GENERAL PRINCIPLES FOR AN ENVIRONMENTAL COMMUNICATION ON MASS-MARKET PRODUCTS

PART 23: METHODOLOGY FOR THE ENVIRONMENTAL IMPACT ASSESSMENT OF CLOTHING PRODUCTS

March 2016

Study conducted on behalf of ADEME by: *AFNOR Association Française de Normalisation*
Contract no.: 1477C0009

Technical coordination: *Edouard FOURDRIN* – **Division\Department:** Products and Material Efficiency

ADEME
Agence de l'Environnement et de la Maîtrise de l'Energie

FINAL REPORT

REPORT CITATION

2016. General principles for an environmental communication on mass-market products – Part 23: Methodology for the environmental impact assessment of clothing products. 47 p.

Contents

Preamble

This guide aims to provide a methodological framework for the environmental impact assessment of clothing.

It constitutes a version of the general principles for an environmental communication on mass-market products (Part 0). The environmental communication indicators will be deemed compliant with the rules of the good practices guide for communication on convenience goods provided they comply with the general principles and cross-sectoral methodological rules laid out in Part 0 herein and its annexes, as well as the rules specified in this sector-specific guide.

This sector-specific guide specifies the items mentioned in Annex A, Clause A.1.1 of the general principles for an environmental communication on mass-market products (Part 0).

1. Scope

This guide applies to clothing (including sportswear and leisurewear) as listed in Table 1 (non-exhaustive list). The materials used for the clothing, such as textiles, leather, downs and down feathers, are included in the scope.

The associated CPA (European classification of products by activity) codes are as follows:

— 14.1 Wearing apparel, except fur apparel;

— 14.3 Knitted and crocheted apparel.

This guide does not apply to clothing accessories such as belts and hats (non-exhaustive list). It does not apply to articles of fur (CPA code 14.2), which is a subcategory that warrants specific methodology requirements.

2. Functional unit and reference flow

2.1. Functional unit(FU)

The functional unit adopted for clothing is:

"A worn and cared item of clothing"

NOTE The rationale for adopting this functional unit is given in the informative annex.

The product under consideration in this guide is the product supplied 'as is' to the user, i.e. the clothing and its packaging system: primary packaging[1] (which the consumer takes home — e.g. plastic film-wrap, coat hanger, carton box, etc.), secondary packaging[2] (used to group packages together — e.g. groupage carton) and tertiary packaging[3] (if any — e.g. pallet, pallet-wrap, spacers).

2.2. Reference flow

The environmental impacts are expressed in terms of the functional unit on the basis of the reference flow.

For the use phase, the numbers of care cycles to factor in are tabulated below:

1 Sales packaging or primary packaging is packaging intended for the consumer or end-user.

2 Secondary packaging is packaging designed to group together unitized groups of articles.

3 Tertiary packaging is packaging for transport. Note that as a rule, transport packaging is uncommon as the secondary packaging is fitted directly into the containers.

Table 1 — Number of care cycles according to category of clothing

Category of clothing	Number of care cycles
Short or long-sleeve t-shirt Sleeveless shirt Shirt Underwear (briefs, panties, boxer shorts, thong, tights, leggings) Sock	50 care cycles
Pullover Fleece Bra, corset Trousers, jeans, overalls Shorts Pyjamas Dress, skirt	30 care cycles
Jackets Blouson Gloves Knit cap Scarf	2 care cycles

NOTE It is important to remember that with this functional unit, the use phase is not a solid guarantee but simply a way of modelling use so as to assess the environmental impacts.

This functional unit is thus liable to be improved during subsequent revisions to this guide (see Annex C).

2.3. Reference sizes

The reference sizes to factor in are tabulated below:

— women's: 38;

— bust size: 90B;

— waist size: 38;

— men's:

Men's sizes	
Pullovers, t-shirts, blousons, etc.	L
Trousers	42
Jackets	50
Shirts	42

— children's: size-segmented as follows:

Babies	Items labelled age 2 to 8 years	Items labelled age 8 to 14 years
6 months	4 years	10 years

— socks:

  — men's: 41;

  — women's: 37;

  — children's: 32;

— tights: size 2.

