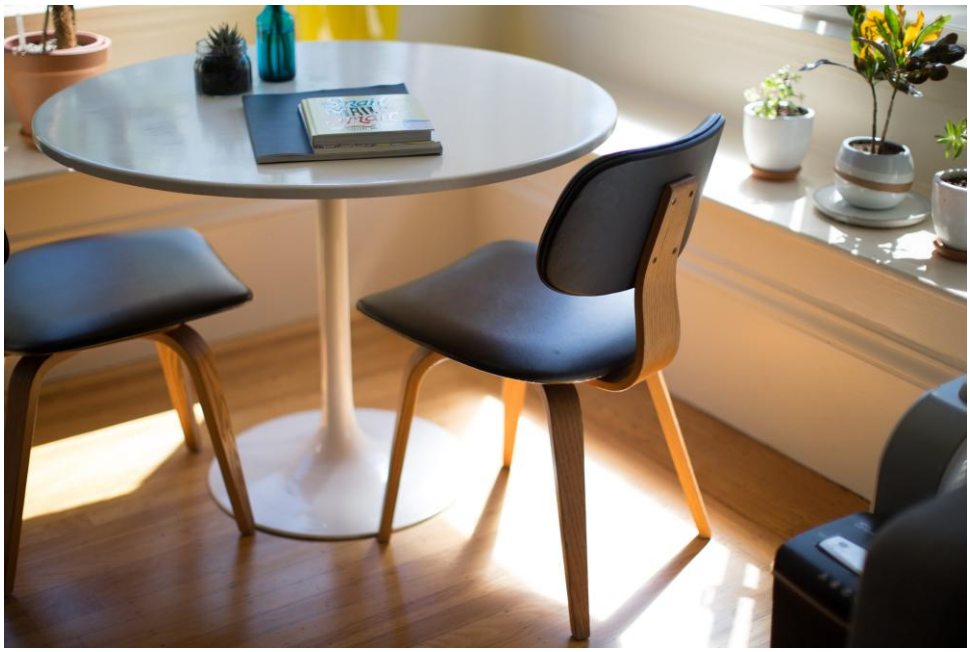
GPP 2020 | procurement for a low-carbon economy

[5] WRAP (2009) Delivering higher recycled content in construction projects http://www2.wrap.org.uk/downloads/Delivering_higher_recycled_content_in_construction_projects.ca0df3d1.5021.pdf

Circular procurement
Case Study 3

Office Furniture

Circular asset management plan helps Sweett Group reducing the amount of office furniture sent to landfill significantly



SUMMARY

What

Sweett Group refurbished their office using a circular approach to closing the material loops of categories like furniture and other office equipment.

How

Closer dialogue with their contractor and risk analysis identified a more optimal combination of purchasing new items, prolonging lifetime of existing and reusing.

Result

Potential reduction of furniture sent to landfill by 70 % and increased residual asset value up to 37%.

Reduction in capital expenditure over lifetime up to € 15,000 through better servicing.

BACKGROUND

Sweett Group is an independent provider of professional services for the construction and management of building and infrastructure projects. They refurbished their Gray's Inn Road office in London, UK, in 2010.

However, they wanted to review the options to make their ongoing maintenance facilities management (FM) contracts more circular over the contract lifetime of 10 years. Asset management is an important aspect of a wider organisational procurement strategy that considers usage and disposal as well as purchasing.

The Gray's Inn Road office facilities management (FM) services contract has a value of circa €2,000,000 over 10 years. Although the FM contract is already in place, the development of an asset management plan enabled a dialogue between the client and the contractor to improve the performance of existing service delivery.

PROCUREMENT APPROACH

Circular procurement extends sustainable procurement principles to consider the in-use and disposal elements alongside sourcing. This encourages circular thinking in order to close materials and product loops and extend product lifetimes, which in turn reduce whole life impacts of production, consumption and disposal. It also enables more circular procurement decisions to be made when considering the maintenance, lifecycle and disposal options of office furniture and fittings within an office setting in this case.

The first step was to define the assets within the scope of the FM management contract of the Gray's Inn Road (GIR) office. Assets included furniture, catering equipment such as fridges and microwaves, and other office equipment, e.g. bins and coat stands. This enabled consideration of the asset condition; life expectancy; calculation of the estimated ongoing cost to contract; and identification of the top 10 most significant assets in terms of value and impact.

Nine of the top 10 most significant assets were furniture items, partly reflecting the nature of the service and the office building. The most expensive asset group identified was desk chairs due to the large quantity and high new unit purchase cost.

The quality of the servicing regime, higher quality products and more frequent servicing, could improve performance, durability and lengthen the asset life and preserve the asset for longer. This can help close product and material loops with knock-on carbon impact reduction.

A risk analysis on the top 10 items enabled lifetime optimisation factors to be considered and assessed the potential for failure and possible impact mitigation measures for each asset. A risk matrix (Figure 2) shows the facilities management team where reuse and reconditioned items might be considered (the green quadrant), for example, plastic tables and desk dividing screens. High risk assets (the red quadrant) such as desk and meeting room chairs, were better suited to procurement of higher quality products and / or implementation of a higher quality of servicing.

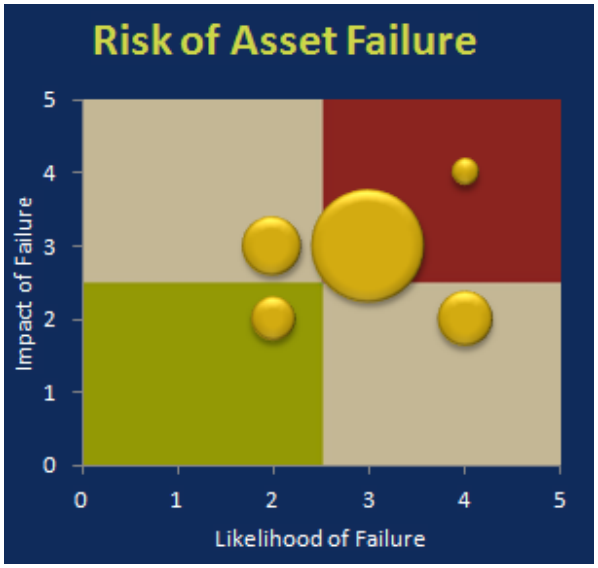


Figure 2 Risk of asset failure matrix - GIR study

To identify the best combination of factors over the 10 year contract for the priority assets, three lifetime optimisation options were assessed using simple life cycle analysis against a baseline cost performance scenario:

- Option 1 – Provide a higher quality of servicing to the high risk and high cost items and leave the quality of future new / replacement items as standard.
- Option 2 – Provide a higher quality of servicing to all of the top 10 items and leave the quality of future new / replacement items as standard.
- Option 3 – Provide a higher servicing regime for all assets and buy higher quality items in the future for the high risk items (desk chairs, meeting room chairs and fridges), whilst leaving the quality of new /replacement items as standard for all other assets.

Tender specification and award criteria

The existing FM contract provides services covering hospitality & vending, caretaking, postal, reception and Helpdesk services. In addition to the existing contract specifications the following specifications have also been adopted for future procurement within the existing FM contract.

TECHNICAL SPECIFICATION	AWARD CRITERIA
▪ All new high risk furniture items to be capable of being remanufactured ▪ All other items to be remanufactured ▪ All items to be sent for re-use	Including but not limited to: ▪ Price ▪ Risk ▪ Sustainability

VERIFICATION
▪ Impact based on life cycle analysis (LCA)

Results

Having evaluated the results from each of the scenarios, the recommended approach in terms of Best Practicable Environmental Option (BPEO) identified Option 2 as the preferred option. This focussed on higher quality servicing to improve asset life and reduce carbon and environmental impacts such as waste from asset replacement before end of functional life.

The adoption of a mobile asset management also enables performance-based environmental impact reduction targets to be set.

Environmental impacts

Resource efficiency savings have been established based on the scenarios. There are a number of benefits that would result from following Option 2 including longer asset life – an important factor in more circular economies.

As the servicing quality increases, the asset life will prolong due to increased care and maintenance. Longer replacement cycles would save on capital expenditure, disposal costs and also reduce the waste generation due to fewer new resources being purchased.

Figure 3 shows the estimated environmental benefits of adopting the more circular approach in Option 2. These include:

- the potential to reduce the amount of furniture sent to landfill at the end of their life by 70%;
- 33 tCO_2e could be avoided through careful management and procurement of furniture items in an office of approximately 200 workstations over a 10 year period; and
- if a similar strategy was employed in 1,000 comparable offices such as those found typically in local government and administrative organisations, the reduction of waste sent to landfill could equate to over 600 tonnes per year.

1000 offices	Waste p.a. (kg)	Waste to landfill p.a. (kg)	Carbon benefit p.a. (tCO_2e)
Baseline	1,630	1,630	2.8
Target	640	440	-0.5
Saving	61%	70%	3.3

Figure 3 Headline environmental benefits from the furniture analysis

Direct reuse can result in a net GHG savings of 0.4 tonnes CO_2 equivalent (CO_2eq) per tonne of desks when compared to landfill. Providing 1 tonne of desks to a preparation for reuse network can result in a net GHG saving of 0.2 tonnes CO_2eq compared to landfill. The lower benefit is due to the embodied energy of additional preparation-for-reuse activities.

Directly reusing office chairs can result in a net GHG saving of 3 tonnes CO_2eq (i.e. just over 35kg CO_2eq per chair) and a net GHG saving of 2.6 tonnes CO_2eq for preparation for reuse, or about 30kg CO_2eq per chair[6].

