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Revision of the EU Green Public Procurement Criteria for Indoor Cleaning Services

Technical report for the 2nd AHWG meeting

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Terms and definitions

Cleaning	'Cleaning' has the meaning defined by the EU Detergents Regulation (EU/259/2012) and is 'the process by which an undesirable deposit is dislodged from a substrate or from within a substrate and brought into a state of solution or dispersion' (Article 2(3)).
Routine	'Routine' refers to regular activities that are performed at least once a month. With regard to the present project, any cleaning activity, with the exception of window cleaning, that is performed less frequently than once a month is considered to be out of scope.
Cleaning services	'Cleaning services' refers to the commercial activities that generate revenue by maintaining the cleanliness of a defined space or object at a desirable level. The focus of this project is on routine indoor cleaning activities, including the cleaning of commercial (e.g., offices, shopping centres, hotels), institutional and other publically accessible buildings (e.g., libraries, schools, museums, churches, hospitals).
Floor cleaning	'Floor cleaning' refers to the routine cleaning of indoor floors in commercial and public spaces using either dry or wet methods.
Sanitary cleaning	'Sanitary cleaning' refers to the routine maintenance of the cleanliness of sanitary facilities. Key cleaning tasks include the cleaning of sinks, toilet bowls and urinals, washing floors, emptying rubbish and sanitary bins and cleaning vertical surfaces. Disinfection and sanitization activities are excluded.
Sanitization	The process of destroying <i>most</i> micro-organisms and removing dirt and germs through the use of chemicals and/or heat – this does not include disinfection practices and products that remove <i>nearly all</i> micro-organisms and germs and sterilization techniques that eliminate <i>all</i> micro-organisms and germs.
Glass/window cleaning	'Glass/window cleaning' refers to the routine* cleaning of glass surfaces, including mirrors. With regard to the present project, glass/window cleaning is limited to the cleaning of indoor glass and window areas that can be accessed without the use of any specialised equipment or machines. *As window cleaning might be performed less frequently than on a monthly basis, the term "routine" is used here in a more flexible way than how it is defined above. Any window cleaning activities corresponding to the definition and that are performed regularly under an indoor cleaning service contract are considered to fall within the scope of this criteria.
Surface cleaning	'Surface cleaning' refers to the routine cleaning of vertical surfaces, furniture (e.g., desks, chairs) and desk equipment (e.g., phones).
Cleaning products	'Cleaning products' refers to chemicals used in cleaning.
Routine cleaning products	'Routine cleaning products' refers to cleaning products that are used on a routine basis in cleaning. With regard to this project, the scope of 'routine cleaning products' includes but is not limited to all the products within the scope of the EU Ecolabel for hard surface cleaning products (previously EU Ecolabel for all-purpose cleaners and sanitary cleaners).
Specialised cleaning products	'Specialised cleaning products' refers to cleaning products that are used for specialised and/or non-routine cleaning tasks (e.g. paint remover).
Cleaning accessories	'Cleaning accessories' refers to reusable cleaning goods such as cloths, mops and water buckets.
Cleaning supplies	'Cleaning supplies' refers to disposable goods used for cleaning, such as wipes, paper towels (used for cleaning, not hand drying) and disposable vinyl gloves.

Consumable goods	'Consumables' refers to consumable products that are used by the end users of the facility, such as toilet paper, paper towels (used for hand drying, not cleaning) and hand soap.
Cleaning power equipment	'Cleaning power equipment' refers to tools used in cleaning that require energy to operate.
Standard	'Standard' refers to a "document established by consensus and approved by a recognised body that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context (ISO/IEC Guide 2:2004, definition 3.2).
Public buildings	'Public buildings' refers to buildings such as schools and other educational establishments, places of public worship, and other buildings destined for public use, benefit, and access (e.g., hospital, library). For hospitals, only publicly accessible areas are considered within the scope of this EU Ecolabel, such as waiting and office areas. All areas that require disinfection and sterilisation are considered out of scope.
EU Ecolabel	'EU Ecolabel' refers to a voluntary ecolabelling award scheme developed and managed by The European Commission intended to promote products and services with a reduced environmental impact during their entire life cycle and to provide consumers with accurate, non-deceptive, science-based information on the environmental impact of products or services. There are three types of voluntary labels identified by ISO with the EU Ecolabel falling under the Type I category.
Green Public Procurement	'Green Public Procurement (GPP)' is a voluntary instrument defined in the Commission Communication "COM (2008) 400 - Public procurement for a better environment" as "...a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured."
Type I Ecolabel	'Type I Ecolabel' is defined by the ISO 14024 standard as a voluntary multi-criteria-based, third party program that awards a license that authorises the use of environmental labels on products indicating overall environmental preference of a product within a particular product category based on life cycle considerations.
Domestic Buildings	'Domestic buildings', in the context of the present project, refers to structures or units of residential accommodation occupied by individuals, families and other households and include households where care is provided for residents (e.g., homes, flats, dormitories, care homes).

EXECUTIVE SUMMARY

The objective of this project is to develop criteria for a new EU Ecolabel for Indoor Cleaning Services and to revise the existing EU Green Public Procurement (GPP) criteria for Cleaning Services. The existing EU GPP Cleaning Services criteria are available at <http://ec.europa.eu/environment/gpp/pdf/criteria/cleaning.pdf>. The recommendations for the revision of the EU Ecolabel criteria for Indoor Cleaning Services are available on the JRC website <http://susproc.jrc.ec.europa.eu/cleaning%20services/stakeholders.html>.

This report is the first draft of the technical report on the revision of the EU GPP criteria for Cleaning Services. Improved requirements and other ideas for improvements were presented and discussed with stakeholders at the 1st Ad-Hoc Working Group (AHWG) meeting held on 22 January 2015. Stakeholder feedback was collected after the meeting and is reflected in this report, which consists of the three sections summarised below.

Introduction

Public procurement constitutes approximately 19% of the overall Gross Domestic Product (GDP) in Europe (EC, 2011) – and as such has the potential to provide significant leverage in seeking to influence the market and to achieve environmental improvements in the public sector. The European Commission has identified Indoor Cleaning Services as a service that is often contracted through public procurement and that has great environmental improvement potential.

The development of EU GPP criteria for Indoor Cleaning Services aims, therefore, at helping public authorities ensure that the indoor cleaning services procured are executed in a way that reduces their associated environmental impacts.

Draft EU GPP Criteria proposal for Indoor Cleaning Services

The current revision of the EU GPP criteria is based on the feedback collected from stakeholder consultation and further research on the relevant subject areas. Table 1 compares the existing EU GPP criteria and the proposed draft EU GPP criteria for Indoor Cleaning Services resulting from this study.

Table 1: Current and proposal for the EU GPP criteria for Indoor Cleaning Services

	Current EU GPP Criteria				Proposal for EU GPP Criteria			
	#	Criterion	Core	Comprehensive	#	Criterion	Core	Comprehensive
Selection criteria	1	Environmental management system	--	X	S1	Staff training	X	X
					S2	Environmental management measures and practices	X	X
Technical specifications	1	Ecolabel products	X	X	T1	Use of cleaning products with lower environmental impact	X	X
					T2	Use of microfiber products	X	X
					T3	Solid waste sorting and disposal at the cleaning sites	X	X
					T4	Consumable goods	X	X
Award criteria					A1	Use of cleaning products with lower environmental impact	X	--
					A2	Use of concentrated undiluted cleaning products	X	X
					A3	Use of cleaning accessories with lower environmental impact	X	X
					A4	Energy efficiency of vacuum cleaners	X	

Contract performance clauses	1	Products used: report list and quantity of cleaning products used a), b)	X	X	C1	Cleaning products, accessories used and procedures followed	X	X
	2	Training in cleaning agents, methods, equipment's, machine and waste management. Others on health, safety and environment	X	X	C2	Staff training	X	X
	3	Work instructions on environmental protection, health and safety standards displayed		X	C3	Solid waste sorting and disposal at the cleaning sites	X	X
	4	Facility manager or supervisor (organise and supervise cleaning)		X				
	5	Use of microfiber cloths		X				

a) For products not mentioned in the initial bid, the contractor shall provide proof of compliance with technical specifications.

b) Justification of the cleaning frequency and products used.

Life Cycle Cost considerations

Cost comparisons are normally based on purchase price alone; however, a cost analysis performed along the supply chain allows for a more comprehensive overview of all the costs associated with a service. In order to align the environmental hotspots with the financial implications for cleaning service providers, a review of Life Cycle Cost (LCC) analyses was performed and resulted in the following key findings:

- There is limited data availability and granularity for the cleaning service sector,
- Staff wages are the largest cost – it is suggested that expenditure related to staff typically accounts for 92% of the life cycle cost of the delivery of cleaning services, while cleaning products and other expenses only account for 2% and 6%, respectively (PWC et al., 2009),
- “Green” cleaning services generally do not result in significant cost increases,
- The absolute costs of “green” products vary between countries,
- The benefits of using “green” cleaning equipment or practices are multi-faceted.

In conclusion, even though “green” (environmentally preferable) products/practices can be more expensive than their non-green counterparts, they play a relatively minor role in the life cycle cost of the delivery of cleaning services. Most of the new proposed EU GPP criteria can be regarded as ‘low hanging fruit’ from a life cycle cost perspective as the proposed improvements are cheap but have a high cost saving potential (e.g. use of microfiber products, use of undiluted cleaning products).

INTRODUCTION

Public procurement constitutes approximately 19% of the overall Gross Domestic Product (GDP) in Europe (EC, 2011) – and thus has the potential to provide significant leverage in seeking to influence the market and to achieve environmental improvements in the public sector. This effect can be particularly significant for goods, services and works that account for a high share of public purchasing combined with the substantial improvement potential for environmental performance. The European Commission has identified Indoor Cleaning Services as one such service. The development of EU GPP criteria for Indoor Cleaning Services aims, therefore, to help public authorities ensure that routine indoor cleaning services are procured and executed in a way that reduces the associated environmental impacts.

Green Public Procurement (GPP) is a voluntary instrument that is defined in the “Commission Communication "COM(2008) 400 - Public procurement for a better environment" as "...a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured." Therefore, GPP criteria are to be understood as being part of the procurement process and must conform to its standard format. Hence, EU GPP criteria should be formulated either as Selection criteria, Technical specifications, Award criteria or Contract performance clauses which, according to the “Buying green handbook” (EU, 2011), can be understood as follows:

- **Selection criteria.** *When assessing the ability to perform a contract, contracting authorities may take into account specific experience and competence related to environmental aspects which are relevant to the subject matter of the contract. They may also exclude operators who are in breach of environmental law in some cases, and - for service and works contracts only - ask specifically about their ability to apply environmental management measures when carrying out the contract.*
- **Technical specifications.** *These constitute minimum compliance requirements that must be met by all tenders. They need to be related to characteristics of the work, supply or service being purchased itself – and not to the general capacities or qualities of the operator. It is also very important that they are clear, understood by all operators in the same way and possible to be verified.*
- **Award criteria.** *These can be used to stimulate additional environmental performance without being mandatory and therefore without foreclosing the market for products not reaching the proposed level of performance.*
- **Contract performance clauses.** *These specify how a contract must be carried out. For supply contracts, the main opportunity for the use of environmental clauses is often to specify how the goods will be delivered.*

For each set of criteria there is a choice between two levels of environmental ambition (Commission Communication (COM (2008) 400):

- The **Core criteria** are *designed to allow easy application of GPP, focussing on the key area(s) of environmental performance of a product and aimed at keeping administrative costs for companies to a minimum.*
- The **Comprehensive criteria** *take into account more aspects or higher levels of environmental performance, for use by authorities that want to go further in supporting environmental and innovation goals."*

In order to identify areas with substantial environmental improvement potential it is necessary not only to analyse the overall environmental impacts caused by the provision of cleaning services but also to understand the most commonly used procurement processes and learn from actors involved in successfully fulfilling contracts. For this reason, the European Commission has developed a process aimed at bringing together both technical and procurement experts to collate a broad body of evidence and to develop, in a consensus oriented manner, a proposal for precise and verifiable criteria that can be used to procure indoor cleaning services with a reduced environmental impact. This technical report presents the findings resulting from that process up to the 2nd Ad-Hoc Working Group (AHWG) meeting that will take place on 22nd October 2015 in Brussels.