NOTE The values associated to the size categories as named above reflect clothing manufacturer or distributor coding and are not taken from a standard.

For men's, women's and children's clothing, in cases where operators are using different prototyping sizes, each size shall be given a correction factor amounting to 5 % of item mass.

For clothing with cup, and where the enterprise is using a prototyping size that is not 90B, a corrective factor shall also be applied. The corrective factor applied corresponds to the mass difference between the prototyping design size used and a 90B type. This mass differential can be calculated using the previous year's products and may be different for each type of product (if variation between types is high): underwire bra, soft-cup bra, moulded cup or padded bra, corset, bodysuit, camisole, shrug, top, bustier, brassiere.

The enterprise needs to be able to demonstrate that its calculations are representative.

REMARK A cup-fitted bikini top can be considered as a bra.

3. Main environmental issues

The main environmental issues for clothing are:

— impact on global warming;

— impact on water resources, both from the water use perspective and the water quality (pollution) perspective;

— depletion of non-renewable natural resources and energy consumption.

4. Lifecycle inventory data at the source of the environmental impacts

Based on available environmental studies and current knowledge, the following data have been identified as source of the above-cited environmental impacts.

These data are recapped in the table below.

Environmental impacts	Impact source data
Greenhouse effect	Fibre production Manufacturing Use Primary packaging (in certain cases)
Water consumption	Production of certain fibres Use Textile finishing (in certain cases)
Water pollution (eutrophication)	Production of certain fibres Manufacturing Packaging (in certain cases)
Water pollution (aquatic ecotoxicity)	Production of certain fibres Use Packaging Finishing—at least in principle, but the models currently available are not sharp enough to get reliable confirmation
Depletion of natural non-renewable resources	Production of fibres Manufacturing Use Transport Packaging
Consumption of non-renewable energy	Use Manufacturing

5. Relevant environmental indicators and calculation methodologies

The first three environmental impacts previously identified and selected for environmental communication shall be characterized using the environmental indicators set forth in the table below. This table indicates the unit of measurement and the calculation method for each impact indicator. The indicators shall be expressed in the units stated in the table ratioed to the functional units stated in section 1 of the sector-specific guide herein.

Environmental impacts	Impact indicators	Units used	Calculation methodologies[4]
Greenhouse effect	Greenhouse gas emissions	kg eq CO_2	IPCC 2007
Water pollution	Eutrophication (freshwater)	kg eq P	ReCiPe 2008
Water consumption	Water consumption	m^3	Net consumption Discharge into another environmental source not accounted for Sea water or water derived from a stable water table (over a 3-yr period) not accounted for This method will be reassessed for relevance in the wake of the "water footprint" standard currently being drafted by the ISO

The results output of the environmental impact assessment shall differentiate use-phase impacts from impacts tied to the other stages in the product life cycle. Depending on the communicational format used, this differentiation shall clearly educate consumers on the use-phase environmental impacts linked to clothing.

NOTE Trial-scheme candidates or project sponsors were given the freedom to calculate other impacts along the lines of those proposed. However, as the trial-scheme results enabling comparative analysis did not get forwarded to working group WG5, there was no way to confirm or disconfirm the list of indicators adopted in this sector-specific guide.

Feedback received from the project work has identified the following impact indicators as optional additional indicators for environmental communication:

— depletion of natural non-renewable resources;

— aquatic ecotoxicity;

— human toxicity;

— consumption of non-renewable energy;

— photochemical pollution.

These additional indicators have not, however, been consolidated at WG5 level which means there is no obligation to quantify them.

The selection criteria justifying the environmental indicator choices adopted are given in Annex.

6. Allocation rules for products and co-products

6.1. Allocations connected to raw materials

These allocation rules are the same are those employed in the life cycle inventories in the ADEME databases for environmental communications.

[4] These characterization methods are given here for information only. The methods employed shall be conform to the general principles for an environmental communication on mass-market products (Part 0).