Financial impacts

Figure 4 details headline financial results obtained for each of the options described above.

Scenario	Capital Costs (£k)	Servicing and Repair Costs (£k)	Residual end of contract (£k)
All New	274	82	56
Baseline	275	86	61
Option 1	275	70	81
Option 2	264	64	83
Option 3	287	63	96

OANDA Exchange rate average for 2015 £1:€1.365

Figure 4 Headline figure results comparing the options with the baseline and all new scenarios

Option 2 was identified as the preferred option based on costs and impact reduction and will result in the following benefits compared to the baseline scenario over the remainder of the FM contract:

- capital cost reduced by £11,000 (€15,000);
- servicing and repair costs reduced by 26%, equivalent to £22,000 (€30,000); and,
- residual value at the end of contract increased by £22,000 (€30,000), creating greater opportunities for second and even third life enabling the associated environmental benefits.

Social impacts

Specifying for remanufacture and purchasing reuse has the potential to benefit small local businesses (SMEs) and the local economy, particularly supported businesses[7] who remanufacture furniture.

[6] WRAP (2014) Environmental and economic benefits of reuse http://www.wrap.org.uk/sites/files/wrap/Final%20Reuse%20Method.pdf

[7] A supported business is an organisation where more than 50% of the workers are disabled persons unable to take up work in the open labour market.

Furniture reuse in the UK is a well-established practice, typically by civil society organisations, recycling organisations and via commercial second-hand shops. A WRAP study[8] on the benefit of reuse in furniture found net positive employment benefits of dealing with furniture desks and chairs.

Market response

The facilities management services sector is a mature market in many European countries including the UK. The development of a mobile asset management plan (MAMP) enables both the client and the service suppliers to recognise common factors regarding the management of resource assets within the contract. The MAMP enables next steps in terms of use and disposal options to be identified so it helps create a more resource efficient business model based on product service systems. Servicisation models are particularly suited to office facilities management. They are one of many options that the public sector can consider as alternatives to traditional linear purchase-use-dispose models to enable more circular procurement[9].

Lessons learned

There are some key opportunities to be realised when developing and implementing an asset management plan. These include:

- Identifying the most expensive items and those with the highest risk of failure can be used to generate a targeted and effective management plan linked to environmental impact reduction.
- Asset management teams are well positioned to collate evidence and collate an asset management plan.
- Procurement and operational teams need to share knowledge to evaluate the best options.
- Implementing an asset management planning process can increase the general awareness of resource use and efficiency within a company and could lead to positive changes in the way that users operate within the building.
- Although not addressed here, asset management planning can also identify opportunities to specify recycled content in products. This helps to create a market demand for recycled materials, and to contribute to closing materials loops.

The work undertaken by WRAP as part of this case study has resulted in the publication of an online mobile asset management plan (MAMP) that can be downloaded at http://www.wrap.org.uk/mamp.

Challenges and solutions

Barriers identified

Some of the barriers identified were as follows:

- Facilities management teams do not necessarily record all of the information required for asset management plans.

[8] WRAP (2011) Benefits of reuse. Case Study: Office Furniture http://www.wrap.org.uk/sites/files/wrap/Office%20Furniture_final.pdf

[9] UNEP (2015) Using Product-Service Systems to Enhance Public Procurement. Technical Report from SPPP Working Group 3a http://www.scpclearinghouse.org/e-library-1.html

- Asset information, when recorded, is often fragmented across a number of teams, offices and systems.
- Leased or hired assets are not directly controllable unless effectively managed through the procurement stage.

Overcoming the barriers

Availability and quality of data require robust monitoring and reporting systems in order to address gaps and inform the right procurement decisions. Verification of information provided by the market is important at the assessment stage in order to assess the impacts from closing material and product loops.

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Circular procurement
Case Study 4

Furniture

Buying reused furniture may deliver up to €2.2 million benefits in the public sector in Wales

SUMMARY

What

Framework for procurement for furniture, fixtures, fittings and flooring by the National Procurement Service (NPS), the central purchasing body for Wales

How

Through market engagement NPS identified that in addition to standard furniture Lots other options to encourage more closed loops solutions could be part of the framework

Result

Net benefits of reuse and remanufacture exceed that of buying new.
Potential cost savings up to €300,000 depending on size of orders over 15 years.
Working with suppliers to engage with third sector organisations.

BACKGROUND

Central Purchasing Bodies (CPBs), acting as procurement bodies for multiple contracting authorities, can play an important role in encouraging more circular procurement in the public goods & services they are responsible for. Typically they develop framework agreements with suppliers, often sub-divided into Lots, for different works, goods or services intended for multiple contracting authorities. CPBs can reduce prices through economies of scale. Furthermore, they reduce duplication, transaction costs, and increase certainty, simplicity and uniformity, allowing for more focused delivery of policy goals. As such, CPBs are an important stakeholder in enabling more circular public procurement practices and in encouraging supply chains to close materials and product loops.

The National Procurement Service (NPS) was set up to enable the Welsh public sector to collaborate more closely in procuring goods and services. Over 70 public sector organisations in Wales are signed up as NPS members including all local authorities, the NHS, National Assembly for Wales, Welsh Government and their Sponsored Bodies, the Police and Fire services and Higher and Further Education. It is responsible for ensuring common and repetitive commodities are only procured once for Wales, avoiding duplication and associated waste of material resources and costs.

The NPS is in the process of establishing a collaborative agreement for the Provision of Furniture. They considered different ways to help more closed loops solution in the procurement of furniture like procuring remanufactured or reused furniture, renting or leasing etc. Due to a still immature market and the differing levels of availability of remanufactured and reused furniture, the NPS had to cut back their initial ambition of closing the loops and instead make it possible for the contracting authorities to take steps in a more circular direction.

PROCUREMENT APPROACH

The National Procurement Service (NPS) initiated the Framework for the Provision of Furniture Solutions for the Welsh Public Sector procurement in June 2015 for Furniture, Fixtures, Fittings and Flooring. The Framework was planned to go live in 2016. The NPS also wanted to investigate what circular economy principles could be included in the framework. They were keen to include reuse, remanufacture and alternative business models to prolong product life, conserve resources and prevent materials from becoming waste.

Furniture items have the potential to be highly circular through incorporation of recycled content, extending product life through repair and remanufacture and in reuse and closed loop recycling, e.g. furniture components being recycled back into new furniture components. This meant extending existing sustainable public procurement principles to consider use and disposal alongside sourcing.

Through market engagement they have identified that in addition to four standard furniture Lots offering different types of furniture, three separate Lots within the furniture category could be tendered to encourage more closed loop solutions and enable the greatest flexibility in market responses based on procurement need and market availability. These additional Lots cover:

- Reused and Remanufactured Furniture.

- Furniture Managed Services Contracts - including alternative business models such as renting or leasing furniture, repair and maintenance.
- Supported Businesses10 who (re)manufacture furniture.

The division into different Lots, including one specifically offering reused and remanufactured items, would enable the contracting authorities using the NPS clearer choices and verification regarding the options available from different suppliers. It also means that small businesses and social networks offering reused furniture can compete fairly with purely commercial organisations offering product service arrangements such as leasing and hire.

The market dialogue however showed that the market for reused and remanufactured furniture is not mature enough yet to ensure steady supply or availability of these solutions, so instead the NPS decided to combine the three lots into one.

Results

Environmental impacts

Closing product loops through reuse of products has greater benefits compared with recycling. A WRAP study[11] showed direct reuse of desks in the UK, e.g. second hand shop or eBay, can provide net greenhouse gas (GHG) savings of 0.4 tonnes CO_2-eq per tonne when compared to landfill and providing 1 tonne of desks for preparation-for-reuse can result in a net GHG saving of 0.2 tonnes CO_2-eq compared to landfill.

However, the most important parameter is displacing the purchase of new desks as a result of reuse. Figure 1 shows how savings vary with different displacement effects for preparation for reuse, with the current, business-as-usual situation highlighted in red. If all reused desks were bought in place of new items, the greenhouse gas savings would be almost 2.5 tonnes CO_2-eq per tonne desks. The gap highlights that purchasing a reused desk in the UK often does not displace a new item although it still helps significantly in closing the furniture product loop by optimising lifetime.

[10] A supported business is an organisation where more than 50% of the workers are disabled persons who are unable to take up work in the open labour market.
[11] WRAP (2011) Benefits of reuse Case Study: Office Furniture
http://www.wrap.org.uk/sites/files/wrap/Office%20Furniture_final.pdf

Figure 1 Greenhouse gas benefits of reuse versus new items in the UK

A WRAP case study[12] for product remanufacture by one of the UK's largest office furniture providers, Senator, provides an example of the willingness of the market to provide alternative approaches to the provision of office furniture requirements. Remanufacturing allows the client to adapt existing furniture to make it more suitable for their current and future needs. For example, using more durable fabrics on chairs which are subject to heavy use; or providing more easy-to-clean surfaces for canteen furniture.

Financial impacts

Cost benefit analysis shows that the net benefits of reuse and remanufacture exceed that of buying new. In 2013 the UK Government Department for Environment, Food & Rural Affairs (Defra) estimated the net financial benefits from procuring less new furniture nationally in the UK as equivalent to €66 million over ten years, based upon cost savings of €73.3 million from avoiding buying new furniture less the increase in spend of €7.2 million for refurbishment.