A detailed environmental and market analysis, as well as an assessment of potential improvement areas, was conducted within the framework of this project and was presented in the Preliminary Report on the Development of the EU Ecolabel Criteria and Revision of the EU Green Public Procurement Criteria for Cleaning Services. This report can be publicly accessed at the website for Cleaning Services <http://susproc.jrc.ec.europa.eu/cleaning%20services/stakeholders.html>. The main findings presented in the Preliminary Report (JRC/IPTS, 2015) are:

Market analysis

- The total estimated turnover of the cleaning service industry for 2010 was €81 billion for EU-27 (Eurostat, 2010). Services within scope (offices, schools and leisure organisations, windows and reception areas) constitute approximately €38 billion (47% of total turnover).
- The five largest markets for professional cleaning services are Germany, France, Italy, UK and Spain.
- Office cleaning dominates, representing 50% of turnover. However, the value of office cleaning has decreased by 8% since 1997, with an equivalent increase in specialised and related cleaning services.
- The cleaning industry structure in Europe is characterised by a large proportion of very small enterprises. 202 000 enterprises in Europe, of which 75% employ fewer than 10 people (Eurostat, 2010, EFCI, 2012). Large enterprises that employ over 500 people only constitute 1.5% of the total (EFCI, 2012).
- The estimated consumption volume of professional cleaning products for the EU28, Norway and Switzerland, is estimated at 590 000 tonnes of products per year (A.I.S.E, 2014), with an estimated value of €886 million (Afidamp, 2014).
- No specific data was available on the sales of sustainable cleaning products or services. However, the number of signatories to charters (*e.g.*, AISE Sustainable Cleaning Charter) or voluntary schemes (*e.g.*, EU Ecolabel, Nordic Swan) indicates that there is a market and interest for sustainable products and services.
- No accurate data exists on cleaning equipment use. However, anecdotal evidence from stakeholders suggests the volume of equipment sales is considerably smaller than product sales as they have a longer lifespan.
- It is estimated that the total value of cleaning supplies production in the EU28, Norway and Switzerland, is €572 million, with over 75% of the value related to floor cleaning (Afidamp, 2014).
- Data provided by EFCI shows that the market share of public tendering in the industrial cleaning sector had risen significantly in many Member States. In the countries where data was collected, public procurement constituted an average of 33% of total turnover in the sector.
- Key features and drivers in the cleaning service sector include the expansion of outsourcing; cost-led contracting and over-representation of part-time (and very short part-time) employment. The sector is also particularly sensitive to wage regulations due to high labour intensity.
- Competition on price has forced cleaning services to invest in new technologies to offer efficiency and cost reduction.
- Sustainable practices in the cleaning service industry are driven by resource and cost saving opportunities, government policies, voluntary standards and market demand.

Key environmental hotspots

Environmental impacts associated with all types of cleaning services were investigated in the technical and environmental analysis chapter of the Preliminary Report. Environmental hotspots for cleaning service components (*i.e.*, cleaning products,

supplies and accessories), cleaning operations/power equipment, road transport and operational management were identified and are summarised in Table 2.

Table 2: Main environmental hotspots of cleaning services

Cleaning service components	Environmental hotspots
Cleaning products, supplies and accessories	Cleaning product formulation (raw materials) Packaging of cleaning products Raw material use, manufacturing and end-of-life of disposable cleaning supplies
Cleaning operations/power equipment	Energy and water consumption in the use phase of cleaning products and power equipment
Road transport	Energy consumption and air emissions of road transport
Operational management	Wastewater discharge related to the use of cleaning products Waste treatment (solid and liquid waste sorting and collection)

Improvement areas for EU GPP criteria

Improvement potential areas associated with all types of cleaning services were investigated in the Preliminary Report. After cross-checking which ones have the potential to be addressed in the framework of the EU GPP programme, relevant improvement potential areas were identified and are summarised in Table 3.

Table 3: Potential environmental improvement areas for cleaning services

Cleaning service areas	Environmental improvements areas
Cleaning products, supplies and accessories	<ul style="list-style-type: none"> • Cleaning products with lower environmental impact • Cleaning product concentration at purchase • Cleaning product dosing • Cleaning supplies and accessories with lower environmental impact • Microfiber products
Cleaning operations/power equipment	<ul style="list-style-type: none"> • Water use in cleaning services • Energy efficiency of cleaning power equipment
Operational management	<ul style="list-style-type: none"> • Wastewater discharge • Solid waste collection, sorting and recycling

1 PRODUCT GROUP NAME, SCOPE AND DEFINITIONS

The key changes proposed in this draft of the Technical Report in terms of name, scope and definition of the product group are summarised below. These proposals are consistent with the proposals for name, scope and definitions proposed for the EU Ecolabel for Cleaning Services, available at the website <http://susproc.jrc.ec.europa.eu/cleaning%20services/stakeholders.html> and will be discussed in the 2nd AHWG on the 22nd of October 2015 in Brussels. The proposals are based on stakeholder comments received during and after the 1st AHWG meeting and additional evidence collected.

1.1 Product group name

It is proposed, following stakeholder consultation, to change the product group's name from "Cleaning Services" to "Indoor Cleaning Services".

The rationale behind this proposal is that the product group's name should reflect its scope while remaining as concise as possible. The proposed name reflects that only indoor activities are covered (these represent the bulk of the market share of cleaning services as shown by the breakdown of market segment data presented in the Preliminary Report) and it also implicitly indicates that only routine tasks are covered, as these represent the largest part of the cleaning activities performed indoors.

1.2 Scope and Definitions

The product group "Indoor Cleaning Services" comprises: *the provision of routine professional cleaning services, performed indoors in commercial, institutional and other publically accessible buildings as well as domestic residences. Areas where cleaning services are performed may include, but are not limited to, office areas, sanitary facilities, such as toilets and sinks, publically accessible hospital areas, such as for instance, corridors, waiting or break rooms.*

It shall comprise window cleaning when it is performed on indoor or outdoor glass and window areas that can be accessed without the use of any specialised equipment or machines.

This product group shall not comprise disinfection activities or cleaning activities taking place on production sites.

In the framework of this criteria, 'routine' refers to regular activities that are performed at least once a month, with the exception of window cleaning, where 'routine' refers to regular activities that may be performed less frequently (e.g., at least once every three months).

The scope for 'window cleaning' under this criteria set is proposed to be restricted to indoor and outdoor glass or window surface areas that can be reached from the floor and without the use of equipment (e.g. ladders). Window cleaning at heights is deemed specialised (requires special equipment and training) and falls under the jurisdiction of additional EU regulations (e.g. the European Council Directive 2001/45/EC concerning minimum safety and health requirements for the use of equipment for work at height or the Temporary Work at Height Directive or TWAHD). Other services or products provided by the cleaning service company staff (e.g. landscaping) but that do not contribute directly to the routine maintenance of cleanliness of an indoor space are considered out of scope as these are not directly relate to the subject matter.

Activities that are non-routine (exceptional) and require specialised cleaning products or machinery were found to be more of a niche market and also often require specialised training, products or tools. These activities include industrial cleaning (e.g. environmental remediation, manufacturing process cleaning); disinfection and sanitisation; special cleaning services (e.g. carpet shampooing, upholstery cleaning, mould remediation services) and sanitation services (e.g. sewer sanitation, cleaning after accidents/disasters, removal of graffiti).

Table 4 summarises the activities and operations carried out by cleaning service providers that would fall within the scope of Indoor Cleaning Services as proposed for the 2nd AHWG meeting.

Table 4: Cleaning activities, components and operations falling in the scope for indoor cleaning services

Cleaning services activities		Operations
Floor cleaning	Key cleaning activities:	Hard floor - vacuuming and washing; carpets - vacuuming
	Cleaning products	General purpose cleaners (align with the Hard Surface Cleaning Products product group)
	Cleaning power equipment	Commercial upright vacuum cleaners, carpet extractors, rotary floor machines, wet pick-up machines
	Cleaning accessories and supplies	Floor pads, wet mops, bucket, trolleys, brooms, brush, plastic shovel, plastic brush, vacuum bag
Sanitary cleaning	Key cleaning activities:	Cleaning sinks, toilet bowls and urinals, washing floor, emptying rubbish and sanitary bins, cleaning vertical surfaces
	Cleaning products	Sanitary cleaners including toilet cleaners (various forms) and cleaners with limescale removal function
	Cleaning power equipment	Restroom cleaning machines; pressure washers
	Cleaning accessories and supplies	Waste handling equipment (carts/receptacles), gloves, wipes, sponges, scouring pads
Glass/windows cleaning	Key cleaning activities:	Cleaning of internal windows, glass and mirrors
	Cleaning products	All-purpose cleaners; glass/window cleaners; window washing concentrate
	Cleaning power equipment	N/A (manual cleaning only)
	Cleaning accessories and supplies	Reusable gloves; disposable gloves; water buckets; cloths rags and paper towels; sprayer bottle
Surface cleaning	Key cleaning activities:	Dusting and washing surfaces and furniture; maintenance of office and communication equipment; cleaning of contact points: handles, switches and phones; washing waste bins, wiping windowsills, dusting table legs and chairs
	Cleaning products	All-purpose cleaners
	Cleaning power equipment	N/A (manual cleaning only)
	Cleaning accessories and supplies	Dusters; mops; disposable wipes

N/A – not applicable

2 DRAFT EU GPP CRITERIA PROPOSAL FOR INDOOR CLEANING SERVICES

Table 5 summarises the main improvement areas of each criterion, developed in more detail in this section

Table 5: Main improvement areas for each proposed EU GPP criteria

Criteria type	Criterion	Name	Potential improvement areas
Selection criteria (S)	S1	Staff Training	<ul style="list-style-type: none"> • Cleaning products with lower environmental impact • Cleaning products concentration at purchase • Cleaning product dosing • Cleaning supplies and accessories with lower environmental impact • Cleaning cloths, mops and rags • Water use in cleaning services • Wastewater discharge • Solid waste collection, sorting and recycling
	S2	Environmental management measures and practices	<ul style="list-style-type: none"> • Cleaning products with lower environmental impact • Cleaning product concentration at purchase • Cleaning product dosing • Cleaning accessories with lower environmental impact • Cleaning cloths, mops and rags • Water use in cleaning services • Wastewater discharge • Solid waste collection and sorting and recycling
Technical specifications (T)	T1	Use of cleaning products with lower environmental impact	<ul style="list-style-type: none"> • Cleaning products with lower environmental impact
	T2	Use of microfiber products	<ul style="list-style-type: none"> • Cleaning cloths, mops and rags
	T3	Solid waste sorting and disposal at cleaning sites	<ul style="list-style-type: none"> • Solid waste collection and sorting and recycling
	T4	Consumable goods	<ul style="list-style-type: none"> • Cleaning supplies with lower environmental impact
Award Criteria (A)	A1	Use of cleaning products with lower environmental impact	<ul style="list-style-type: none"> • Cleaning products with lower environmental impact
	A2	Use of concentrated undiluted cleaning products	<ul style="list-style-type: none"> • Cleaning products concentration at purchase
	A3	Use of cleaning accessories with lower environmental impact	<ul style="list-style-type: none"> • Cleaning accessories with lower environmental impact
	A4	Energy efficiency of vacuum cleaners	<ul style="list-style-type: none"> • Energy consumption in the use phase
Contract Performance Clauses (C)	C1	Cleaning products, accessories used and procedures followed	<ul style="list-style-type: none"> • Cleaning products and accessories with lower environmental impact • Cleaning products concentration at purchase • Cleaning product dosing • Cleaning cloths, mops and rags

	C2	Staff training	<ul style="list-style-type: none"> • Cleaning products with lower environmental impact • Cleaning products concentration at purchase • Cleaning product dosing • Cleaning accessories with lower environmental impact • Cleaning cloths, mops and rags • Water use in cleaning services • Wastewater discharge • Solid waste collection and sorting and recycling
	C3	Solid waste sorting and disposal at the cleaning sites	<ul style="list-style-type: none"> • Solid waste collection and sorting and recycling

DRAFT

2.1 Selection criteria

2.1.1 Staff training (S1)

Rationale

This EU GPP criterion aims to ensure that cleaning staff are trained and capable of delivering efficient and effective cleaning services, with special emphasis put on environmental aspects. This is a new criterion that encourages cleaning service providers to put in place robust comprehensive training programmes for concerned staff, with appropriate follow-ups.

Different companies have different policies for training staff and different countries have different legislation and government funded training opportunities. As this kind of support isn't available in all countries, the criterion scope is designed to be detailed and serve as a checklist of minimum requirements for staff training and to provide clear instruction for criterion verification. It provides requirements for training of the service delivery staff as well as procurement staff. It covers different areas associated with the purchase of products and goods as well as on the delivery of cleaning services, such as the correct use of cleaning products, practices leading to water and energy savings, and health and safety best practices.

The current EU GPP criteria cover Staff Training as a Contract Performance Clause, with a list of topics that should be covered. In this EU GPP criteria proposal, Staff Training is covered as Selection Criteria, to ensure that the cleaning service provider has the means of providing the training, and a Contract Performance Clause, to ensure that adequate records of training received are kept throughout the contract delivery.