6.2. Allocations of the impacts of textile finisher facilities

A given finisher facility may be able to process several different models of clothing, and production line-level specific data is not always available.

Where the operator wants to use specific data for textile finishing (see section 8.5), the site's consumptions and waste shall be subdivided between the different co-products processed as set out below:

— subdivision according to separate processes (allocation bypassed);

— or if this is not feasible, subdivision according to the mass of products involved.

6.3. Allocations of the impacts and benefits of recycling the product and its packaging system

Recycling textile fibre into textile fibre

The impacts and benefits of recycling are allocated to the material incorporating the recycled fibre (0/100-basis allocation). The model to use is specified in the general principles for an environmental communication on mass-market products (Part 0).

Recycling non-textile material into textile fibre

The allocation rule adopted here is the allocation scheme for plastics specified in the general principles for an environmental communication on mass-market products (Part 0) (50/50-basis allocation*)*

Packaging (non-textile)

The impacts and benefits of recycling the (non-textile) packaging are allocated as per the rules specified in the general principles for an environmental communication on mass-market products (Part 0).

6.4. Incineration

The impacts and benefits of energy recovery from the products and packaging are allocated as per the rules specified in the general principles for an environmental communication on mass-market products (Part 0).

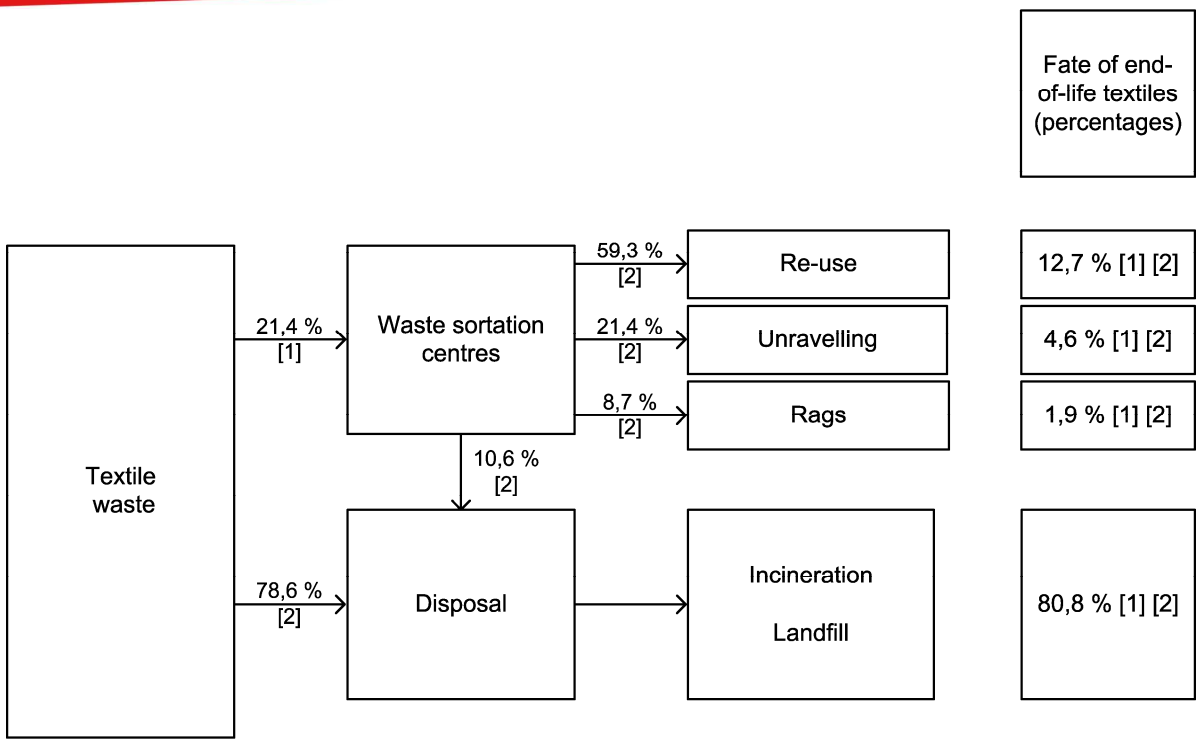
7. Conditions for taking into account end-of-life processes

7.1. End-of-life of the clothing

Clothing (excluding lingerie)

The end-of-life shall be a mean data value for all articles of clothing, unless a waste (collection and recycling) stream is in place.