Scaling this down to the public sector in Wales, results in a net present value estimate of €2.2 million benefits over 10 years through the NPS Furniture category Lots. This makes developing additional Lots commercially viable.

A cost benefit analysis for three different scenarios, of small, medium and large furniture procurements suggested that savings could be in the range of €11,000-€300,000 (undiscounted) over 15 years depending upon the size of order.

[12] WRAP (2013) Remanufacturing office furniture http://www.wrap.org.uk/node/16597

Social impacts

In Wales, reuse organisations are typically charitable small medium enterprises. There are several furniture reuse organisations in Wales whose aim is to relieve poverty and reduce waste by promoting the reuse of essential items. Most of the furniture reuse organisations in Wales are geared to facilitate the redistribution of household furniture to the public, but the inclusion of specific Lots within the NPS framework may encourage some to provide a more commercial service at a small-scale, further enhancing social benefits and well-being. Collaborative tenders or 'social consortia' can also be encouraged through the inclusion of social clauses or in positively weighting the inclusion of social enterprise partnerships as a key tender evaluation criteria. These enable commercial businesses to partner with charitable and social enterprises to provide reuse and remanufactured services as part of a wider offering.

Market response

In offering a service to contracting authorities a Central Purchasing Body, like the NPS, has to ensure availability of supply. The differing levels of availability for reuse and a less mature supply of specifically remanufactured furniture meant the different options were better combined in a single Lot. This makes it possible for the suppliers to potentially provide differing solutions, market offerings and associated circular benefits either working together in partnerships/consortiums or on their own attempting to ensure availability of supply. It is up to the contracting authority to decide which best meets their needs.

Lessons learned

Because of the lack of remanufactured furniture currently available in the marketplace (2015), it was recommended that reused and remanufactured furniture were combined in one Lot. As a central procuring body the NPS aims to encourage good practice but also has to ensure procuring authorities using its services have adequate choice and access to products.

Simply specifying the purchase of remanufactured furniture is not a fully circular solution for contracting authorities but it is taking a step in a more circular direction showing to the market the future direction. A further option for future specifications within the Lots would be to require furniture purchased to be capable of being remanufactured as part of a post-purchase service. Furthermore the circularity of furniture products can be further improved by additional requirements that influence design for recyclability and inclusion of commercially viable levels of recycled content in new products.

The Netherlands Green Deal[13] has been encouraging the demand for more circular product design by:

[13] Dutch Green Deal http://www.greendeals.nl/english/green-deal-approach/

- increasing the percentage of recycled material used in production;
- augmenting the proportion of recyclable materials at end of life;
- considering what happens with furniture after usage; and
- encouraging minimisation of waste during the production process.

The influence of large central purchasing organisations, like the NPS in Wales can provide a powerful lever for delivering more circular solutions to public procurement. However, purchasing organisations of this size and nature need to be engaged early and risks need to be clearly identified and mitigated in order to obtain buy-in. Demonstration pilots can act as useful vehicles to demonstrate the potential for more circular procurement practices.

Challenges and solutions

Challenge

Analysing costs of rental of furniture in order to perform a cost benefit analysis of hiring or leasing furniture as an alternative business model can be challenging as costs depend on the quantity of items and the length of rental period.

It was difficult to tangibly estimate the potential costs benefits from the specific supported businesses Lot. However buying from a supported business has been shown through supporting evidence[14] helps to improve people's lives by providing meaningful and sustainable employment for those who are unable to take up work in the open labour market.

Solution

Hiring or leasing furniture would need to be assessed on a case by case basis by the procuring authorities, for example, comparing the type of furniture needed and also duration. This will provide more tailored data which will enable more informed comparisons between purchasing new and reused items.

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[14] The Scottish Government (2014) Supported Businesses in Scotland: Creating value in a socially responsible way

Circular procurement
Case Study 5

Hospital Mattresses

Moving from business as-usual to a hybrid mattress service

SUMMARY	***What*** Cambridge University Hospitals Foundation Trust (CUHFT) wants more focus on circular options in re-tendering a contract for the provision of 329 mattresses. ***How*** CUHFT made a market review to identify the impacts of different procurement choices. These will be used to inform the next procurement steps. ***Result*** Estimated savings of >€273,000 over 4 years. Annual savings of over 5,000 nursing hours per year. Estimated 4,5 tonnes per year of waste diverted from landfill.

BACKGROUND

Cambridge University Hospitals Foundation Trust (CUHFT) is one of 160 National Health Service (NHS) acute Hospital Trusts in England.

In June 2015, they were starting the process of re-tendering a contract for the provision of 329 mattresses including pressure therapy systems and associated support services to reduce pressure ulcers in patients. In 2007 the estimated annual cost of pressure ulcer care in the UK was €3.14 - €4.23 billion per annum and the mean cost per patient of treating a pressure ulcer was calculated to be €54,600 a year.

CUHFT wished to consider alternative and more circular options that conserved product life and resources and prevented materials from becoming waste. They therefore undertook a market review in conjunction with WRAP – the UK delivery body waste and resources - to identify the impacts of different procurement choices in order to obtain a more circular solution. Their starting point was owning, maintaining and disposing of standard patient mattresses and a set number of additional specialist pressure therapy mattresses that are swapped in and out in response to patient needs for pressure ulcer treatment.

PROCUREMENT APPROACH

Traditionally CUHFT, like other UK Trusts, has procured two types of mattresses; a standard foam-filled mattress for all hospitals beds and additionally, specific pressure therapy mattresses through a purchase-use-dispose model. But with existing CUFHT targets of 10% reduction in energy consumption within the facility and 25% reduction in waste arising from CUHFT's operations and increase in recycling and recovery rates by 20% they were interested in a more resource efficient procurement approach.

In existing procurement CUFHT already requires all providers to take all reasonable steps to minimize their adverse impact on the environment and to implement environmental management systems. This enables suppliers to, for example, demonstrate their progress on climate change adaptation, mitigation and sustainability. When it comes to specific technical specifications, the CUFHT uses the EU GPP Criteria for Electrical and Electronic Equipment used in the Health Care Sector.

The WRAP review looked at how the CUFHT could move from this standard purchase-use-dispose model to more circular procurement approaches. Using a more resource efficient business model (REBM) approach would potentially generate environmental and economic benefits as well as deliver a more circular solution. REBMs consider in-use and disposal impacts as well as sourcing. There are numerous REBM models that adopt take-back/ buy-back, leasing and product-service systems approaches which can all deliver more circular solutions than a traditional buy-use-throw-away approach.

The review identified over 70 pressure therapy mattress products currently available from over 10 suppliers in the UK market and identified the three following different procurement approaches using circular economy principles:

- a lease contract - contracting with a single supplier to lease pressure therapy mattresses for a set number of beds in the hospital with the supplier retaining ownership of the mattresses at the end of the lease, enabling take-back and subsequent recycling options;
- a managed service contract - similar to leasing, but includes full management of the mattresses within the hospital, including decontamination and service and repair that improve product lifetimes; and
- a hybrid mattress contract – where CUHFT only needs to procure one mattress type which can be used in either static or dynamic mode when combined with a dynamic pump, which could be leased separately.

Switching to a hybrid mattress system would mean only one mattress type will be needed by CUHFT, rather than a standard foam mattress for all the beds in the hospital and a set number of additional pressure therapy mattresses. Although this was not the most circular of the 3 options evaluated, the hybrid mattress route was recommended as the best option because of its associated environmental benefits (reduced waste to landfill), cost savings potential and ability of the market to deliver a more circular business approach such as the more circular managed services option.

Potential Results

The market review was undertaken as part of the early pre-tender stage 'identifying the need and assessing the risk' (Figure 2) to enable circular principles to be considered throughout the ongoing procurement exercise. The market study showed that full leasing models that might enable more circular outcomes were not available in the market although a partial, or hybrid, system was.

Environmental impacts

Moving from business-as-usual to a hybrid mattress service would increase lifetime optimisation and reduce waste to landfill. A hybrid mattress system will significantly reduce the overall demand for raw materials and energy required as only one hybrid foam mattress type will be needed by CUHFT for all the beds in the hospital. Based on 1200 beds, 309 hybrid mattress systems were estimated, with a waste diversion potential to be circa 4.5 tonnes per annum over the business as usual case for the next 4 years based on displacing this many standard mattresses. The embodied carbon savings are estimated to be between 5.25 and 5.75 tonnes of CO_2e p.a. for the same period.

A hybrid mattress system requires the addition of a dynamic pump that can be leased or managed through a service contract rather than being purchased. This product-service approach is a more circular solution as it encourages longer term thinking around product durability and service life, lowering maintenance load and reducing materials use. The hybrid mattresses are cleaned in the same way as standard mattresses, reducing transportation impacts (CO_2 and particulate emissions) associated with off-site decontamination that may be applicable to other options.

Financial impacts

The mean cost per patient of treating a pressure ulcer is estimated to be €54,600 a year in the UK. Therefore the provision of pressure therapy systems is a significant cost to any NHS Trust and can act as a driver for identifying more circular procurement solutions.

The unit cost per day to lease a pressure therapy mattress can vary significantly depending on the type of unit, number of units and the lease period. The unit cost of purchasing also varies widely from €860 to €2,050. WRAP estimated that cost savings of potentially €276,800 could be achieved using a 'hybrid' mattress model rather than a full leasing model over a four year period.

Social impacts

Although adopting a hybrid mattress system is a relatively new approach, where it has been applied, for example in the Medway NHS Trust, it saved the equivalent to 2.5 full time nurses per year (>4,000 hours per year). This means more time for direct patient care. If adopted in the CUHFT procurement exercise, it would save over 5,000 nursing hours per year, resulting in better patient care.