Core criteria	Comprehensive criteria
Selection criteria	
<p>S1. Staff Training</p> <p>Tenderers shall have in place a staff training program, including written procedures or manuals, ensuring that relevant staff has access to the information needed to deliver cleaning services in an efficient and environmentally responsible manner.</p> <p>Staff training shall cover the following topics:</p> <p>Procurement staff: <u>Cleaning products, supplies and accessories:</u></p> <ul style="list-style-type: none"> – Staff shall be trained to read safety data sheets and to identify and procure cleaning products which meet the requirements in the core criterion (T1: Use of cleaning products with lower environmental impact) – Staff shall be trained to procure microfiber products and supplies and accessories with lower environmental impact. <p>Cleaning staff: <u>Cleaning products:</u></p> <ul style="list-style-type: none"> – Staff shall be trained on how to read product instructions and safety data sheets and on the use of the correct product dosage for each cleaning task. – Staff shall be trained to use the correct dilution rate for concentrated cleaning products and how to use the appropriate dosing equipment. – Staff shall be trained on the minimisation of the range of cleaning products used as a mean to minimise the risk of overuse and misuse of cleaning products shall be covered. <p><u>Energy saving:</u></p> <ul style="list-style-type: none"> – Staff shall be trained to use room temperature water for diluting products, unless otherwise specified by the product manufacturer. – Staff shall be trained to use the appropriate cycle and temperature for both industrial and household washing machines. 	<p>S1. Staff Training</p> <p>Tenderers shall have in place a staff training program, including written procedures or manuals, ensuring that relevant staff has access to the information needed to deliver cleaning services in an efficient and environmentally responsible manner.</p> <p>Staff training shall cover the following topics:</p> <p>Procurement staff: <u>Cleaning products, supplies and accessories:</u></p> <ul style="list-style-type: none"> – Staff shall be trained to read safety data sheets and to identify and procure cleaning products which meet the requirements in the comprehensive criterion (T1: Use of cleaning products with lower environmental impact) – Staff shall be trained to procure microfiber products and supplies and accessories with lower environmental impact. <p>Cleaning staff: <u>Cleaning products:</u></p> <ul style="list-style-type: none"> – Staff shall be trained on how to read product instructions and safety data sheets and on the use of the correct product dosage for each cleaning task. – Staff shall be trained to use the correct dilution rate for concentrated cleaning products and how to use the appropriate dosing equipment. – Staff shall be trained on the minimisation of the range of cleaning products used as a mean to minimise the risk of overuse and misuse of cleaning products shall be covered. <p><u>Energy saving:</u></p> <ul style="list-style-type: none"> – Staff shall be trained to use room temperature water at for diluting products, unless otherwise specified by the product manufacturer. – Staff shall be trained to use the appropriate cycle and temperature

<p><u>Water saving:</u></p> <ul style="list-style-type: none"> – Staff shall be trained to use microfiber cloths where appropriate to minimise the use of water and cleaning products. <p><u>Waste:</u></p> <ul style="list-style-type: none"> – Staff shall be trained to select appropriate durable and reusable cleaning accessories to minimise the use of single use cleaning supplies where this does not compromise staff safety and hygiene requirements. – Staff shall be trained to correctly discard waste water. – Staff shall be trained to collect, separate and dispose waste into categories that can be handled separately by the local or national waste management facilities as defined by Criterion T3. Solid waste sorting and disposal. Training should include waste management at the cleaning sites. – Staff shall be trained to collect and separate hazardous waste as listed in Decision 2000/532/EC and disposal appropriately as required by the local waste management authority. Training should include waste management at the cleaning sites. <p><u>Health and safety:</u></p> <ul style="list-style-type: none"> – Staff shall be informed on health, safety and environmental issues and encouraged to adopt best practices for cleaning tasks. This must include information on: <ul style="list-style-type: none"> - Safety Data Sheets and handling of chemicals - National working environment legislation - Ergonomics and working environment - Road safety <p>Adequate training, with a minimum duration of 16 h, shall be provided to all new staff within four weeks of starting employment and an update on the above points, with a minimum duration of 8 h, for all other staff at least once a year.</p> <p>If the service provider uses temporary personnel for more than 30% of the EU GPP service, the service provider must ensure that the temporary personnel also undergo relevant training.</p> <p>Verification:</p> <p>A record of these training measures (introductory/vocational training) shall be kept and made available for consultation by the contracting authority.</p>	<p>for both industrial and household washing machines.</p> <p><u>Water saving:</u></p> <ul style="list-style-type: none"> – Staff shall be trained to use microfiber cloths where appropriate to minimise the use of water and cleaning products. <p><u>Waste:</u></p> <ul style="list-style-type: none"> – Staff shall be trained to select appropriate durable and reusable cleaning accessories to minimise the use of single use cleaning supplies where this does not compromise staff safety and hygiene requirements. – Staff shall be trained to correctly discard waste water. – Staff shall be trained to collect, separate and dispose waste into categories that can be handled separately by the local or national waste management facilities as defined by Criterion T3. Solid waste sorting and disposal. Training should include waste management at the cleaning sites. – Staff shall be trained to collect and separate hazardous waste as listed in Decision 2000/532/EC and disposal appropriately as required by the local waste management authority. Training should include waste management at cleaning sites. <p><u>Health and safety:</u></p> <ul style="list-style-type: none"> – Staff shall be informed on health, safety and environmental issues and encouraged to adopt best practices for cleaning tasks. This must include information on: <ul style="list-style-type: none"> - Safety Data Sheets and handling of chemicals - National working environment legislation - Ergonomics and working environment - Road safety <p>Adequate training, with a minimum duration of 16 h, shall be provided to all new staff within four weeks of starting employment and an update on the above points, with a minimum duration of 8 h, for all other staff at least once a year.</p> <p>If the service provider uses temporary personnel for more than 30% of the EU GPP service, the service provider must ensure that the temporary personnel also undergo relevant training.</p> <p>Verification:</p> <p>A record of these training measures (introductory/vocational training) shall be kept and made available for consultation by the contracting authority.</p>
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Consequences

Good staff training is fundamental to the delivery of sustainable cleaning services. According to stakeholder information and life cycle cost considerations (see Section 3 of this report), the initial investment cost for staff training is not significant in the context of the life cycle cost of cleaning services. Including staff training as a selection criterion will allow procurers to assess if tenderers can ensure that their staff has the appropriate skills to deliver more environmentally conscious cleaning services.

The benefits of the provision of good staff training is multi-faceted: it ensures that cleaning services are delivered in an environmental friendly and efficient manner; it reduces consumption of cleaning products and natural resources, such as energy and water; it reduces burdens on human resources, leading to direct and substantial cost savings; and it improves the health and safety of staff.

Consultation questions

- Have similar criteria been set in previous tenders and, if so, what were the verification procedures?

2.1.2 Environmental management measures and practices (S2)

Rationale

An Environmental Management System (EMS) is required in the current version of the EU GPP criteria as a comprehensive criterion. Putting in place an EMS is considered good practice as it helps monitor and improve resource efficiency and reduce environmental impacts at company level.

This criterion requires, as core criteria, applicants to set the basis of an EMS by implementing processes on the areas detailed in the criterion text below. The comprehensive criteria require the company to have a registered EMS or an ISO 14001 certification.

Core criteria	Comprehensive criteria
Selection criteria	
<p>S2. Environmental Management System</p> <p>The service provider shall have in place an environmental management system containing at least the following elements:</p> <ul style="list-style-type: none"> • An environmental policy identifying most relevant direct and indirect environmental impacts and organisations policy toward those potential impacts. • A precise action program ensuring the application of the environmental policy to the serviced supplied and establishing targets on environmental performance regarding the use of resources (e.g., reduction in cleaning products used) and action to reduce the environmental impact. The establishment of targets and actions shall be supported by the collection of data on the use of resources and other environmental aspects (e.g. waste generation). • An audit process allowing verification every two years on organisation performance with regards to the targets defined in the action program. <p>The environmental policy and the performance of the organisation with regards to the targets shall be made available for consultation by the public on the provider premises.</p> <p>Verification:</p> <p>The service provider shall provide a declaration of compliance with this criterion, together with a copy of the environmental policy, the action program, the audit report and the procedures for taking into account survey carried out to the client satisfaction. Applicants registered in EMAS or certified according to ISO 14001 are considered as complying with this criterion. The applicant must provide the ISO 14001 certificate and/or EMAS registration as a mean of compliance for this criterion.</p>	<p>S2. Environmental Management System</p> <p>The service provider shall have in place a documented, third party verified Environmental Management System, such as EMAS or ISO 14001, for the whole Company or at least the sector of the company directly involved in the contract¹.</p> <p>Verification:</p> <p>Applicants registered in EMAS or certified according to ISO 14001 are considered as complying with this criterion. The applicant must provide the ISO 14001 certificate and/or EMAS registration as a mean of compliance for this criterion.</p>

¹ Where an economic operator had demonstrably no access to such certificates, or no possibility of obtaining them within the relevant time limits for reasons that are not attributable to that economic operator, the contracting authority shall also accept other evidence of environmental management measures, provided that the economic operator proves that these measures are equivalent to those required under the applicable environmental management system or standard (art. 62, para 2 of Directive 2014/24/EU).

In the reform of the Public Procurement Directives^{2,3} (published in the Official Journal 28th March 2014 and requiring transposition by Member States within 24 months), it is explicitly stated (Art. 66 of Directive 2014/24/EU) that the organisation, qualification and experience of staff assigned to performing the contract (where the quality of the staff assigned can have a significant impact on the level of performance of the contract) can be a criterion for awarding a contract.

Consequences

An EMS is a very powerful instrument that assists in establishing a plan and procedures to monitor and reduce the overall environmental impact at organisation level. There will be an initial cost linked to the implementation of the environmental management practices but the return on investment period is likely to be short. UK Defra performed a study on the benefits of EMS for SMEs, which are particularly prevalent in the cleaning service industry (Defra, 2012). The study identified that sales and marketing opportunities are the important drivers for SMEs in the service sector, that there are significant cost saving opportunities and the return on investment period is reasonably short (3 months of certified EMS systems); however, it was also observed that cost benefits vary significantly from case to case.

This criterion will encourage cleaning companies to implement third party certified environmental management standards, leading to improvements in environmental performance in a systematic way.

Consultation questions
<ul style="list-style-type: none">○ Have similar criteria been set in previous tenders and, if so, what were the verification procedures?

2.2 Technical specifications

2.2.1 Use of cleaning products with lower environmental impact (T1)

Rationale

The use of cleaning products has been identified as an environmental hotspot for cleaning services. For example, Kapur et al. (2012) highlights that cleaning products have dominant impacts on human toxicity and ecotoxicity, whilst ADEME (2010) concludes that the manufacturing of cleaning products is an environmental hotspot for sanitary cleaning. Thus the aim of this criterion is to reduce the undesirable effects on the environment by limiting the use of cleaning products containing ingredients that are harmful to the environment and human health.

The use of ecolabelled cleaning products by the cleaning service sector provides a reliable way of identifying more environmentally-friendly cleaning products, as ISO Type I ecolabels put strict limitations on the chemical composition and formulations of products. In addition, this decreases the administrative burden on companies as these products are readily identifiable and companies already track which products are used and in which amounts.

Stakeholder feedback gathered during and following the 1st Ad-Hoc Working Group (AHWG) meeting was in favour of the inclusion of this criterion and focused on the criterion threshold and on how to deal with harmful substances in products that are not ecolabelled, verification and assessment methods, among others.

² Directive 2014/24/EU on public procurement and repealing Directive 2004/18/EC.

³ Directive 2014/25/EU on procurement by entities operating in the water, energy, transport and postal services sectors and repealing Directive 2004/17/EC.

The current version of the EU GPP proposes both core and comprehensive criteria for cleaning products as part of the Technical Specifications. The core criteria briefly focuses on the ingoing substances, requiring that no substances of very high concern be in the formulation, and also sets out requirements for packaging. The comprehensive criteria sets out the same requirements as the EU Ecolabels related to detergent products.

The updated proposed criterion refers to the ecotoxicity and excluded and restricted substances requirements set out in the EU Ecolabel for Hard-Surface Cleaning products and requires a certain amount of products to fulfil them; the threshold is different for core and comprehensive criteria. Moreover, the comprehensive criteria also requires that all products used are labelled with specific CLP classifications in order ensure that a minimum level of environmental and health and safety performance is reached by all the products used.