The mean data value for clothing end-of-life shall be modelled using generic data corresponding to the average French national scenario for textiles. The flowchart below schematizes the set of data used for modelling the end-of-life of textile materials:



Sources:

[1] The source streams were determined with input from a study currently being led by OPTIMA for the ADEME to characterize the merchandizing of clothing–linen–shoes.

[2] Household-donated clothing–linens–shoes (the 'TLC' stream in French) – 2011 figures – ADEME

The breakdown of the various post-disposal treatment options is available in the ADEME database (disposal of household waste).

Lingerie

For the end-of-life of matching lingerie sets, the French national average scenario for municipal waste disposal applies.

The impacts of incineration and landfilling account for the impacts offset by waste-to-energy recovery and are predicated on the secondary data given by the ADEME database.

7.2. Production scraps

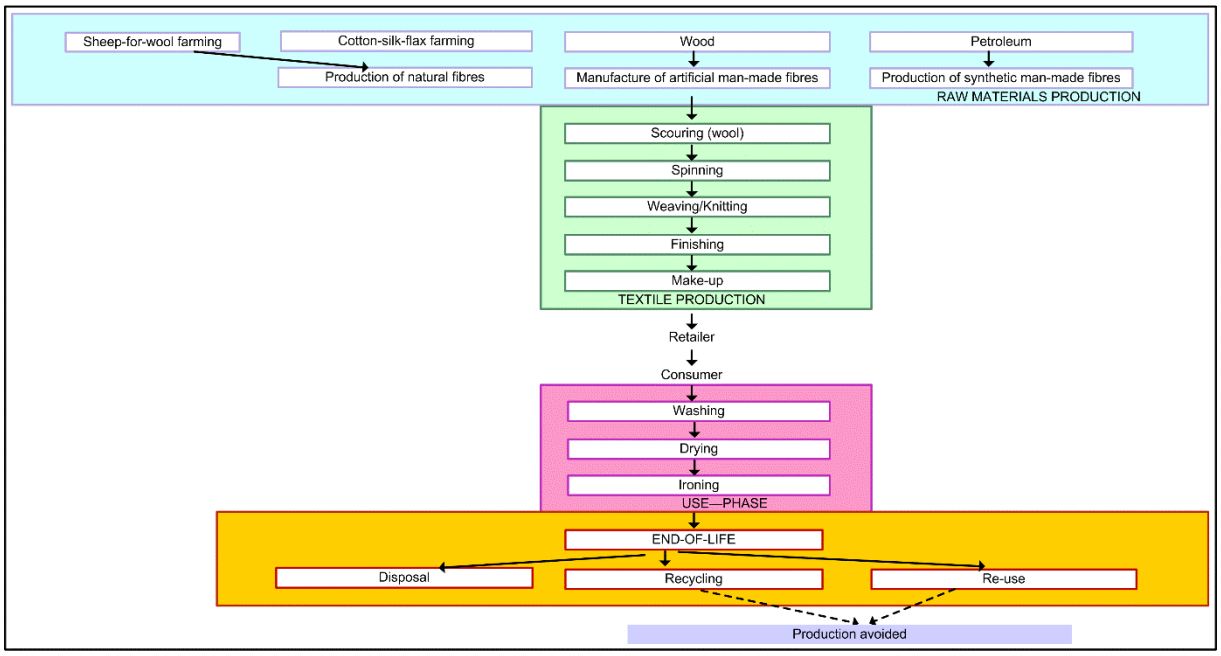
The end-of-life of production scraps is not modelled here. That said, the material engaged in production scraps is modelled using the bulk loss rates defined as semi-specific or secondary data according to each stage in the life cycle (see 9.2 Articulation between primary, secondary and semi-specific data).