Plate 1 Manual patient care for pressure ulcers is resource intensive

Market response

The hybrid mattress approach was only developed in the UK in 2012, and provides an alternative resource efficient business model for pressure therapy mattresses as it enables some elements of leasing (the pump) rather than full ownership. The market review identified that there are no suppliers currently offering a full leasing arrangement for hybrid mattresses and the cost of encouraging the development of this approach is estimated initially to be too high. CUHFT will therefore need to directly purchase the mattresses but could still lease the dynamic pumps and support services.

Lessons learned

Whilst leasing and managed services can provide a more closed loop approach to the traditional direct purchase of pressure therapy mattresses, the hybrid mattress system was the only cost effective and market ready solution. Though still a more resource effective solution than the original approach. This highlights the challenges of cost efficiency and availability sometimes faced when trying to move from business as usual. In critical service categories, like mattresses, waiting for the most circular market solutions may not be possible, as illustrated in this case. WRAP has recommended that CUHFT approach key suppliers to see if a leasing or managed service for hybrid mattresses could be developed. This is a way to prepare the market to deliver more circular solutions in the future procurement processes.

The approach is highly replicable and all UK NHS Trusts could potentially benefit as they all require pressure therapy systems for patient care. CUHFT needs to undertake a whole life costs analysis to better understand the costs associated with the purchase, operation, maintenance (including decontamination) and disposal of a hybrid mattress system. Other Trusts would need to do likewise to work out the system best suited to their particular needs.

The standard specifications and requirements in the standard invitation to tender already demonstrate some scope for tenderers to consider options for reducing in-use and disposal impacts but do not currently proactively encourage tender responses to consider how best to close material loops. The WRAP review noted that the tender specifications stage would need to address this if the procurement should demonstrate more circular thinking.

The WRAP study showed that whilst more circular solutions could be identified, they were either not available in the current marketplace or not commercially viable for CUHFT's needs. The most resource efficient solution available in the market is a hybrid mattress solution, so asking for this in the tender specification stage would be the first step in a more circular approach. A balance needs to be made in determining the best 'next steps' to take in developing a more circular approach.

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Circular procurement
Case Study 6

Textiles

Examples of and steps in implementing circular procurement in the textile sector

SUMMARY

What

Textiles and clothing products are a common category with high spend values for many public sector organisations. This case describes existing experience with circular procurement of textiles in Public sector contracting authorities and Central Purchasing Bodies.

How

Circular procurement principles are explained in the context of the textiles lifecycle and procurement cycle phases.

Result

Encourage innovation in design; reduces carbon impacts; reduces toxicity; increases durability; increases reuse and recycling at end of life

BACKGROUND

Textiles and clothing products are a common category with high spend values for many public sector organisations.

Whilst collection and reuse rates are reasonably high (ca. 50-60 % recycling rates are common) in household clothing, corporate or work wear collection rates are lower and often not recorded accurately due in part to lack of controls over end of life disposal route.

The most dominant life cycle stage is fabric production (comprising weaving/knitting etc. and treatment of fabric). This represents about 33% of total life cycle greenhouse gas (GHG) impacts[1].

Using circular procurement principles can reduce the high environmental impacts of textiles associated in production, consumption and disposal of both natural fibre and synthetic textiles.

This case study explores different ways of doing circular procurement of textiles and shows examples of existing experience.

Circular procurement principles

The potential for textiles in general, and clothing in particular, to be circular in production and consumption is potentially very high but requires procurement actions to address all parts of the textiles lifecycle chain (Figure 1).

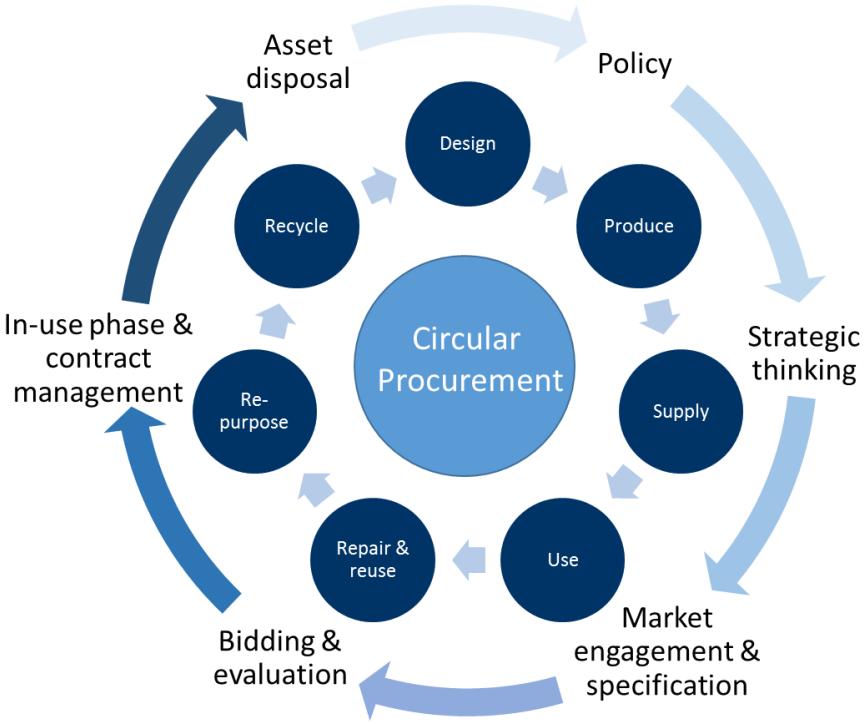

Figure 1 Embedding circular thinking within the whole procurement cycle

Design

Design of the garment and of the garment management scheme can help facilitate reuse or recycling. This can include fibre choice, labelling, product take-back schemes or partnerships with third parties who can reuse or recycle high proportions of the used textiles.

Market engagement with designers and producers can encourage more closed-loop thinking around the design of textile and clothing products through fibre choices, application of additives, quality levels etc. that impact on reuse potential, durability and recyclability.

Uniforms often include logos or badges that are difficult to remove, but many could use removable badges if specified. This was, for example, done when standardising nurses' uniforms in the Welsh National Health Service[15].

Opportunities also exist to specify levels of recycled content in new textiles (e.g. carpet tiles) and clothing. The Dutch Green Deal circular procurement scheme is currently trialling requirements for between 20-25% recycled fibres in certain product categories.

Life time Optimisation

Improving durability within clothing is an important element for circular procurement. However, durability may not be a relevant attribute for all end products. In some cases, specifying 'better quality' does not mean hard-wearing but instead refers to shape/drape/flexibility, fabric lustre or softness. These qualitative attributes may mean the item can be worn more frequently and kept for longer.

Specifying product care labels can also improve durability through recommended approaches to washing (detergent dosing levels and temperature of wash) and drying (line drying versus tumble-drying) of garments.

End of Life

Many textile products, especially clothing, have longer functional lives than the contract-life or financial write-down allow for. What happens to clothing at the end of the in-use phase therefore has a significant environmental and potentially economic impact but is typically not considered at the purchasing stage in any detail.

A significant portion of discarded textile and clothing is sent to landfill or to energy recovery from waste (EfW). Therefore, opportunities may exist in working with existing waste contracts within the public sector organisation to review disposal options where take-back is not possible.

Product labelling or take back schemes can encourage sustainable actions at the end of life stage. In Herning, Denmark, a circular work wear procurement included collaboration with VIA University that resulted in the development of 17 recycled products from the end-of-life work wear[16].

[15] UK Defra 2011 Sustainable Clothing Procurement – Uniforms in the NHS.
[16] Read more about the Herning experience in case nr. 11

Work wear often has higher quality specifications than consumer equivalents. For example, in the Netherlands the denim in military uniforms has been re-purposed in other garments and into tent fabric following de-camouflaging. Through the Green Deal for circular procurement[17] the Dutch are also piloting an upgraded collection and sorting project to enable new fibres to be produced from collected corporate clothing.

Collaboration

One of the key success factors for circular procurement is supply chain collaboration. Circular procurement aims to creating multiple value. This increases the economic value of all companies in the supply chain and can create greater shared ownership in the procurement outcomes.

As well as developing supplier relationships, opportunities exist through more circular procurement to create partnerships around collection, repair and reuse of textiles. These partnerships can be both revenue generating (due to the high value of reuse clothing in particular) and charitable.

Resource efficient business models

Depending on the category, circular procurement provides options for adapting the business as usual (produce-consume-dispose) model to a more resource efficient procurement model. This can help deliver policy goals as well as bringing organisational benefits like cost savings, reduced environmental impacts and improving social wellbeing. One consistent element of alternative business models is the development of products that reduce resource use. For example:

- more consideration for second life products (either at purchase or disposal);
- encouraging design for greater recyclability and using products; and
- increasing recycling (creating demand for products with recycled content or using materials and products that are more easily recycled.

Product service system (PSS) models can be relevant to clothing and textiles where in-use impacts and end-of-(first) life pathways can have a big influence of the overall environmental impacts. Product-service systems however are not by definition sustainable[18]. PSS can include incentives for sustainable practices, but this needs to be organised and specified in the right way. Details on what is needed to ensure sustainability within the services are required to maximise their potential.