Core criteria	Comprehensive criteria																							
Technical Specification																								
<p>T1. Use of cleaning products with lower environmental impact</p> <p>At least 30% by volume at purchase of all cleaning products used per year to perform the contract shall be compliant with the criteria on toxicity to aquatic organisms and excluded and restricted substances of the EU Ecolabel for Hard Surface Cleaning Products.</p> <p>Verification: The service provider shall supply data (commercial name and volume and number of products) on the cleaning products that are projected be used in the execution of the contract, indicating specifically the ones that comply with the requirements. Products that have been awarded with the EU Ecolabel for Hard Surface Cleaning products, or equivalent, will be deemed to comply with the requirements.</p>	<p>T1. Use of cleaning products with lower environmental impact</p> <p>1. At least 50% by volume at purchase of all cleaning products used per year to perform the contract shall be compliant with the criteria on toxicity to aquatic organisms and excluded or restricted substances of the EU Ecolabel for Hard Surface Cleaning Products.</p> <p>2. All cleaning products used to perform the contract shall not be classified and/or labelled as being:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #4F81BD; color: white;">GHS Hazard Statement</th> </tr> </thead> <tbody> <tr><td>H300 Fatal if swallowed</td></tr> <tr><td>H301 Toxic if swallowed</td></tr> <tr><td>H304 May be fatal if swallowed and enters airways</td></tr> <tr><td>H310 Fatal in contact with skin</td></tr> <tr><td>H311 Toxic in contact with skin</td></tr> <tr><td>H330 Fatal if inhaled</td></tr> <tr><td>H331 Toxic if inhaled</td></tr> <tr><td>H340 May cause genetic defects</td></tr> <tr><td>H341 Suspected of causing genetic defects</td></tr> <tr><td>H350 May cause cancer</td></tr> <tr><td>H350i May cause cancer by inhalation</td></tr> <tr><td>H351 Suspected of causing cancer</td></tr> <tr><td>H360F May damage fertility</td></tr> <tr><td>H360D May damage the unborn child</td></tr> <tr><td>H360FD May damage fertility. May damage the unborn child</td></tr> <tr><td>H360Fd May damage fertility. Suspected of damaging the unborn child</td></tr> <tr><td>H360Df May damage the unborn child. Suspected of damaging fertility</td></tr> <tr><td>H361f Suspected of damaging fertility</td></tr> <tr><td>H361d Suspected of damaging the unborn child</td></tr> <tr><td>H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.</td></tr> <tr><td>H362 May cause harm to breast fed children</td></tr> <tr><td>H370 Causes damage to organs</td></tr> </tbody> </table>	GHS Hazard Statement	H300 Fatal if swallowed	H301 Toxic if swallowed	H304 May be fatal if swallowed and enters airways	H310 Fatal in contact with skin	H311 Toxic in contact with skin	H330 Fatal if inhaled	H331 Toxic if inhaled	H340 May cause genetic defects	H341 Suspected of causing genetic defects	H350 May cause cancer	H350i May cause cancer by inhalation	H351 Suspected of causing cancer	H360F May damage fertility	H360D May damage the unborn child	H360FD May damage fertility. May damage the unborn child	H360Fd May damage fertility. Suspected of damaging the unborn child	H360Df May damage the unborn child. Suspected of damaging fertility	H361f Suspected of damaging fertility	H361d Suspected of damaging the unborn child	H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.	H362 May cause harm to breast fed children	H370 Causes damage to organs
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H330 Fatal if inhaled																								
H331 Toxic if inhaled																								
H340 May cause genetic defects																								
H341 Suspected of causing genetic defects																								
H350 May cause cancer																								
H350i May cause cancer by inhalation																								
H351 Suspected of causing cancer																								
H360F May damage fertility																								
H360D May damage the unborn child																								
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H370 Causes damage to organs																								

	H371 May cause damage to organs
	H372 Causes damage to organs through prolonged or repeated exposure
	H373 May cause damage to organs through prolonged or repeated exposure
	H400 Very toxic to aquatic life
	H410 Very toxic to aquatic life with long-lasting effects
	H411 Toxic to aquatic life with long-lasting effects
	H412 Harmful to aquatic life with long-lasting effects
	H413 May cause long-lasting harmful effects to aquatic life
	H59 Hazardous to the ozone layer
	EUH029 Contact with water liberates toxic gas
	EUH031 Contact with acids liberates toxic gas
	EUH032 Contact with acids liberates very toxic gas
	EUH070 Toxic by eye contact
	H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
	H317 May cause allergic skin reaction
	Verification:
	1. The service provider shall supply data (commercial name and volume and number of products) on the cleaning products that are projected be used in the execution of the contract, indicating specifically the ones that comply with the requirements. Products that have been awarded with the EU Ecolabel for Hard Surface Cleaning products, or equivalent, will be deemed to comply with the requirements
	2. The service provider shall supply the safety data sheets for all cleaning products that are projected to be used in the execution of the contract.

Consequences

The criterion will encourage the use of cleaning products with low environmental impacts. The comprehensive requirement that all products used do not have any of the listed CLP labels will ensure that all the products used in the cleaning services respect certain environmental and health and safety standards.

Regarding market availability, there is no data specifically related to products that would fulfil the requirements on ecotoxicity and excluded or restricted substances as set out in the EU Ecolabel for hard-surface cleaning products. The data related to products that hold an EU Ecolabel license shows that these hard-surface cleaners (consumer and professional) that currently hold an EU Ecolabel license are manufactured in 14 of the EU28 (+NO) countries, but are sold throughout Europe (JRC IPTS, 2014). The data does not allow for an understanding on how these are spread between different types of cleaning products and how readily available professional products are on the market.

The LCC analysis suggests that although the price of environmentally preferable cleaning products varies significantly between countries, the usage of these products should not impact the life cycle cost of cleaning service significantly.

Consultation questions

- Are the proposed threshold % for the use of cleaning products with lower environmental impact accessible to service providers?
- Is the set of criteria identified, specifically, toxicity to aquatic organisms and excluded and restricted substances (taken from the EU Ecolabel for hard-surface cleaning products) adequate and practical for this requirement?
- Should the relevant pictograms be included in the EU GPP text next to the listed hazard phrases to facilitate verification procedures?

2.2.2 Use of microfiber products (T2)

Rationale

This criterion aims to encourage the use of microfiber cloths in order to reduce water consumption during cleaning activities. Water depletion, eutrophication and ecotoxicity are key environmental impacts associated with the use of water and cleaning products in cleaning services (Preliminary Report, chapter 3).

Stakeholders have made comments on the following aspects:

- Scope and definition – stakeholders suggested that this criterion should focus entirely on microfiber cloths, mops and rags
- Threshold – stakeholders suggested that the percentage of microfiber product usage varies between companies and sites, but in general a reasonable percentage should be achievable for all.

No information regarding market availability and market penetration of microfiber cloths was found and varying opinions were stated during stakeholder interviews. In two cases, the majority (more than 90%) of cloths used by the cleaning company were microfiber cloths. In the third case, the company's use of microfiber cloths greatly depended on the client site but in some cases only microfiber cloths were used. The same company stated that overall a reasonable percentage was achievable for all client sites.

The use of microfiber cloths in the current version of the EU GPP is required as a contract performance clause stating that "the contractor should use reusable microfibre cloths where appropriate" without further guidance. It is proposed to cover microfibre products as part of the technical specification criteria, with specific threshold requirements in order to ensure that these products are effectively used.

Core criteria	Comprehensive criteria
Technical Specification	
<p>T2. Use of microfiber products</p> <p>At least 30% of the textile cleaning accessories (<i>e.g.</i>, cloths, head mops and rags) used per year shall be made of microfiber.</p> <p>Verification:</p> <p>The tenderer shall supply a list of the textile cleaning accessories that will be used in the execution of the contract, indicating specifically the ones that are made of microfiber.</p>	<p>T2. Use of microfiber products</p> <p>At least 50% of the textile cleaning accessories (<i>e.g.</i>, cloths, head mops and rags) used per year shall be made of microfiber.</p> <p>Verification:</p> <p>The tenderer shall supply a list of the textile cleaning accessories that will be used in the execution of the contract, indicating specifically the ones that are made of microfiber.</p>

Consequences

The use of microfiber products allows cleaning companies to make substantial cost and environmental impact savings, as shown in a study conducted by the University of California Davis Medical Centre (UCDMC, 2002). For example, it was found that the use of microfiber products can result in a 95% reduction in water and chemical use, 20% labour cost per day and a 60% reduction in cost over the lifetime of a mop. The same study also showed that the use of microfiber mops

might reduce costs associated with worker injuries, due to the fact that they are much lighter than conventional mops and require less cleaning solution, reducing the need to repeatedly lift heavy buckets of water.

Consultation questions

- Are the proposed threshold % for the use of microfiber products accessible to service providers?
- Are these types of products commonly covered by technical specifications within your tenders?

2.2.3 Solid waste sorting and disposal at the cleaning sites (T3)

Rationale

As the correct sorting and disposal of solid waste represents high potential improvement for environmental impacts, it is proposed to be covered here as a Technical Specification and also as a Contract Performance Clause (Section 2.4.3).

Handling of solid waste is a significant part of cleaning service practices and ADEME (2010) suggests that incorrect sorting or disposal of solid waste can account up to 91% of the freshwater ecotoxicity impact of cleaning services. Ideally, it should be ensured that cleaning companies separate and dispose of solid waste into the correct streams as required by the local or national waste management facilities. Stakeholder consultation yielded that while the cleaning company can easily sort waste at their own premises, solid waste sorting facilities are, in some cases, not present on the cleaning sites (clients' premises) and therefore are not managed by the cleaning company. Thus, for this criterion, it is necessary to cover the case where the solid waste sorting and consequent disposal falls out of the control of the cleaning service provider.

The current version of the EU GPP criteria does not include specific requirements for the sorting and disposal of solid waste but it is covered by the criteria on Staff Training. As local or national waste management practices and facilities for waste management differ throughout Europe, this criterion proposal offers more flexibility for tenderers.

Core criteria	Comprehensive criteria
Technical Specification	
<p>T3. Solid waste sorting and disposal at the cleaning sites a)</p> <p>Solid waste generated at the cleaning sites shall be sorted into the correct waste stream categories wherever the client provides the means (e.g. waste containers for distinct solid streams) for the sorting of different solid waste. When waste disposal is the responsibility of the tenderer, this shall be done in accordance with local or national waste management practices and facilities.</p> <p>Verification: The tenderer shall supply a description of the solid waste stream categories sorted and the disposal procedures to be followed during the execution of the contract.</p>	<p>T3. Solid waste sorting and disposal at the cleaning sites a)</p> <p>Solid waste generated at the cleaning sites shall be sorted into the correct waste stream categories wherever the client provides the means (e.g. waste containers for distinct solid streams) for the sorting of different solid waste. When waste disposal is the responsibility of the tenderer, this shall be done in accordance with local or national waste management practices and facilities.</p> <p>Verification: The tenderer shall supply a description of the solid waste stream categories sorted and the disposal procedures to be followed during the execution of the contract.</p>

a) This criterion is applicable only for waste generated at the cleaning sites, whenever the client provides the means for cleaning staff to sort waste into relevant solid waste streams.

Consequences

This criterion ensures that solid waste is being sorted and treated properly to minimise its potential environmental impacts. Apart from environmental impact reduction, this criterion can also aid in the uptake of the recycling rate in general.

In terms of cost implications for cleaning service providers, the LCC analysis suggests that the provision of solid waste collection and sorting services is not likely to have a significant impact on the life cycle costs (see Section 3).

Consultation questions

- Are requirements set on solid waste sorting and disposal within your tenders? If so, what are the verification procedures?
- Should the wording be amended to better reflect that the phrase "solid waste generated at the cleaning sites shall be sorted into the correct waste stream categories" refers to:
 - the waste generated at the cleaning sites by its habitual users (e.g. office workers) who pre-sort the waste,
 - the cleaning staff should take the pre-sorted bins in offices and dispose of them in the appropriate containers inside or outside the premises?

2.2.4 Consumable goods (T4)

In some cases consumable goods are procured and supplied by cleaning companies on behalf of their clients as part of contracts. The consumer goods covered under this criterion include paper products (e.g. toilet paper, paper towels, tissues) and hand soap. Consultation with cleaning companies confirmed that the purchase of consumable goods is part of some of their customer contracts with the products listed above being most commonly supplied.

This criterion should only be considered in the cases where the supply of consumable goods is part of the cleaning services contract.

Core criteria	Comprehensive criteria
Technical Specification	
<p>T4. Consumable goods a)</p> <ol style="list-style-type: none"> 1. At least 20% by volume of hand soaps supplied per year to perform the contract shall be compliant with the requirements on toxicity to aquatic organisms and excluded or limited substances and mixtures criteria of the EU Ecolabel for Rinse-off Cosmetics. 2. At least 30% by number of articles or pieces of paper towels and tissues supplied per year to perform the contract shall be compliant with the requirements on Emissions to water and air, Energy use, Fibres – Sustainable forest management, Hazardous Chemical substances, Product Safety and Waste Management of the EU Ecolabel for Tissue Paper. 3. At least 30% by number of articles or pieces of toilet paper supplied per year to perform the contract shall be compliant with the requirements on Emissions to water and air, Energy use, Fibres – Sustainable forest management, Hazardous Chemical substances, Product Safety and Waste Management of the EU Ecolabel for Tissue Paper. <p>Verification: The service provider shall supply a list of the consumable goods that will be used in the execution of the contract, indicating specifically the ones which comply with the criterion. Products awarded with the EU Ecolabel for Rinse-off Cosmetic Products or equivalent and, EU Ecolabel for Tissue Paper, or equivalent, will be deemed to comply with the requirements.</p>	<p>T4. Consumable goods a)</p> <ol style="list-style-type: none"> 1. At least 30% by volume of hand soaps supplied per year to perform the contract shall be compliant with the requirements on toxicity to aquatic organisms and excluded or limited substances and mixtures criteria of the EU Ecolabel for Rinse-off Cosmetics. 2. At least 50% by number of articles or pieces of paper towels and tissues supplied per year to perform the contract shall be compliant with the requirements on Emissions to water and air, Energy use, Fibres – Sustainable forest management, Hazardous Chemical substances, Product Safety and Waste Management of the EU Ecolabel for Tissue Paper. 3. At least 50% by number of articles or pieces of toilet paper supplied per year to perform the contract shall be compliant with criteria on the requirements on Emissions to water and air, Energy use, Fibres – Sustainable forest management, Hazardous Chemical substances, Product Safety and Waste Management of the EU Ecolabel for Tissue Paper. <p>Verification: The service provider shall supply a list of the consumable goods that will be used in the execution of the contract, indicating specifically the ones which comply with the criterion. Products awarded with the EU Ecolabel for Rinse-off Cosmetic Products, or equivalent and, EU Ecolabel for Tissue Paper, or equivalent, will be deemed to comply with the requirements.</p>

Consultation questions

- Are the proposed threshold % for the different products accessible to service providers?
- Are other products (e.g. textile hand roll) commonly covered by similar requirements in tenders? If so, what are they and what verification procedures used?
- Are these types of products (consumable goods) commonly covered by technical specifications within your tenders?

2.3 Award criteria

No award criteria are included in the current version of the EU GPP criteria. The Award Criteria proposed below aims to stimulate companies to aim for high environmental performance, without being mandatory and therefore allowing companies to choose which areas to focus on.

2.3.1 Use of cleaning products with lower environmental impact (A1)

Rationale

The use of cleaning products with lower environmental impact is proposed to be covered as a Technical Specification (Section 2.2.1). Both the core and comprehensive Criteria require that a certain percentage of products used have been shown to have lower ecotoxicity and do not contain certain harmful substances. Moreover, as part of the Technical Specifications, the comprehensive criteria also requires that all products are not be labelled with specific CLP classifications. This latter requirement ensures that a minimum level of environmental and health and safety performance is reached by all the products used.

It is proposed that, as it is not covered in the core criteria of the Technical Specification, the latter requirement (that all products used are not labelled with specific CLP classifications) is set as core criteria for an award criterion.

Core criteria	Comprehensive criteria													
Award criteria														
<p>A1. Use of cleaning products with lower environmental impact</p> <p>Points shall be awarded to tenders in which all cleaning products used to perform the contract are not classified and/or labelled as being:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #4F81BD; color: white;">GHS Hazard Statement</th> </tr> </thead> <tbody> <tr><td>H300 Fatal if swallowed</td></tr> <tr><td>H301 Toxic if swallowed</td></tr> <tr><td>H304 May be fatal if swallowed and enters airways</td></tr> <tr><td>H310 Fatal in contact with skin</td></tr> <tr><td>H311 Toxic in contact with skin</td></tr> <tr><td>H330 Fatal if inhaled</td></tr> <tr><td>H331 Toxic if inhaled</td></tr> <tr><td>H340 May cause genetic defects</td></tr> <tr><td>H341 Suspected of causing genetic defects</td></tr> <tr><td>H350 May cause cancer</td></tr> <tr><td>H350i May cause cancer by inhalation</td></tr> <tr><td>H351 Suspected of causing cancer</td></tr> </tbody> </table>	GHS Hazard Statement	H300 Fatal if swallowed	H301 Toxic if swallowed	H304 May be fatal if swallowed and enters airways	H310 Fatal in contact with skin	H311 Toxic in contact with skin	H330 Fatal if inhaled	H331 Toxic if inhaled	H340 May cause genetic defects	H341 Suspected of causing genetic defects	H350 May cause cancer	H350i May cause cancer by inhalation	H351 Suspected of causing cancer	
GHS Hazard Statement														
H300 Fatal if swallowed														
H301 Toxic if swallowed														
H304 May be fatal if swallowed and enters airways														
H310 Fatal in contact with skin														
H311 Toxic in contact with skin														
H330 Fatal if inhaled														
H331 Toxic if inhaled														
H340 May cause genetic defects														
H341 Suspected of causing genetic defects														
H350 May cause cancer														
H350i May cause cancer by inhalation														
H351 Suspected of causing cancer														

H360F May damage fertility
H360D May damage the unborn child
H360FD May damage fertility. May damage the unborn child
H360Fd May damage fertility. Suspected of damaging the unborn child
H360Df May damage the unborn child. Suspected of damaging fertility
H361f Suspected of damaging fertility
H361d Suspected of damaging the unborn child
H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.
H362 May cause harm to breast fed children
H370 Causes damage to organs
H371 May cause damage to organs
H372 Causes damage to organs through prolonged or repeated exposure
H373 May cause damage to organs through prolonged or repeated exposure
H400 Very toxic to aquatic life
H410 Very toxic to aquatic life with long-lasting effects
H411 Toxic to aquatic life with long-lasting effects
H412 Harmful to aquatic life with long-lasting effects
H413 May cause long-lasting harmful effects to aquatic life
H59 Hazardous to the ozone layer
EUH029 Contact with water liberates toxic gas
EUH031 Contact with acids liberates toxic gas
EUH032 Contact with acids liberates very toxic gas
EUH070 Toxic by eye contact
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
H317 May cause allergic skin reaction

Verification:
The service provider shall supply the safety data sheets for all cleaning products that are projected to be used in the execution of the contract.

Consequences

The proposed criterion will encourage the use of cleaning products with lower environmental and health and safety impacts, even when the core criteria is used by the procurers. The main consequence for tenderers is an increase in documentations, as Safety Data Sheets for all products would be required to be provided to the procurer. As shown in the LCC study, the cost of cleaning products represents a relatively small percentage of the overall costs of cleaning services, even if these products are more environmentally friendly (Section 3.3.3).

Consultation questions

- Should the relevant pictograms be included in the EU GPP text next to the listed hazard phrases to facilitate verification procedures?

2.3.2 Use of concentrated undiluted cleaning products (A2)

Rationale

This criterion aims to promote the use of products that require dilution with water before use. Evidence shows that the use of undiluted products results in reduced emissions due to lower packaging material requirements and fuel use for transportation. In addition, lower amounts of resources are used to manufacture these products, resulting in lower impacts (AISE, 2013).

During the development of the criterion, stakeholder feedback was received on the following areas:

- Scope and definition – stakeholders requested that terms such as ‘concentrated’ and ‘undiluted’ be clarified: in the scope of the EU Ecolabel and EU GPP criteria, "undiluted" refers to products that are normally used after being diluted with water and "concentrated" refers to products that, when compared to other products on the market, require smaller doses to achieve the same results as they contain high percentages of active substances. Thus a "concentrated undiluted" product is a product that requires both a smaller dose of product and diluting with water before use.
- Availability of concentrated ecolabelled products: no public data could be found on the availability of ecolabelled concentrated undiluted products and their dilution rates, but consultation with cleaning companies confirmed that these are available and that they are making use of such products. Given the lack of data, it is proposed that the percentage requirement for concentrated undiluted (dilution rate above 1:80) product use is relatively low. This way, companies have full flexibility in choosing the types of products they can use and still comply with criteria T1. Due to the approach taken (minimum dilution rate) on the requirement it is not possible to compare the requirement proposed with those in other schemes (e.g. Nordic Swan); however, anecdotal industry stakeholder consultation yielded that the proposed values are feasible for at least some cleaning service companies.

Core criteria	Comprehensive criteria
Award criteria	
<p>A2. Use of concentrated undiluted cleaning products</p> <p>Points shall be awarded to tenders in which at least 10% by volume of all cleaning products directly related to the cleaning tasks have a minimum dilution rate of 1:80.</p> <p>Verification:</p> <p>The tenderer shall supply a list of the cleaning products, including the dilution rate, which are projected to be used in the execution of the contract.</p>	<p>A2. Use of concentrated undiluted cleaning products</p> <p>Points shall be awarded to tenders in which at least 30% by volume of all cleaning products directly related to the cleaning tasks have a minimum dilution rate of 1:80.</p> <p>Verification:</p> <p>The tenderer shall supply a list of the cleaning products, including the dilution rate, which are projected to be used in the execution of the contract.</p>

Consequences

Undiluted products and concentrated undiluted products are proven to be significantly cheaper than ready-to-use products, especially in the long run (Section 3). There are also other indirect benefits such as saving storage space and potential benefits during products transportation.

Stakeholders have stated that they are proactively choosing undiluted cleaning products over readily-diluted cleaning products due to the cost benefit. This trend may be further enhanced by this criterion.

Consultation questions

- Could you provide us information about the procurement contracts that include requirements on concentrated undiluted cleaning products?
- Could you provide us information on the estimated cost reductions associated to the use of concentrated undiluted cleaning products?
- Are the proposed threshold % for the use of concentrated undiluted cleaning products accessible to service providers?

2.3.3 Use of cleaning accessories with lower environmental impact (A3)

Rationale

The use of cleaning accessories was identified as an environmental hotspot for cleaning services by ADEME (2010), and the use of ecolabelled cleaning accessories can provide a reliable way of lowering impacts associated with cleaning services. During the development of the criterion, stakeholder feedback was received on the following areas:

- Scope – feedback was provided on what should be covered by this criterion. It was suggested that the accessories that should be in focus include mops and cloths as both types of products are covered by the EU Ecolabel and Nordic Swan.
- Threshold – feedback was provided on the practicality of meeting high thresholds for cloths and mops (including also microfiber cloths and mops).

Market availability for ecolabeled cleaning accessories appears to be low. For bin bags, it was assessed that they could be potentially covered by three ecolabels (Blue Angel, Generalitat de Catalunya and NF Environnement) although no data is available on whether any bin bags have been awarded with one of those ecolabels. Overall, there are fewer than 50 products with ecolabel licenses from these three ecolabelling schemes and they can only be found in Germany and France (Blue Angel, Generalitat de Catalunya, 2015). Thus, due to lack of market penetration, it is proposed that bin bags are not covered by the scope of this criterion.

With regard to cloths and mops, the ECAT catalogues show that there are 1,162 EU Ecolabel textile products available. However, it is not possible to say how many of these are textiles that can be used in the scope of cleaning services. It is hoped that EU GPP may increase the market demand of ecolabelled cleaning accessories. Cloths and mops can also be ecolabelled under the "Supplies for microfiber based cleaning" Nordic Swan product group. The number of Nordic Swan licenses for these supplies by country are as follow: Finland (204), Sweden (133), Denmark (20), Norway (12) (*National Ecolabel websites, 2015*)), The Nordic Swan Ecolabel for Cleaning Services requires, as an optional criterion, 70% of cloths and mops to be ecolabelled.