Tender specification and award criteria

Specification

Embedding sustainability in specifications has the potential to influence the design and production of textiles and reduce overall waste. This will help close product and material loops, e.g. through increasing durability and lifetimes and/or potential for recycling at end of life. Single fibre cloth types are generally more recyclable than blends of fibres and are to be preferred in terms of closing textile material loops for both synthetic and natural fibres.

Specifications for circular clothing will typically focus on less:

[17] Dutch Green Deal http://www.greendeals.nl/english/green-deal-approach/
[18] UNEP SPP Working Group 3a 2015 Using Product-Service Systems to Enhance Public Procurement. Technical Paper

- water and energy consumption from purchase, use (e.g. washing cycles) and disposal;
- carbon emissions (including transport losses);
- hazardous materials such as additives and dyes;
- land-use degradation; and
- packaging.

Equally, circular procurement specifications can also encourage more:

- resource efficiency e.g. recycled content targets or procuring reused;
- standardization of products, e.g. uniforms;
- product durability, either in use or through second and third life;
- reuse and recycling at end of life.

In-use phase impacts should also be considered. These are mainly from the use of energy and water to wash and dry clothes, use of detergents and subsequent load on the wastewater treatment system.

There may be scope to encourage alternative business models that promote lifetime optimisation through repair and reuse, e.g. from take-back schemes or leasing and hire models (product-servicisation). It is also possible to consider including information on and communication related to clothing (particularly those articles that may be washed frequently); guidance notes on best methods, correct temperature, detergent dosing and drying options.

Award criteria

Use of materials that have lower environmental impacts over whole life of the product is an important circular principle that considers in-use and end-of-life impacts as well as sourcing. Bidders should be asked to indicate how they have applied life cycle thinking to select fibres and materials that have the lowest environmental impact over the whole life of the product. For example flax and hemp, have been identified as having lower environmental impacts in production than, more common fibres such as cotton and polyester. Proposing lower impact fibres as alternatives is positive, but their use must be justified over the whole product lifecycle.

In the Netherlands, around 30 product groups, including textiles, that cover the majority of all purchases by the Dutch government have been defined. Criteria have been developed for each product group based on a number of common circular procurement principles. By awarding on the basis of the Most Economically Advantageous Tender and not only on price, tenderers may be challenged to make a distinctive bid with a higher sustainability content.

The Dutch circular procurement award criteria focus on three areas:

- Circularity e.g.
    - Possibility for re-use
    - Possibility for extending the life of the product
    - Possibility for re-use of materials and components
    - Raw materials footprint
    - Carbon footprint
    - Closing the loop - in practice and retained control

- Circularity “user value”, e.g.
    - Assurance of the required level of quality

- Product warranty
- Flexibility in user wishes (e.g. other colours, labels/ badging etc)
- Flexibility in usage period (shorter or longer)
- Unique product properties
- Transfer at end of usage period (cost for transfer ownership)

- Costs aspects
  - Total Cost of Ownership/Life Cycle Cost

The contracting authority must determine the weight of the various criteria and the basis for evaluation, for example, via point-counting, ranking, Life Cycle Costing, award on value or cost/benefit.

Adopting circular procurement principles creates the opportunity for the procurement to encourage demand for secondary materials, e.g. recycled fibres in textiles and corporate or work wear and uniforms. In the UK, Government Buying Standard require that bidders must indicate the proportion of the product by weight made of recycled fibres, i.e. fibres originating only from cuttings from textile and clothing manufacturers or from post-consumer waste (textile or otherwise).

Results

Environmental impacts

The environmental impact of textile and clothing garments is high in terms of carbon, water and energy. The carbon footprint of a tonne of garments, both new and existing, in use in the UK in 2009 ranged from around 15 to 46 tonnes CO_2 equivalent, depending on the fibre type of the garment[19].

Table 1 summarises the overall impacts from the main fibre types found in most textiles and garment products.

Fibre type (1 tonne)	**Footprint per tonne of fibre in clothing**		
	Carbon (tCO^2e)	Water (m^3)	Production Waste (t)
Cotton	23	2,600	1.6
Wool	30	2,300	1.6
Silk	20	44,000	1.6
Polyester	18	100	1.4
Viscose	23	3,700	1.6
Acrylic	25	150	1.4
Polyamide (nylon)	19	100	1.4

Table 1 Carbon, water and waste footprints of fibres in clothing19

[19] WRAP 2012 A Carbon Footprint for UK Clothing and Opportunities for Savings

Financial impacts

Value retention through circular procurement is maximised by first examining reuse of the product, then the reuse of parts, and finally the reuse of raw material.

Value retention is also improved where products are designed and constructed in such a way that at the end of the period of usage, the destruction of value is avoided to the fullest extent possible. For example products that are suitable for disassembly or are easy to separate can result in potential revenue streams from higher value asset disposal. At a basic level avoiding costs of landfill also provides a minimum benefit.

One of the key success factors for more circular procurement is supply chain cooperation aimed at creating multiple value. This increases the economic value of all companies in the supply chain along with environmental and social values.

Social impacts

In considering circular procurement of textiles it should be recognised that auditing sourcing can provide significant challenges. Natural fibre production is typically in developing countries. Therefore addressing ethical and social issues such as living wage provision, avoidance of child labour, application of fair trade principles, adequate working conditions, and animal welfare in the manufacture of textiles is critical. Ethical protocols and standards exist to help in verification, e.g. by the International Labour Organization, Fair Trade Foundation and the Ethical Trading Initiative. Indicative standards are SA8000[20] or ISEAL or equivalents.

Market response

There are a number of points regarding the market response to circular procurement in general and textiles in particular which include:

- The emergence of ing new markets for recycling
- The evidence of 'first movers' in Product Service Systems
- The awareness of circular economy principles is growing particularly in multinational organisations with global supply chains (e.g. textiles production) and interest is increasing in green business models
- The ecodesign is still not fully understood within the majority of the marketplace and public procurement could do more to promote innovation.
- The support from investors / banking sector and government are typically cited as reasons for inertia although pilots and exemplars show that rapid innovation is both possible and can be commercially viable.

[20] Social Accountability International SA8000 is a certification standard that encourages organisations to develop, maintain, and apply socially acceptable practices in the workplace. http://www.sa-intl.org/

Examples of steps towards circular procurement of textiles

Central Purchasing Bodies (CPBs)

The 43 Police forces in England and Wales provide uniform services for over 160,000 uniformed officers and civilian staff. Between 2013-2014 they have set up a 10 year National Uniform Managed Service (NUMS) to design and implement a national service capable of integrating and managing the end-to-end uniform solution[21]. This also enables circular procurement principles to be embedded in work wear across all forces and enables both specifications for design standardisation and end-of-life uniform management to be considered.

Extending product life

Many branded clothing products and uniforms have specific security criteria linked to disposal to mitigate risks. In Northern Ireland, the Police Service (PSNI) had been paying to have clothing items destroyed for security reasons. Through a take-back arrangement, by dyeing the original dark green garments black the disposal contractors were able to address security criteria and help generate a higher resale return for the PSNI[22].

Adopting alternatives to business as usual

Another option to address challenges faced in closing material loops is to consider forms of managed service contracts.

The Dutch Rijkswaterstaat have partnered with a commercial organisation, DutchaWEARness, on procurement of work wear of stewards at locks along waterways. This is a circular lease contract in which DutchaWEARness owns the work wear, organises return logistics and recycles the work wear collected from 2015 and uses this material for the new work wear in 2016.

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[21] National Uniform Managed Service (NUMS) OJEU tender notice http://tinyurl.com/zy8x3rk
[22] WRAP 2014 Dyeing to dispose of http://tinyurl.com/jkvwjxk

Circular procurement
Case Study 7

Car Sharing

Car sharing services improves the public fleet management in the city of Bremen

SUMMARY	***What*** Use of car sharing in the city of Bremen (Germany) to supply its own fleet ***How*** Framework contract with carbon emission limits ***Result*** Car sharing reduces CO2 emissions and the use of natural resources by the number of cars manufactured Clear financial benefits

The source of this case is: “Using Product-Service Systems to Enhance Sustainable Public Procurement”, UNEP, 2015.

BACKGROUND

The concept and use of car sharing has spread across Europe (and North America) recently and has become quite popular in many cities. In 2003 Bremen was one of the first cities in Europe to use car sharing to improve its fleet management.

In 2009 Bremen adopted a new sharing car action plan with the overarching goal to reduce the negative impacts of transport on the environment. One specific aim has been to encourage 20,000 people in Bremen to become customers of a car sharing provider by 2020. To implement the Action Plan, the city of Bremen recognized the need to strengthen interaction and the creation of partnerships between public transport operators and private car sharing schemes.

Since 2003 car sharing has been incorporated into the city’s administrative sector - Bremens’s Senate Departement for Construction, Environment and Transport - helping to reduce the cost of vehicle maintenance, management and use. Currently, other public organizations (among others the Office of Finance, the library, the health service and the school for vocational training of the City State of Bremen) use car sharing as part of their fleet management. Further expansion of the use of car sharing is planned.

PROCUREMENT APPROACH

The city of Bremen has made a framework contract with Cambio, the largest car sharing provider in Bremen. By including car sharing in the management of its own fleet, the authorities lead by example. The expansion of car sharing in Bremen has demonstrated the extent to which car sharing schemes can reduce traffic congestion. When integrated within a well-planned and reliable intermodal transport system (e.g. public transport services, bicycles), car sharing can help resolve existing parking and traffic problems.