Core criteria	Comprehensive criteria
Award criteria	
<p>A3. Use of cleaning accessories with lower environmental impact</p> <p>Points shall be awarded to tenders in which cleaning accessories directly related to the cleaning tasks respect the following requirements:</p> <ol style="list-style-type: none"> 1. At least 20% of mops used per year to perform the contract shall be compliant with the relevant criterion for textile fibres and criteria for fitness for use (e.g. criterion 23 - wash resistance of cleaning products) of the EU Ecolabel for textile products. 2. At least 20% of cloths per year to perform the contract shall be compliant with the relevant criterion for textile fibres and criteria for fitness for use (e.g. criterion 23 - wash resistance of cleaning products) of the EU Ecolabel for textile products. <p>Verification:</p>	<p>A3. Use of cleaning accessories with lower environmental impact</p> <p>Points shall be awarded to tenders in which cleaning accessories directly related to the cleaning tasks respect the following requirements:</p> <ol style="list-style-type: none"> 1. At least 50% of mops used per year to perform the contract shall be compliant with the relevant criterion for textile fibres and criteria for fitness for use (e.g. criterion 23 - wash resistance of cleaning products) of the EU Ecolabel for textile products. 2. At least 50% of cloths used per year to perform the contract shall be compliant with the relevant criterion for textile fibres and criteria for fitness for use (e.g. criterion 23 - wash resistance of cleaning products) of the EU Ecolabel for textile products. <p>Verification:</p>

The tenderer shall supply a list of the accessories that will be used in the execution of the contract indicating specifically the ones which comply with the criterion. Products awarded with EU Ecolabel for textile products, or equivalent, are deemed to comply.	The tenderer shall supply a list of the accessories that will be used in the execution of the contract indicating specifically the ones which comply with the criterion. Products awarded with EU Ecolabel for textile products, or equivalent, are deemed to comply.
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Consequences

This criterion aims to encourage cleaning companies to use cleaning accessories with lower environmental impacts. The cost implication for the cleaning companies is likely to be insignificant from a life cycle cost perspective.

Consultation questions

- Is the set of criteria identified, specifically, textile fibres and fitness for use (taken from the EU Ecolabel for textile products) adequate and practical for this requirement on mops and cloths ?
- Is the proposed threshold % for the use of cleaning accessories with lower environmental impact accessible to service providers?
- Are other products (e.g. bin bags) commonly covered by similar requirements in tenders?

2.3.4 Energy efficiency of vacuum cleaners (A4)

Rationale

Vacuum cleaners are the most frequently used pieces of energy-powered equipment in the cleaning service sector and energy consumption linked to vacuum cleaners has been identified as an environmental hotspot (ADEME, 2010; Consorcio Soligena, 2011). Depending on the cleaning situation, the energy consumption of floor cleaning, to which vacuum cleaners are a major contributor, can account for up to 52% of the total energy consumption for cleaning services (ADEME, 2010). During the development of the criterion stakeholder feedback was received on the following area:

Unit of measurement - multiple stakeholders highlighted that energy consumption alone is not an effective measurement unit of the efficiency of this type of machine as dust pick-up performance of vacuum cleaners plays a major role in the overall energy consumption. The cleaning performance (dust pick-up) is a parameter that is taken into account in the Commission Delegated Regulation (EU) No 665/2013 of 3 May 2013 (Annex III), which identifies the parameters that must be present on the energy label. These parameters include, besides the cleaning performance classes (dust pick-up for carpet and hard floors), the dust-re emission class and the sound power level. Therefore, the energy label format already presents the above-mentioned parameters.

As professional cleaning product providers tend to use commercial vacuum cleaners, market research was carried out on the energy classes available for this type of machine. It was found that energy class A vacuum cleaners are readily available from two of the largest producers although no data was available on the level of their use by cleaning companies. Moreover, when considering energy class together with performance levels for these vacuum cleaners, the results show that energy class A machines have generally have performance levels at least as good as (simultaneously for both carpet and hard floor cleaning) class B or lower energy efficient vacuums (Kaercher and Nilfisk, 2015)

Core criteria	Comprehensive criteria
Award criteria	
A4. Energy efficiency of vacuum cleaners At least one vacuum cleaner used in the provision of the cleaning service operation shall meet class A on energy efficiency as defined in	A4. Energy efficiency of vacuum cleaners At least one vacuum cleaner used in the provision of the cleaning service operation shall meet class A on energy efficiency as defined in

<p>Commission Delegated Regulation (EU) No 665/2013 of 3 May 2013 with regard to energy labelling of vacuum cleaners (domestic and commercial cleaning)</p> <p>Verification:</p> <p>The service provider shall provide relevant documentation to show the compliance with the energy class (e.g. invoice of vacuum purchase and product fiche according to Commission Delegated Regulation (EU) No 665/2013 (Annex III)).</p>	<p>Commission Delegated Regulation (EU) No 665/2013 of 3 May 2013 with regard to energy labelling of vacuum cleaners (domestic and commercial cleaning)</p> <p>Verification:</p> <p>The service provider shall provide relevant documentation to show the compliance with the energy class (e.g. invoice of vacuum purchase and product fiche according to Commission Delegated Regulation (EU) No 665/2013 (Annex III)).</p>
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Consequences

This criterion will award points to cleaning service providers that show initiative in the use of energy efficient vacuum cleaners that can directly lead to a reduction in energy consumption of the cleaning service delivery.

Consultation questions

- Do you agree with the approach taken (requirement for energy class A, for at least one vacuum cleaner)?

2.4 Contract performance clauses

2.4.1 Cleaning products, accessories used and procedures followed (C1)

Rationale

This contract performance clause covers three key elements of cleaning services: cleaning products, accessories and procedures. The clause only concerns the maintenance and provision documentation related to these three elements in order to ensure that it is possible to monitor on-going compliance with criteria proposed in the Selection Criteria and Technical Specifications.

The significance of the environmental impact associated to cleaning products and accessories are discussed in Sections 2.2.1 and 2.3.3 of this report.

The current version of the EU GPP criteria requires, as core and comprehensive criteria, that twice a year a list of the cleaning products used is provided indicating the name and quantity of the cleaning products used. It is proposed to extend this criterion to explicitly cover accessories such as cloths and mops and extend it to include cleaning procedures.

Core criteria	Comprehensive criteria
Contract Performance Clause	
C1. Cleaning products, accessories used and procedures followed The service provider shall document and report biannually, during the duration of the contract, to the contracting authority the following aspects: <ol style="list-style-type: none">1. Type, dilution rate and quantity of cleaning products used in the delivery of the cleaning services.2. Type and quantity of cleaning accessories used in the delivery of the cleaning services detailing at least:<ol style="list-style-type: none">a) microfiber products3. Cleaning procedures and dosing devices. Verification: The biannual inventory and procedures report shall be made available to the contracting authority for verification purposes. The contracting authority shall foresee rules for penalties for non-compliance.	C1. Cleaning products, accessories used and procedures followed The service provider shall document and report biannually, during the duration of the contract, to the contracting authority the following aspects: <ol style="list-style-type: none">1. Type, dilution rate and quantity of cleaning products used in the delivery of the cleaning services.2. Type and quantity of cleaning accessories used in the delivery of the cleaning services detailing at least:<ol style="list-style-type: none">a) microfiber products3. Cleaning procedures and dosing devices. Verification: The biannual inventory and procedures report shall be made available to the contracting authority for verification purposes. The contracting authority shall foresee rules for penalties for non-compliance.

Consequences

This contract performance clause ensures that there is a channel for the procurer to continuously monitor the performance of the contractor. Although this might impose a significant administrative burden to the contractors, it is deemed necessary to have a way to check that cleaning activities are carried out in an efficient and environmentally-friendly manner.

Consultation questions

- In existing tenders, what is the periodicity of reports on the use of products and accessories used?

2.4.2 Staff training (C2)

Rationale

Although staff training is also proposed to be covered in the Selection Criteria, the aim of this Contract Performance Clause is to assure that documentation related to staff training will be available for the purpose of monitoring on-going compliance. The importance and benefits of staff training are discussed in Section 2.1.1 of this report.

The current EU GPP criteria cover Staff Training as a Contract Performance Clause, with a list of topics that should be covered. In this EU GPP criteria proposal, Staff Training is covered as Selection Criteria, to ensure that the cleaning service provider has the means of providing the training, and a Contract Performance Clause, to ensure that adequate records are kept throughout the contract delivery.

Core criteria	Comprehensive criteria
Contract Performance Clause	
C2. Staff training The service provider shall document and report yearly the amount (hours) and subject of training provided to each member of staff to the contracting authority. Verification: The yearly staff training report shall be made available to the contracting authority for verification purposes. The contracting authority shall foresee rules for penalties for non-compliance.	C2. Staff training The service provider shall document and report yearly the amount (hours) and subject of training provided to each member of staff to the contracting authority. Verification: The yearly staff training report shall be made available to the contracting authority for verification purposes. The contracting authority shall foresee rules for penalties for non-compliance.

Consequences

This contract performance clause ensures that there is a channel for the procurer to continuously monitor the performance of the contractor. Although this might impose a significant administrative burden to the contractors, it is deemed necessary to have a mean to check that adequate staff training is in place during the contract period.

2.4.3 Solid waste sorting and disposal at the cleaning sites (C3)

Rationale

As the correct sorting of the solid waste represents high potential improvement for environmental impacts, it is proposed to be covered both in the Contract Performance Clauses and as an Award Criteria (Section 2.3.4). The proposed criterion Solid Waste Sorting and Disposal as a Contract Performance Clause ensures that the tenderer sorts and disposes of solid waste correctly throughout the contract, if they choose to fulfil Criterion A4.

For more information on solid waste sorting and disposal in the scope of the EU GPP, see Section 2.2.3.

Core criteria	Comprehensive criteria
Contract Performance Clause	
C3. Solid waste sorting and disposal at the cleaning sites Only applicable if procurer chooses to include T3 in the tender. The service provider shall document and report periodically to the contracting authority, for the solid waste generated at the client	C3. Solid waste sorting and disposal at the cleaning sites Only applicable if procurer chooses to include T3 in the tender. The service provider shall document and report periodically to the contracting authority, for the solid waste generated at the client

<p>premises, the categories sorted and their disposal in accordance with local or national waste management practices and facilities.</p> <p>Verification:</p> <p>Within six months of the start of the contract and thereafter at the end of every year of the contract, the tenderer shall supply to the contracting authority for verification purposes, a description of the solid waste stream categories sorted and the disposal procedures followed. The contracting authority shall foresee rules for penalties for non-compliance.</p>	<p>premises, the categories sorted and their disposal in accordance with local or national waste management practices and facilities.</p> <p>Verification:</p> <p>Within six months of the start of the contract and thereafter at the end of every year of the contract, the tenderer shall supply to the contracting authority for verification purposes, a description of the solid waste stream categories sorted and the disposal procedures followed. The contracting authority shall foresee rules for penalties for non-compliance.</p>
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Consequences

This criterion ensures that solid waste is being sorted and treated properly to minimise its potential environmental impacts. Apart from environmental impact reduction, this criterion can also aid in the uptake of the recycling rate in general.

In terms of cost implications for cleaning service providers, the LCC analysis suggests that the provision of solid waste collection and sorting services is not likely to have a significant impact of the life cycle cost (see Section 3).

DRAFT

3 LIFE CYCLE COSTS CONSIDERATIONS (LCC)

3.1 Introduction to life cycle costs (LCC)

The most common cost comparisons are usually performed based on purchase price alone. However, a cost analysis performed along the supply chain allows a more comprehensive overview of all costs needed to carry out a service. The use of Life Cycle Costs (LCC) can give a different viewpoint as this approach tracks the costs of the service through its life cycle stages, including, for example not only the cost of supplies, accessories and machinery but also the cost of running the service (e.g. electricity and water used during cleaning operations) and the labour costs.

Public authorities can provide the industry with real incentives for developing green technologies through green procurement. In some service sectors, the impact can be particularly significant, as public purchasers command a large share of the market (e.g. energy efficient buildings, public transport, facilities management). If the whole life costs of a contract are considered, green public procurement allows saving money and simultaneously protecting the environment. By purchasing wisely, one can save materials and energy, reduce waste and pollution, and encourage sustainable patterns of behaviour.

Considering LCC gives a broader overview and can therefore change the perspective of cost comparisons, whereby the costs linked to greener cleaning services could become comparable to conventional cleaning services, or even cheaper. Figure 1 shows an example where the cost along the life cycle stages of a conventional product are compared with an environmentally preferable product.

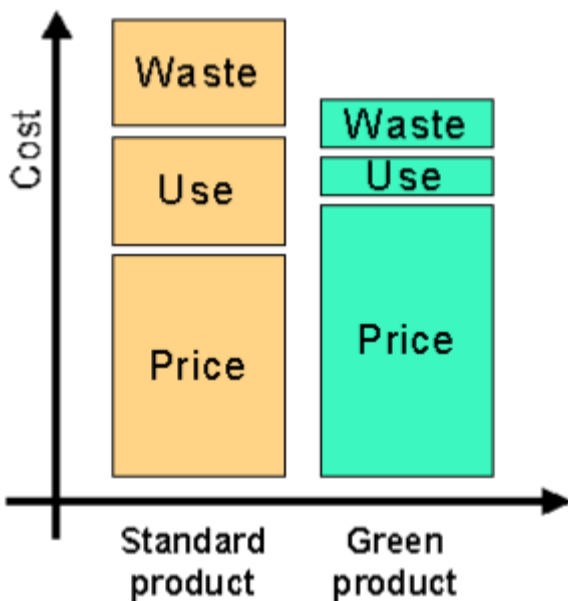


Figure 1 - An example of LCC result, showing the influence that use and disposal costs could have on the life cycle cost of a product of a service (European Commission, 2008)

3.2 Review of LCCs studies associated with cleaning services

3.2.1 Relevant studies

The review focused on two key LCC studies identified to present comprehensive information on cleaning services performed by Öko-Institut and ICLEI (2007) and PWC *et al.* (2009a).

The study from Öko-Institut and ICLEI (2007) investigated the cost impact of cleaning products in the context of the life cycle of cleaning services. The scope of the study is summarised in Table 6.

Table 6 – Scope of study from Öko-Institut and ICLEI (2007)

Geography	Three member states of the EU: Sweden, Germany and Spain
Type of cleaning	Office, Bathroom and Window cleaning
Costs included	Wages cleaning staff Social insurance Other labour costs Wages other staff Cleaning products Machines Risk and profits Other costs
Life Cycle stages considered	Purchase and installation Costs during the use phase of the products Disposal costs

The results obtained are presented in the Table 7, Table 8 and Table 9. They illustrate the cleaning service costs, respectively, for an office space, sanitary facility and for windows cleaning in three Members States (Germany, Spain and Sweden). The results highlight the life cycle cost differences between conventional and ecolabelled products (i.e. green products). The cost of cleaning products was the only variable in this analysis as the other costs were assumed to be constant.

Table 7 shows that green products are cheaper than conventional products in Sweden for office cleaning but are more expensive in Germany and Spain. Overall, the total impact of the price difference was observed to be relatively low, resulting in 1-2% changes in the overall life cycle cost of office cleaning in these three countries. No additional information was provided for the difference in prices.

Table 7 - The life cycle cost impact (cost in EURO €) of using green cleaning products for cleaning a defined office space in Germany, Sweden and Spain Öko-Institut and ICLEI (2007)

	Germany			Sweden			Spain		
	Non-green version	Green version	Difference	Non-green version	Green version	Difference	Non-green version	Green version	Difference
Wages cleaning staff	231	231	0%	312	312	0%	197	197	0%
Social insurance	55	55	0%	101	101	0%	67	67	0%
Other labour costs	75	75	0%	97	97	0%	35	35	0%
Wages other staff	22	22	0%	34	34	0%	2	2	0%
Cleaning products	7	10	39%	25	18	-29%	11	18	67%

Machines	5	5	0%	28	28	0%	n/a	n/a	n/a
Other costs	9	9	0%	25	25	0%	31	31	0%
Risk and profits	12	12	0%	19	19	0%	24	24	0%
SUM	416	416	1%	640	633	-1%	366	373	2%

Table 8 shows that green products are only cheaper than conventional products in Sweden for sanitary facility cleaning, but more expensive in Germany and Spain. However, the total impact of the price difference is also relatively low, resulting in 2-3% changes in the overall life cycle cost of sanitary cleaning for the three countries.

Table 8 - The life cycle cost impact (cost in EURO €) of using green cleaning products for cleaning a defined sanitary facility in Germany, Sweden and Spain Öko-Institut and ICLEI (2007)

	Germany			Sweden			Spain		
	Non-green version	Green version	Difference	Non-green version	Green version	Difference	Non-green version	Green version	Difference
Wages cleaning staff	647	647	0%	873	873	0%	552	552	0%
Social insurance	153	153	0%	283	283	0%	187	187	0%
Other labour costs	209	209	0%	271	271	0%	99	99	0%
Wages other staff	63	63	0%	96	96	0%	5	5	0%
Cleaning products	21	51	148%	70	9	-87%	30	45	53%
Machines	14	14	0%	79	79	0%	n/a	n/a	n/a
Other costs	27	27	0%	70	70	0%	87	87	0%
Risk and profits	32	32	0%	52	52	0%	67	67	0%
SUM	1165	1196	3%	1794	1734	-3%	1027	1043	2%

Table 9 shows that green products are cheaper than conventional products in Sweden and Germany for window cleaning, but more expensive in Spain. However the total impact of the price difference is also relatively low, resulting in 1-3% changes in the overall life cycle cost of windows cleaning for these three countries.

Table 9 - The life cycle cost impact (cost in EURO €) of using green cleaning products for cleaning a defined number of windows in Germany, Sweden and Spain (Öko-Institut and ICLEI 2007)

	Germany	Sweden	Spain
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	Non-green version	Green version	Difference	Non-green version	Green version	Difference	Non-green version	Green version	Difference
Wages cleaning staff	24	24	0%	33	33	0%	21	21	0%
Social insurance	6	6	0%	11	11	0%	7	7	0%
Other labour costs	8	8	0%	10	10	0%	4	4	0%
Wages other staff	2	2	0%	4	4	0%	0	0	0%
Cleaning products	0.8	0.5	-36%	3	1	-48%	1	2	94%
Machines	1	1	0%	3	3	0%	n/a	n/a	n/a
Other costs	1	1	0%	3	3	0%	3	3	0%
Risk and profits	1	1	0%	2	2	0%	3	3	0%
SUM	44	43	-1%	67	66	-2%	38	39	3%

Preliminary Findings and Conclusions:

- Staff wages represent the largest share of the life cycle costs, accounting for 82-92% of the total life cycle costs of cleaning services (see Table 7, Table 8 and Table 9). The percentage dedicated to staff wages is very similar among the different types of cleaning services (i.e. office cleaning (floor and surface cleaning), sanitary cleaning and window cleaning). A report by EFCI argues that a decrease in contract prices quickly translates into heavy pressure on employment, as labour costs in this sector amount to more than 75% of the turnover (Uni Europa, 2004).
- The differences in costs between the use conventional or green cleaning services were found to be insignificant when considering the overall life cycle costs. The cost of cleaning products are similar among the three different types of cleaning activities and the difference in the cost between the non-green and green cleaning products range from 1-3% (in absolute values).

The relative costs of green cleaning products vary significantly between countries: green cleaning products are always significantly cheaper than conventional products in Sweden but they are usually more expensive in Germany and Spain, as illustrated in Table 10 (data extracted from the previous tables).

Table 10 - Relative differences of the costs of green cleaning products compare to conventional products (Öko-Institut and ICLEI, 2007)

	Germany	Sweden	Spain
Office cleaning	+39%	-29%	+67%
Sanitary cleaning	+148%	-87%	+53%
Window cleaning	-36%	-48%	+94%

Moreover, it should be noted that the authors of the study (Öko-Institut and ICLEI, 2007) highlighted multiple limitations for the work performed. For example, different products are used in different quantities to clean the same surface and the dosage used depends on the soiling of the surface to be cleaned. The quantities of products used (and therefore the costs associated) were calculated based on a mean dosage, as indicated by the product manufacturer.

The study from PWC et al. (2009a) built upon and extends the study from Öko-Institut et al. (2007), see Table 11. It supported the LCC analysis results for cleaning services, and added that green cleaning products increased the total life cycle cleaning service cost by 1%, while the use of microfibre products decreased this cost by 9%. Thus, using green products and microfibre products results in a net reduction cost of 8% for green cleaning services when compared to conventional cleaning services.

Table 11 – Scope of study (PWC et al., 2009a)

Geography	EU 27 – focus on seven EU member states : Austria, Denmark, Finland, Germany, Netherlands, Sweden and UK
Type of cleaning	Cleaning service (based on Office cleaning in Germany Öko-Institut and ICLEI (2007)
Costs included	Same as Öko-Institut and ICLEI, (2007)
Life Cycle stages considered	Purchase and installation Costs during the use phase of the products Disposal costs

Table 12 shows the LCC structures summarised to a practical level for the seven EU member states. Results show that staff costs dominate life cycle costs for cleaning services and the costs of cleaning products are negligible across the seven EU member states under consideration.

Table 12 - Cost structures for cleaning services (PWC et al., 2009a)

LCC relevant costs	LCC cost structure							
	Baseline (Germany)	Austria	Denmark	Finland	Germany	Netherlands	Sweden	UK
Labour costs	92%	92%	91%	93%	92%	93%	93%	93%
Cleaning products	2%	2%	2%	2%	2%	1%	2%	1%
Other costs	6%	6%	7%	6%	6%	5%	6%	5%

Preliminary Findings and Conclusions:

- The use of green cleaning products with no hazardous substances led to a financial impact per square meter cleaned of +1%. Therefore, despite the fact green cleaning products, which are approximately 40% more expensive than the non-green version, their contribution to life cycle costs for cleaning services is negligible.
- The use of microfiber cleaning products (e.g. mops and cloths) was found to lead to an overall cost reduction of about 9% of the total cost for cleaning services, due to decreased labour costs. This cost reduction is explained in the report by the fact that the use of microfiber cloths means less manual labour for the staff and a higher hourly performance rate (e.g. due to the filling or carrying of buckets with water and cleaning products, changing

water). Furthermore, it means healthier working conditions for staff (fewer hazardous substances inhaled), leading to fewer working hours per square meter and less absence due to illness and physical problems.

- Staff training is a common practice in the studied countries and the study assumes that it does not contribute to any significant additional cost.

3.2.2 Other studies

Two other studies have been identified to be useful for the LCC analysis, one performed by the ICA group (2003) and the other by Campbell (2011). These studies are not LCC analyses but rather provide supporting data or background information concerning life cycle costs through the provision of detailed cost structure data for cleaning service companies.

The ICA group study (ICA group, 2003) shows a business plan with a five year forecast of income and costs of an American co-operative cleaning company, not in existence at the time of publication. The data is comprehensive on the types of costs incurred by a cleaning company but no conclusions are drawn (Table 13).

Table 13 – Scope of study (ICA group, 2003)

Geography	Washington DC, USA
Type of cleaning	Commercial cleaning
Study	Feasibility for establishment of a cleaning co-operative
Costs included	Total Gross Sales Cost of Goods Sold Direct Labor Benefits Direct Materials Expendable Supplies Depreciation Equipment Exp. (non-depr.) Vehicle Exp. (non-depr.) Operating Expenses Administrative Salaries Administrative Benefits Rent Depreciation Office Supplies Printing & Copying Professional Serv.--accounting Insurance Postage Marketing Training Utilities Telephone/Communications Waste Disposal Payroll Service Miscellaneous
Life Cycle	Purchase and installation Costs during the use phase of the products Disposal costs

The results made available on the costs are more detailed than all the other studies, but do not compare different types of conventional and green cleaning services. It is also not clear whether this cleaning service provider is a conventional or green provider, however, it was assumed that this data is for an American conventional cleaning service provider (Table 14).

Table 14 – Detailed 5 year income statement (ICA group, 2003)

Income Statement--5 Year Summary	Year 1	Year 2	Year 3	Year 4	Year 5
Sales					
Office	262,500	551,250	868,219	1,185,119	1,493,249
Total Gross Sales	262,500	551,250	868,219	1,185,119	1,493,249
Cost of Goods Sold					
Direct Labor	153,915	323,222	507,977	691,920	870,003
Benefits	26,367	55,370	87,041	118,588	149,145
Total Direct Labor Cost	180,282	378,592	595,018	810,508	1,019,148
Direct Materials	13,125	27,563	43,411	59,256	74,662
Expendable Supplies	2,625	5,513	8,682	11,851	14,932
Depreciation	3,044	3,130	3,130	2,122	2,036
Equipment Exp. (non-depr.)	3,938	8,269	13,023	17,777	22,399
Vehicle Exp. (non-depr.)	3,938	8,269	13,023	17,777	22,399
Total COGS	206,951	431,334	676,288	919,291	1,155,577
Gross Profit	55,549	119,916	191,931	265,828	337,673
Operating Expenses					
Administrative Salaries	72,500	110,725	132,613	174,836	219,474
Administrative Benefits	12,977	21,160	25,788	34,800	44,311
Rent	10,000	10,300	10,609	10,927	11,255
Depreciation	2,400	2,767	3,133	2,500	2,867
Office Supplies	300	309	318	328	338
Printing & Copying	120	124	127	131	135
Professional Serv.--accounting	2,600	2,678	2,758	2,841	2,926
Insurance	600	618	637	656	675
Postage	300	309	318	328	338
Marketing	12,000	12,360	12,731	13,113	13,506
Training	2,264	1,944	1,626	1,160	1,035
Utilities	960	989	1,018	1,049	1,080
Telephone/Communications	1,200	1,236	1,273	1,311	1,351
Waste Disposal	100	103	106	109	113
Payroll Service	2,704	5,679	8,925	12,158	15,287
Miscellaneous	656	1,378	2,171	2,963	3,733
Total Operating Expenses	121,681	172,678	204,153	259,209	318,424
Operating Profit	-66,132	-52,762	-12,222	6,619	19,248
Total Other Income	6,344	5,758	5,786	481	604
Total Other Expenses	0	0	3,747	7,650	11,276
Profit Before Tax	-59,788	-47,004	-10,183	-551	8,576
Total Taxes	0	0	0	0	0

Net Income	-59,788	-47,004	-10,183	-551	8,576
Average FTE Workers	11.8	23.6	35.4	46	55.2

The study from Campbell (2011) provides case studies of cleaning cost savings in American universities due to an “engineered cleaning system” over janitorial cleaning, which was unchanged for 50 years. The study supports the main message that cleaning services using up-to-date methods and products are significantly economically advantageous over their outdated counterparts. Table 15 presents the scope of the study.