The framework includes a Blue Angel ecolabel certificate. The main standard for the certificate is the carbon emission limit value. Thus the framework states that no fleet vehicle bought during the term of the contract shall emit more than 230 CO_2/km on standard fuel consumption. The CO_2 emission requirement for the car sharing fleet of an operator is based on the adapted EU CO_2 legislation (Regulation (EC) No 443/2009, April 2009). This regulation defines an average fleet limit of 130 g CO_2/km.Plug-in hybrid cars and all electric vehicles may not be included into the calculation for the entire fleet.

The car sharing operator must also inform its customers about fuel-saving programmes organized by driving schools or other training providers in the area.

Results

Environmental impacts

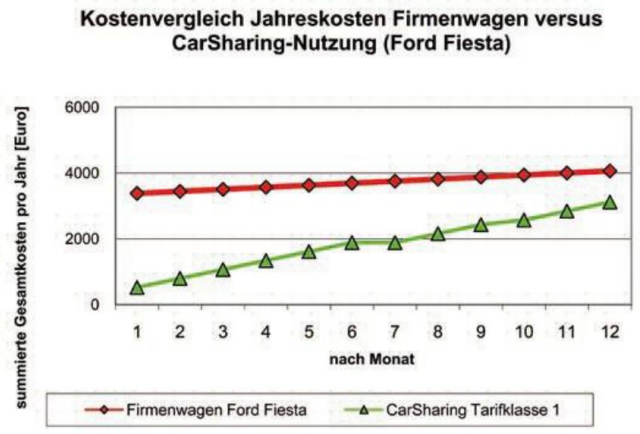
Car sharing reduces the use of natural resources by reducing the number of cars manufactured, and by establishing minimum environmental and energy efficiency threshold. It controls and reduces CO_2 emissions and local air pollution.

Financial impacts

The costs of purchasing, insuring, taxing and maintaining the vehicles involved in a car sharing scheme is distributed among the users. Use of a car is more intensive when the car is shared, so the financial benefits are clear.

The graph below compares the cost of owning a small business car (red) and a shared car of this type (green) in the case of the German car sharing company Cambio.

Horizontal axis: months (1 = January). Vertical axis: cost in euros/year.



Source: *CarSharing für gewerbliche Kunden. Gute Beispiele der CarSharing-Nutzung in Unternehmen, Verwaltungen*, Organisationen und Vereinen, Bundesverband Car-Sharing, 2010), http://www.carsharing.de/arbeitsschwerpunkte/projekte/carsharing-fuer-gewerbliche-kunden.

Lessons learned

Fees for car sharing include the total cost of use. To enable a fair comparison of costs by public procures between the owned fleet and a shared fleet, it is also important to include all costs related to the owned fleet which include purchase, maintenance and fuel, but also parking space costs and, in particular, the cost of the staff administering the fleet.

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Further details of the car sharing study: http://www.scpclearinghouse.org/resource/using-product-service-systems-enhance-sustainable-public-procurement

Circular procurement
Case Study 8

Office Carpeting & Furnishing

The office building of Prorail in the Netherlands calls for a more circular approach to carpenting and furnishing

SUMMARY

What

Procurement of carpeting and furnishing of the office building of Prorail, the rail infrastructure company in the Netherlands

How

Furniture and carpeting are supplied in a circular business model by the service provider, including cleaning and maintenance. At the end of use, it is returned to the service provider and then reused or recycled

Result

Products are specifically designed to enable reusability, refurbishment and recyclability and are therefore more resource-efficient

Circular carpeting was offered at a comparable price. However, circular furnishing solutions were more expensive

The source of this case is: “Using Product-Service Systems to Enhance Sustainable Public Procurement”, UNEP, 2015.

BACKGROUND

In 2013 a pilot was launched in the Netherlands with the aim of developing a more circular approach to carpeting and furnishing of the office buildings of ProRail, the country’s rail infrastructure company. The circular model - involving reuse, remanufacturing or recycling of end-of-life products - would replace the traditional ‘take-make-use-waste’ model. As circular procurement was still a new concept at this time, a pilot approach was adopted in order to test its application within a procurement procedure and learn as much as possible during the process.

PROCUREMENT APPROACH

The tender distinguished three aspects of awarding a contract. The following considerations were included.

Sustainability

- possibilities for reusing the product
- possibilities for extending the life of the product
- possibilities for reuse (recycling) of materials or parts
- raw materials footprint
- CO_2 footprint
- closing the loop

User value

- assurance of the required level of quality
- product warranty
- flexibility of user wishes
- flexibility of use period
- unique product properties
- transfer at end of usage period

Costs

- total costs of ownership

When responding to the call for tender, suppliers were requested to present both a traditional and a circular option to enable a comparison between the resulting costs and benefits. The tender included functional specifications, which provided more scope for suppliers to develop different solutions than a traditional procurement process.

A precompetitive dialogue with several potential suppliers took place as part of the pilot. In the case of carpeting, the user buys the product, with a take-back guarantee after ten years. In the case of furniture, responsibility for the products remains with the supplier, so this is a type of lease.

Results

Environmental impacts

Products are specifically designed to enable reusability, refurbishment and recyclability and are therefore inherently more resource-efficient. Lower associated CO_2 emissions and other characteristics that promote sustainability are also 'designed into' these products.

Financial impacts

In this pilot exercise circular carpeting solutions were offered at a comparable price to that of traditional solutions. However, circular office furnishing solutions were more expensive.

One reason for the higher cost of circular models is the small scale of these operations. In addition, several risk-related factors lead to higher price quotations such as:

- the difficulty of predicting the value of the product at end-of-life (in ten years)
- the continuity of the business in the long run (i.e. whether it will still exist in ten years)
- the complexity and associated risk of guaranteeing long-term performance and the quality of materials and parts supplied by upstream producers
- uncertainty about the cost of reuse and recycling in ten years' time

Lessons learned

Developing the tender with effective functional specifications requires dialogue with potential suppliers in order to gauge what the market has to offer and how best to stimulate innovation. This can be a complex and potentially time-consuming process.

Circularity can be a difficult concept for the procuring organizations to understand. The following conditions would facilitate an understanding of circularity and its insertion in Sustainable Public Procurement:

- developing criteria for evaluating/weighting the different aspects of offers (mainly circularity and sustainability versus cost)
- finding ways to compare different offers with slightly different business models
- producing Key Performance Indicators (KPIs) and defining quality throughout the life-cycle
- defining how to deal with risks (e.g. unintended damage to products)
- making life-cycle costs transparent
- fitting specifications for desired look and feel into the process of procurement

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Further details of the case: http://www.scpclearinghouse.org/resource/using-product-service-systems-enhance-sustainable-public-procurement

Circular procurement
Case Study 9

Construction

Brummen town hall is a raw material “depot” designed for disassembly

Image: Huib Mekers, Stedendriehoek

SUMMARY

What

Building a temporary office, Brummen Town Hall, for a period of 20 years (the Netherlands)

How

In its request for proposals the municipality of Brummen asked for a temporary office. The company Turntoo came up with the soulution: a building designed for disassembly. Brummen got at product-service model

Result

The building is 30% cheaper than two other comparable town halls
Reusability and recyclability are taken into account in the design phase. Dismantling and take-back are included in the contract

The source of this case is: “Using Product-Service Systems to Enhance Sustainable Public Procurement”, UNEP, 2015.

BACKGROUND

The Dutch municipality of Brummen needed a new town hall.

The solution turned out to be a Turntoo building: The Brummen Town Hall is built with consistent use of reusable and renewable high-quality construction materials, and a contractual approach that guarantees circularity at the end of the intended use period. The supporting structure, façade and floors are made from wood in pre-fabricated components. The use of concrete has been minimized. The wooden components can easily be dismantled and reused in a new building. Interestingly, manufacturers requested several minimal yet important design changes so that the components could be used more easily in their second-life application.

PROCUREMENT APPROACH

In its request for proposals of a new town hall, Brummen asked for a temporary office for a period of 20 years. Procurement considerations include:

- maximum sustainability within the available budget;
- performance requirements; and
- making the greatest possible use of knowledge in the market

The Dutch company Turntoo presented an alternative business model based on retaining its products throughout the life-cycle rather than selling them to consumers. The Turntoo model fits into the broader trend of PSS or extended producer responsibility, which integrates services into a product offering.

With the launch of the new town hall, Turntoo delivered the first building conceived as a raw materials ‘depot’. The building is a temporary arrangement of construction materials, of which all details are known including their destination in a subsequent second use phase or ‘second life’.

Contract award criteria

- price
- design
- planning
- opportunities/risks
- quality management
- corporate social responsibility (CSR)/sustainability
- presentation

Price and sustainability were each awarded a maximum of 30 points, so they had equal importance

Results

Environmental impacts

The chosen procurement approach promises the following environmental benefits:

Producers retain ownership of a product and derive their profits from its use rather than its sale; therefore, they have an incentive to make the product as durable and efficient as possible. Materials are used as many times as possible before they have to be replaced.

Once the building reaches the end of its life, the producer will disassemble it and the materials will re-enter the production loop, reducing the demand for virgin raw materials. 95% of the design consists of components that can be disassembled and reused.

The energy embedded in the products at production is retained at the highest possible level

Financial impacts

With an estimated total cost between EUR 1 million and EUR 5 million, the building is 30% cheaper than two other comparable town halls recently built in the vicinity.

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Further details on the case: http://www.scpclearinghouse.org/resource/using-product-service-systems-enhance-sustainable-public-procurement

Circular procurement
Case Study 10

Medical Technologies

Medical Center Patient Care services results in savings of USD$ 10 million over 15 years

SUMMARY

What

Georgia Regents Medical Center (GRMC) in the United States teamed up with private sector to enable a more patient centred approach to healthcare.