Table 15 – Scope of study (Campbell, 2011)

Geography	USA
Type of cleaning	University cleaning
Costs included	N/A – cost savings only
Life Cycle	Purchase and installation, costs during the use phase of the products, and disposal costs

3.2.3 Concluding remarks from the LCC literature review

The LCC studies reviewed offer an overview of the costs incurred by cleaning service providers in Europe, including a comparison of conventional and green providers for cleaning services so that differences and the resulting barriers or motivations can be identified. The following conclusions can be drawn from this review:

Limited data availability and granularity - LCC data is scarce and no detailed data source was identified at the provider level for this analysis. The LCC data identified was nationally aggregated data from three and seven EU member states. None of the studies reviewed show a detailed LCC analysis for a cleaning service provider, but provide a good insight on the cost structure for the sector. The national data provided allowed for a comparison between conventional and green versions of cleaning services. The variables considered by these studies are limited to cleaning products and some accessories (e.g. cloths). Other aspects of cleaning services are regarded as constants (e.g. wages and cleaning appliances) and do not vary between conventional and green versions. No publically available studies that provide a more comprehensive coverage of different types of green interventions were identified. One source did give detailed cost data for a cleaning service provider, but this did not include a green-vs-conventional comparison and was based in the USA. In general, data sourcing for a LCC analysis is difficult to obtain due to the high confidentiality of financial data for individual cleaning service providers.

Staff wage is the most important cost – Staff costs represent the largest share on the considered costs for cleaning services. This has two significant implications for green products and practices: 1) any changes to non-wage costs are likely to be insignificant in the context of cleaning services and 2) green products and practices that can reduce staff cost (e.g. by reducing cleaning time) are likely to realise the most cost benefits.

Cost of “green” cleaning products is small in the overall sector cost structure – The reviewed sources demonstrated that green cleaning services are economically advantageous. With staff costs being the single largest element of expense, investing in green cleaning products and practices are not likely to bring a substantial cost increase.

Absolute costs of green product vary between countries – The Öko-Institut and ICLEI (2007) show that the price green cleaning products does not have to be more expensive than conventional products, although the price varies from country to country. Stakeholders also highlighted that the price and availability of green products (including cleaning products and accessories) differs substantially from country to country. The variation between countries may be large and generalisation should not be made.

The benefits of using “green” cleaning equipment or practices are multi-faceted – The PWC et al. (2009a) study on microfiber products illustrates the complexity of conducting a comprehensive LCC study for cleaning services: the cost of microfiber cloths is higher than for conventional cloths, but their use greatly improves cleaning efficiency by reducing cleaning time, cleaning product use and negative health effect to cleaners and may lead to an important cost reduction. Other types of green cleaning practices, such as providing better staff training, are likely to have similar multi-faceted benefits and lead to significant cost benefits.

3.3 Cost implications for the criterion set: an overview

The LCC studies reviewed do not cover all the EU GPP criteria proposed. The life cycle cost implication of the proposed EU GPP criteria are reviewed in this section. The EU GPP criteria are, in comparison to the LCC, very specific and reported at a much more detailed level of activities than the LCC studies reviewed in Section 3.2.

The proposed revised EU GPP criteria consider the following criteria areas covering the main hotspots along the life cycle stages of the cleaning service provision:

- Cleaning products, supplies and accessories (e.g. use of cleaning products with lower environmental impact)
- Cleaning operations/power equipment (e.g. vacuum cleaners)
- Operational management (e.g. solid waste sorting and disposal)

The LCC studies reviewed, of which (PWC et al., 2009) is one of the most relevant examples, provide the following breakdown of the costs: Staff (92%), Cleaning products (2%) and Other (6%). This is calculated based in the annual cost data for cleaning services in Germany by using results of a market research in Germany and for a service that does not comply with the EU GPP criteria.

The aim of this section is to identify representative evidence to understand whether there is a cost difference between green and non-green products/practices covered by the proposed EU GPP criteria. This is to provide information on the cost associated to the set of EU GPP criteria proposed.

3.3.1 Staff training

This element includes aspects such as a reduction in the consumption of cleaning products, for example through use of correct dosage as considered by Öko-Institut and ICLEI (2007). The study from the ICA group (2003) gave training an average cost across 5 years of 1% of the total LCC cost – this data is assumed to be for a conventional USA cleaning service start-up. The scope of the staff training criterion in the EU GPP covers a lot more than the appropriate use of cleaning products, namely, the propose use of tools and equipment, cleaning techniques, energy saving, water saving, waste management and health and safety.

The full life cycle cost benefits of staff training is very complex as it covers many different areas of the operation and delivery of cleaning services. Financial data on staff training investment and return on investment is scarce. PWC *et al.* (2009a) suggests that the training of employees can be regarded as common practice in the cleaning services industry in the seven European countries studied. The study focuses on the use of green cleaning products and it found that there is no additional cost to train staff in the use of green products compared to the cost to train staff in the use of non-green cleaning. Stakeholder consultation yielded that costs can go up to about €125.000 a year to train all the staff of a medium-sized company. However, no indications could be given as to any resulting savings related to lower product use, etc. Overall, the cost benefits of staff training is likely to be significant, as it can fundamentally improve the quality and efficiency of the delivery of the cleaning services but, for the reasons stated above, it is very difficult to quantify these benefits.

3.3.2 Environmental management measures and practices

The implementation of an Environmental Management Systems (EMS) is a common requirement for good environmental management, to improve resource efficiency and reduce environmental impacts. According to PWC *et al.* (2009b) cleaning service providers with an existing environmental component in their purchasing policy achieved a 51% higher attainment of a core or comprehensive level of GPP, compared to other organisations.

3.3.3 Use of cleaning products with lower environmental impact

The Öko-Institut and ICLEI (2007) and the PWC *et al.* (2009a) found that green products can be more expensive than non-green products. The Öko-Institut and ICLEI (2007) found a +39% difference for green cleaning products in Germany; however, this can vary significantly among countries as the same study found that green cleaning products in Sweden are significantly cheaper than conventional products for all cleaning scenarios (Table 7, Table 8 and Table 9, section 3.2.1).

Considering the cost of cleaning products in the context of life cycle costs of cleaning services, the expenditure on cleaning products, in the studies reviewed, only accounts for 1-3% of the total cost structure for cleaning services. Therefore changing from conventional to green products would not result in significant costs for the cleaning service provider.

3.3.4 Energy efficiency for vacuum cleaners

The study from ICA group (2003) gave equipment an average cost across 5 years of 2% of total LCC cost – this data is assumed to be for a conventional USA cleaning service start-up. Energy used during cleaning is not usually a burden for the service provider, so it is excluded from this analysis.

Some sources were found to be able to compare the purchase cost for distinct energy classes for commercial vacuums. Comparison was complicated by trying to match the product attributes and the comparison of the purchase costs may not ideal as the vacuum characteristics may vary slightly. However purchase cost may vary between € 145 and € 660 for classes A to G (Kaercher, 2015). For A-rated vacuum cleaners purchase costs evidence shows that purchase cost may be about € 300 (Kaercher, 2105a) and for class B rated vacuums € 270 (Kaercher, 2015b).

3.3.5 Use of microfibre products

PWC *et al.* (2009a) found that the purchase cost of microfiber cloths was approximately 15% higher than the purchase cost for conventional cloths. However, it is estimated that microfibre products reduced staff cleaning time by 10%, which led to a LCC cost reduction of 9%, representing a much bigger saving than the investment. A comparable study in the USA carried out by the University of California Davis Medical Center found that, in a hospital context, microfibre mops reduced labour costs by 20% (UCDMC, 2002).

Other indirect cost benefits include healthier working conditions for staff (fewer substances inhaled), leading to fewer working hours per square meter and less absence due to illness and physical problems.

3.3.6 Use of cleaning accessories with lower environmental impact

This criterion concerns the use of ecolabelled mops and cloths. As these types of ecolabelled products have a limited market availability, no good market data was found for a cost comparison.

From a life cycle cost perspective, the literature review has demonstrated that the expenditure on cleaning accessories is relatively small, adding up to less than 1-2% (according to Öko-Institut and ICLEI (2007)). Moving from conventional cleaning supplies and accessories to ecolabelled ones is not likely to be a significant financial burden for cleaning companies. However, whether these products will allow cleaning companies to achieve cost benefits is largely unknown.

3.3.7 Solid waste sorting and disposal

The study by the ICA group (2003) estimates that costs related to waste disposal average at less than 1% of the total LCC costs across 5 years (calculated from Table 14, section 3.2.2) – this data is assumed to be for a conventional USA cleaning service start-up. This low-cost criterion is unlikely to produce significant differences between green and conventional cleaning service provisions, although waste disposal options may produce or alleviate a variety of different environmental impacts. It should be noted that such a criterion highly depends on the solid waste treatment options as made available by the public authorities.

3.3.8 Use of concentrated undiluted cleaning products

Undiluted cleaning products are cheaper than ready-to-use products on the long run and they also provide some important indirect benefits, such as reduced storage space, reduced packaging and a reduction in transport requirements – all of these provide cost saving opportunities. Table 16 shows two examples where a undiluyrf cleaning product used for general cleaning (diluted 1:50) is 98%-99% cheaper than a ready-to-use cleaning product. At the most concentrated dilution, for heavy cleaning (diluted 1:10), the price difference was 92%-93% cheaper for the undiluted product. According to Öko-Institut and ICLEI (2007), cleaning products can make up between 1-3% of the life cycle cost of cleaning services.

Table 16 – Price comparisons for multi-use and washroom cleaners, RTU and concentrated, cost per litre

	Ready-to-use	Undiluted
	Delphis Eco multi-purpose cleaner 750ml	Delphis Eco multi-purpose cleaner concentrated 2x5L pack
Price	£4.11 per litre	£0.07 per litre, diluted to the ratio of 1 part concentrate to 50 parts water for general cleaning
	(£3.08 per 750ml)	(£34.02 for 2x5L)
Comparison	Baseline	98% cheaper than ready-to-use product
Information source	Delphis Eco	Delphis Eco

	Ready-to-use	Concentrated
	Delphis Eco washroom cleaner 750ml	Delphis Eco washroom cleaner concentrated 2x5L pack
Price	£4.47 per litre	£0.07 per litre, diluted to the ration of 1 part concentrate to 50 parts water for general cleaning
	(£3.35 per 750ml)	(£33.51 for 2x5L)
Comparison	Baseline	99% cheaper than ready-to-use product

Information source	Delphis Eco	Delphis Eco
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3.4 Concluding remarks

Table 17 presents the conclusions of the LCC analysis for cleaning services. The findings are that green products/practices might be more expensive than their non-green counterparts. However, their overall impact on the life cycle cost of the delivery of cleaning service is low. Most of the newly proposed EU GPP criteria can be regarded as 'low hanging fruit' from a life cycle cost perspective as some proposed improvements are comparatively cheap and may have a cost saving potential (e.g use of microfiber products, use of undiluted cleaning products).

Table 17 – Concluding remarks based on the literature review

Newly proposed GPP criteria	Significant difference between green and non-green	Estimated significance to life cycle cost for cleaning services
Staff training	Likely to have positive life cycle cost impact, but difficult to quantify in a holistic way	About 1%
Environmental management measures and practices	Set up (design of EMS) cost is affordable, but implementation cost might be significant and cost benefit is unknown.	Set up cost is <1% of life cycle cost; implementation cost could be significant.
Use of cleaning products with lower environmental impact	Green products can be significantly more expensive	About 1%
Use of cleaning products with lower environmental impact	No concluding remarks	Less than 1%
Use of microfiber products	Microfiber product is more expensive but delivers significant life cycle cost saving	Reduction 8% (+1% cost, -9% staff time)
Use of cleaning accessories with lower environmental impact	Market data not enough for conclusions drawing	Less than 1%
Solid waste sorting and disposal	No significant difference due to low implementation cost	Less than 1%
Use of concentrated undiluted conducts	Undiluted products are significantly cheaper	Less than 1%

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