How

Phillips Healthcare and GRMC work together throughout a 15-year contract to cost-effectively design and deploy innovative patient care.

Circularity achieved by provision of products with standardized parts and components for greater modularity and efficient repair, refurbishment and reuse.

Result

Estimated savings of USD$ 10 million over the life of the agreement; reduced carbon and material footprint; reuse of existing products.

The source of this case is: “Using Product-Service Systems to Enhance Sustainable Public Procurement”, UNEP, 2015.

BACKGROUND

In 2013 Georgia Regents Medical Center (GRMC) in the United States teamed up with the private sector – Phillips Healthcare – to enable a more patient centred approach to healthcare through the use of a managed service business model using a Public Buying Service (PBS) which acts as a central Purchasing Body. The alliance is a first-of-its-kind delivery model in the United States.

Through this alliance, GRMC seeks to address the current and future clinical, operational and equipment needs of the hospital’s multiple sites, including its combined 632-bed medical centre, cancer centre, and children’s hospital, which serve the medical needs of between 4 and 6 million people across Georgia and South Carolina (Philips, 2013).

This Public Private Partnership (PPP) encompasses a comprehensive range of consulting services; advanced and innovative medical technologies (across a range of Philips’ technologies including imaging systems, patient monitoring and clinical informatics solutions, as well as lighting and consumer products); and the associated operational performance, planning and maintenance services of these technologies. This will affect all care areas and enhance medical research and clinical technology research and development initiatives. In addition, Philips will provide GRMC with rapid access to new equipment as well as educational resources.

Philips and GRMC will work together throughout a 15-year contract period to cost-effectively design and deploy innovative patient care strategies; distinct work groups staffed by GRMC and Philips personnel will focus on technology, services, consulting and innovation.

PROCUREMENT APPROACH

The contract is worth USD$ 300 million, with pre-determined monthly operational costs over a 15year period. It is the largest agreement of this kind for Philips Healthcare and is part of the company’s Circular Economy Program, in which it seeks to implement circular initiatives with a particular focus on performance-based business models.

The director of the Circular Economy Program for Philips Healthcare, Nestor Coronado Palma, describes the GRMC alliance as an innovative business model. He says: “It’s not just selling something and having a one-year guarantee, or a 10 year service contract. It’s a comprehensive arrangement to fulfil the needs of these hospitals with the appropriate technologies and services across 15 years” (King, 2014). Through this work, Philips is attempting to redesign and rebrand its products through a circular economy approach that focuses on customer access rather than ownership, and business models for services and solutions rather than one-off transactions.

The agreement does not preclude GRMC from obtaining technologies from other companies. Philips cannot provide every device or service needed, but it is expected that Philips will provide about 75 per cent of the medical technology at GRMC.

In this synergistic relationship, both parties are responsible for finding new and unique ways to advance the quality of patient care.

From Philips' perspective, the procurement should be about selling modular design, circular design and system efficiency. System efficiency and circularity can be achieved by designing products with standardized parts and components to allow for greater modularity and more efficient repair, refurbishment and reuse. For Philips, the aim is to create system platforms between products or technologies, such as x-ray, CT, MR, nuclear medicine and ultrasound; for example, the tables on which patients lie could be standardized across several of the imaging technologies and even across brands. Modularity also allows Philips to configure, or reconfigure, equipment to fit customer requirements.

Results

Financial impacts

The ex-CEO of GRMC, David Hefner, estimated that this alliance would save an estimated USD$10 million over the life of the agreement (Mosquera, 2013).

Lessons learned

Hospitals often face challenges when trying to effectively plan for better patient care because huge amounts of time is spent negotiating through complex procurement, maintenance and service guidelines, with different departments having differing and often conflicting clinical and financial priorities. GRMC felt that the right healthcare delivery model, based on PBSs, would minimize these issues, allowing solutions to be developed holistically to make systems more cost and resource efficient.

Circular procurement
Case Study 11

Textiles and Workwear

The Municipality of Herning will reuse and recycle work clothes

SUMMARY

What

Procurement of work clothes in the Danish municipality of Herning.

How

In 2014 Herning municipality introduced a new business model to provide innovative solutions to prolong the life time of the work clothes and to incorporate reuse and recycling in the daily operations. One of the goals was to develop clear criteria for disposal and reuse of worn work clothes.

Result

Reuse of work clothes and transfer of work clothes, from the current contract to the next, would save 6 700 Euros and 1011 tonnes of CO_2 in a 4 year period in Herning's technical operations department alone.

BACKGROUND

Earlier the Municipality of Herning had a lease agreement with the laundry service company "Forenede Dampvaskerier" where they rent, wash and repair the work clothes.

The challenge was to address that all new employees of the technical operations department received brand new work clothes and whenever an employee resigned the clothes were discarded, regardless of the quality. Also when the current textile service contract would expire, all work clothing would be discarded. The discarded work clothes were not recycled.

The City of Herning decided to investigate how to prolong the lifetime of the work clothes and include reuse and recycling of work clothes into daily operations in the purchase and supplier chains. This has led to the preparation of a new circular business model of work clothes in the municipality's technical operations department.

PROCUREMENT APPROACH

The objectives of the circular economy project in Herning Municipality were as follows:

- To define operative and objective criteria for reuse of work clothing.
- To adjust the current textile service contract in order to introduce a circular economy based model to this specific purchase area.
- To develop a general guide for incorporating a circular economy based model into public tenders, which can be used in various purchase areas and by other public entities.
- To find commercial recycling solutions for used work clothes.

To ensure a high level of quality and validity of the project the Municipality decided to cooperate with multiple parties, including students from the design school Teko as well as researchers and experts who helped with the economic analysis and the establishment of criteria for the reuse and disposal of used clothing. In addition, the municipality has been in dialogue with local businesses working with textile, furniture and construction to identify problems relating to commercial recycling.

Employees in the technical operations department have also been consulted in the process. They have helped to ensure the quality and practical design of the work clothes meets the requirements and expectations from the practical reality.

In the first phase of the project the reuse criteria was defined. User culture, signal value and changing attitude towards used clothes were discussed with the employees. Subsequently, objective criteria in reference to official standards (EN 20471:2013, ISO 105-A02 and A03, SNV 195651) were described (with Danish Technological Institute acting as consultant). Finally, the implementation of procedures and control functions for the criteria were agreed on in cooperation with the textile service company De forenede Dampvaskerier (DFD).

The second phase of the project consisted of introducing circular economy aspects to the current contract as a pilot. In order to transfer work clothes in use to the next contract it was necessary to make an additional contract (allonge) to the current contract where the conditions for transferring materials and a calculation model for determining net present value of the materials was defined.

Results

As part of the circular economy project Herning Municipality has written a general guide on how to take circular economy principals into account in municipal procurement contracts. This serves as inspiration for other procurement organizations.

After the initial phases the Municipality published a circular tender for procurement of work clothes. Unfortunately they had to cancel the tender due to the fact that even though the suppliers found it interesting with a more circular solution, they were not ready or interested to engage in a solution where they potentially had to receive a pool of clothes that another supplier had delivered, treated and washed for the municipality in the last four years.

The environmental equation did not add up, when the suppliers weren't interested in dealing with competitors' clothes. The purchasing department therefore ended up with a traditional model where the municipality owns the work clothes. Instead of a circular model, the project has opened up a number of other sustainable initiatives. The Purchasing Department is thinking more in total costs and work clothes are now in heritage, whereas before it was personal. Hence, the clothes will only be discarded when it is worn out.

It was the intention to scale up the project for future use in other business areas and for other municipalities. They are thinking of making a joint procurement with other municipalities to increase the procurement volume and thereby the incentives for the market to join.

Environmental and financial impacts

The initial calculations of the projects potential results estimate that approximately 7,000 euro and 1,012 tonnes of CO2 could be saved if the municipality moves to a more circular business model.

The result is achieved solely by reusing the work clothes transferring it from the present to the future contractor when the contract expires. The real changes and savings lie with the textile service company, which owns the materials, but part of the savings will be realized in the municipality through the supply control contract.

Lessons learned

Three good advices from Herning Municipality on engaging in circular procurement include:

- Consider what may be the best approach for your particular municipality - in which areas is there experience, special knowledge or strengths? What may be appropriate for local businesses? It might be fruitful to try to gear their production in the right direction.
- Be open-minded. It is important to share knowledge and ideas with many different parties.

- Get going and make attempts to procure more circular! - It is fun, educational and rewarding.

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Further details on the case can be found at www.ansvarligeindkob.dk/cases and in the report: “Nordic best practices relevant for UNEP 10YFP of sustainable consumption and production”, 2015.

Circular procurement
Case Study 12

Policy

The procurement and supply policy works as catalyst for circular procurement in Samsø Municipality

SUMMARY

What

The Municipality of Samsø (Denmark) has adopted a Circular Procurement Policy.

How

The intention is to motivate both the procurer and the bidder in a more circular direction. The experience available on circular procurement is limited so the emphasis is on market testing and dialogue, and testing circular criteria.
The policy is divided into fixed and optional criteria.

Result

The policy is tested in a business case on leasing of heat pumps.
It is a business model in which plumbers earn their money by selling services instead of products.

BACKGROUND

The municipality of Samsø (an island) has a population of 3,767 and an area of 114.71 km².

The Municipality's vision behind the development of a new Circular Procurement Policy is to buy products and services that can match the needs of a changing world, provide the greatest possible impact on the bottom line and support sustainable development.

PROCUREMENT APPROACH

The municipality of Samsø (Denmark) has adopted a Circular Procurement Policy based on circular economy.

The policy is a framework that is made flexible enough to encompass all types of purchases in the municipality. It contains demands that will motivate both municipal buyers and bidders. This includes both market testing and market dialogue as the available knowledge about circular procurement is very limited.

The policy is divided into fixed and optional criteria:

Fixed criteria

- Total Cost must be used as competitive parameter
- All bidders must make a short and precise qualitative description of how their product or service contributes to more recycling of materials and resource efficiency
- Service agreements that promote local employment rather than the purchase of new products will be included as a competitive parameter, where appropriate
- Electrical using products must meet energy demands made in the DEA's procurements guidelines
- All applicable laws must be observed

Optional criteria

- Documented inventory of CO_2 emissions as a result of the production, transport, use and disposal of the product. If relevant, it should also include emissions caused by production of the materials used in the product.
- Documented share of recycled materials in the product
- Documented share of recycled material in packaging and proportion of packaging that can be recycled.
- Documented proportion of a product that is designed to be dismantled, so that the materials can be used again in pure fractions.
- Documented efforts that improve environmental and work-environmental conditions.
- Documentation that shows that materials listed on the EPA List of undesirable substances is not used.

Results

As part of the adoption of the Procurement Policy it has been the municipality's intention to test the policy in a business case. They chose a case concerning the lease of heat pumps.

In collaboration with Grundfos and local plumbers the municipality is working on developing a new business model for recycling and leasing of pumps for water, heating and sewage.

The idea is that when replacing pumps, recycled pumps are used while new pumps only are installed via a leasing arrangement rather than an outright purchase. There is also a return operation of the pumps, where the parts are recycled.

It is a business model where the plumbers earn their money by selling services rather than products. Grundfos delivers the latest pump technology and the necessary spare parts. And the municipality ensures the latest and most energy-efficient technology.

This case is chosen because the business model has the potential to save energy and resources, and it is not only interesting for the municipality, but also for private homeowners and thus also for the partners in the project. Finally, it does not demand excessive knowledge about circular and sustainable economy or exclude local business owners.

Lessons learned

The project has materialized an example of what a municipality across departments and with commercial actors can do in relation to the circular economy.

The municipality has until now had a decentralized procurement without procurement criteria of any kind. The new procurement policy has helped to assemble the municipal competencies toward a common, comprehensive and efficient procurement organization.

Circular economy can be used as a framework to articulate and discuss sustainable economy in the context of the current business paradigm.

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Further details on the case can be found at www.ansvarligeindkob.dk/cases

Circular procurement
Case Study 13

Furniture

Circular Procurement of Furniture for the City Hall of Venlo

SUMMARY

What

Procurement of furniture for the City Hall of Venlo looking at toxic free substances to make it easier to disassemble, refurbish and retain residual value.

How

Creating a contract that leaves room for a continuous cycle of materials that can be incorporated into biological or technological cycles with no loss of quality.
Incorporating new business models by implementing Total Cost of Ownership.

Result

Design for disassembly makes it easier to recycle and exchange worn-out parts of the products.
Asking the right (circular) questions to the market and considering a preventive maintenance plan has guaranteed a residual value of 18% after a period of ten years from the original budget of 1.6 million.

The source of this case study is the EU newsletter: “GPP in practice” issue no. 60, April 2016.

Background

The Venlo Region, located in the southeast of the Netherlands, has expressed its ambition to become pioneers in the transition to a circular economy by developing several initiatives supporting the implementation of circular economy principles in the manufacturing and construction sectors.

The circular economy principles were applied when the new City Hall was constructed. The new building, which was finished by 2016, combines several municipal services that were previously distributed all over the city into one complex, including offices, a public hall, meeting rooms and an underground parking. It consists of a three story parking garage and a total floor space of 13,500m² and a total investment of 46 million euro.

The construction process was initiated in 2009 where designers were asked to present their vision of a sustainable building, taking into consideration the following key aspects:

- Use of appropriate safe & healthy materials which can be recycled after their lifetime
- Enhance air and climate quality
- Produce and use only renewable energy
- Enhance water quality

When the furniture for the City Hall was to be procured it was also decided to follow the circular economy principles.

PROCUREMENT APPROACH

For the tender process of the office furniture, which started in 2013 with a market consultation, bidders were asked to offer products based on healthy materials with positive impact (free of toxic substances), which would be easy to disassemble, refurbish and retain residual value. The purpose was to create a continuous cycle of materials that can be incorporated into biological or technological cycles with no loss of quality.

Furthermore, the objective of this tender package was not only to achieve an attractive working environment, but to incorporate new business models by implementing the Total Cost of Ownership concept, which estimates not only direct costs of products but also indirect costs (e.g. ecological, social) and by asking bidders to offer a take-back system for their products after a period of ten years and to consider the financial residual value of these products, including maintenance.

Tender specification and award criteria

Technical specifications

Minimum requirements given by the Dutch Government in the “criteria for sustainable purchasing” was applied. Additional requirements were included to address sustainability issues, such as:

- Office furniture delivered shall have a minimal technical life of ten years. After a period of ten years, all furniture parts and components must be available in the market for a refurbishment of the products.
- Furniture will comply with the European regulations for Formaldehyde, determined in accordance with EN 120, DIN EN 717-1 and DIN EN 717-2.
- Textiles used in furniture must not contain:
    - chlorinated artificial fibres
    - halogenated flame retardants, except when applying such substances under
    - Benzedrine based dyes
    - in pigments, dyes or specific textile fibres higher concentration of certain heavy metals as the following specified in the requirements
- The coating used in/on furniture should comply with the emission limits for antimony, arsenic, barium, cadmium, chromium, lead, mercury and selenium as mentioned in the regulation EN 71-3.

Award criteria

The contract was awarded to the bidder with the most advantageous economic tender. For this purpose, four criteria and the following weighting system were established:

- Quality - 10%
- Cradle to Cradle (C2C) - 30%, with a minimum requirement: at least 60% of the highest scoring bidder
- Total Cost of Ownership - 30%, calculated based on the price minus residual cost of products after a period of ten years
- Esthetics - 30%, with a minimum requirement: at least 60% of the highest scoring bidder

A C2C specialist was involved in the assessment body. A scoring of 100 % for C2C was delivered when a product had a C2C or equivalent certification. Otherwise, a matrix with a breakdown of the C2C criteria was provided in the call for tenders. A bidder could score 25% of the amount of points, based on the following subcriteria:

- The extent to which the chemical composition of the product is known, till 100 parts per million;
- The extent to which components can be separated, without the need of additional substances or materials which are no longer reusable in the process;
- The extent to which materials can be recycled at the end of the intended lifetime, without losing the original quality or being biological compostable or degradable;

- The extent to which the materials of the product are quickly renewable or recycled materials.

Contract performance clauses

The supplier is obliged to deliver a plan with preventive maintenance to be performed yearly, including service level agreements, such as response times, temporarily replacing defective furniture, timing for maintenance, etc.

During the term of the contract, the supplier is responsible for all common repairs that have to be performed in furniture. After a period of ten years, the supplier is obliged to take back the furniture and offer possibilities for refurbishment.

Results

The tender for the office furniture comprised two different tender lots: one for single devices and another one for permanent furniture. For each of these lots, three bidders present an offer after a pre-selection procedure.

The contract was awarded to a single supplier in July 2013.

Asking the right (circular) questions to the market and considering a preventive maintenance plan resulted not only in a high number of C2C or equivalent certified materials, but has also guaranteed a residual value of 18% after a period of ten years from the original budget of 1.6 million.

Environmental impacts

The main environmental impacts derived from the production of office furniture are the uncontrolled harvest of timber and the use of chemical products of concern, which have severe impacts on the environment and on the indoor climate of buildings/offices impacting on human health. Design for disassembly makes it easier to recycle and exchange worn-out parts of the product. Furthermore, on-site maintenance works have been procured in order to extend the lifetime of the furniture and ensure the highest quality.

Lessons learned

One of the main lessons learned through this procurement was the need to carry out a thorough analysis of the whole process before starting the procurement procedure. The market should be involved at the beginning, e.g. through market consultation, as suppliers need to understand the requirements before they are able to provide good proposals.

When searching to apply innovation, the market not only has to be consulted but, sometimes, it also has to be trained. For this purpose, several training sessions, including architects, building contractors, public procurers, technical advisors and product suppliers were organised throughout the lifetime of the project, to ensure that requirements were fully understood and applied. Especially important was to involve the design team at the beginning of the design process in the training.

Asking for take-back systems worked well for the interior package. Some suppliers suggested offering a leasing model for the products instead of a direct sell, but finally the project team decided to purchase the products and use the Total cost of ownership concept to reduce potential risks.

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For related information, please see European GPP criteria and Technical Background Report for Furniture and the Technical Background Report and GPP criteria for office buildings (to be published in 2016).

About SPP Regions

SPP Regions is promoting the creation and expansion of 7 European regional networks of municipalities working together on sustainable public procurement (SPP) and public procurement of innovation (PPI).

The regional networks are collaborating directly on tendering for eco-innovative solutions, whilst building capacities and transferring skills and knowledge through their SPP and PPI activities. The 42 tenders within the project will achieve 54.3 GWH/year primary energy savings and trigger 45 GWh/year renewable energy.

SPP REGIONS PARTNERS

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