7.3. End-of-life of the packaging

For primary, secondary and tertiary packaging, the end-of-life is dependent on the materials employed. Recommended guidance is to use the most up-to-date household packaging recycling rates (for primary packaging) or industrial packaging recycling rates (for secondary and tertiary packaging) that can be obtained via the ADEME database.

8. Scope of the assessment and calculation methodology for the selected indicators

8.1. Description of the clothing life cycle



8.2. Life cycle stages taken into account

The stages and processes accounted for in the environmental impact assessment of wearing apparel are as follows:

— the stages involved in raw materials production;

— the production and end-of-life of clothing accessories (buttons, slide fasteners, etc.);

— the production and end-of-life of the entire packaging system (primary, secondary and tertiary);

— the stages involved in made-up textile-articles (clothing or household linen) (made-up textile process steps including spinning, finishing, weaving, knitting, tailoring);

— the stages involved in distribution up to the warehousing (transport approach: transport from the clothing-maker up to the delivery depots or distribution hubs);

— the stages involved in tailored garment transport;

— the use-phase stages: washing, drying, ironing;

— the end-of-life stages.

8.3. Stages not accounted for in the life cycle analysis

The following stages are excluded from the scope of analysis:

— customer journeys between their home and the point-of-sale: in accordance with the recommendations of the ADEME/AFNOR platform on environmental communication, this stage will be the subject of a different communication directed at the end-customer;

— transport tied to the collection of primary packaging waste after use by the consumer.

The following apparel accessories are disregarded as both their mass and environmental impact radius are considered negligible:

— price tags (excluding hang tags);

— woven sow-in labels;

— care labels;

— threading;

— twill;

— bias (excluding fastenings);

— stitches.

For all other garment accessories (buttons, slide fasteners, RFID chips, etc.), the rule of a 5 % cut-off by mass on energy content and environmental impact radius shall be verified.

9. Articulation between primary and secondary data

Primary activity data (or specific data) is a quantified value obtained by direct measurement or calculations using direct measurements of an activity or process in the product life cycle. This value is used, after multiplication by an emission or characterization factor, to calculate an impact category indicator.

NOTE 1 The primary data sources reflect the specific nature and efficiency of a process and as a result, their specific environmental impacts.

NOTE 2 The primary activity data does not include emission or characterization factors.

EXAMPLE Source-type and amount of fibres used.

Secondary (or generic) data is a quantified value of an activity or product life cycle process obtained from sources other than the direct measurement or calculations using direct measurements.

EXAMPLE Electricity consumption in the knitting phase.

Semi-specific data is:

— primary (or specific) data to be filled in by the operator, but for which a default value is proposed;

— data given by default but that may be specified by the operator to improve the environmental impact assessment.

EXAMPLE By default, the guide sets the electricity consumption required to make up a scarf at 1 kWh/article. However, the scarf studied required 0,7 kWh at the make-up step. The default value can be re-specified.

These intentionally conservative values are designed to encourage the actors in the market chain to substitute in their own value so as to improve the results of the environmental assessment. These conservative values, as proposed, are not mean textile-industry values and are therefore strictly for use within this methodological-guidance framework.

9.1. Primary (or specific) data collection framework

Make-up site, weaving site, knitting site and textile finishing site shall be determined:

— either from make-or-buy forecasts (when the first order is placed), restock included (restock forecasts shall be coherent with figures for the previous years);

— or consider the main supplier of the apparel article, where 'main supplier' accounts for over 70 % of total production output for said article.

In both cases, the determination of the energy mix for the make-up site covers the entire end-to-end article production circuit and not just channels corresponding to articles sold in France.

For the make-up stage, the producer can if necessary go into deeper detail (such as differentiating restock from first stock-in or even exclusively considering those articles sold in France).

For weaving or knitting, if the clothing-makers supply the fabrics, the data on the procurement circuits can be used; otherwise the worst-case energy-mix data shall be used.

9.2. Articulation between primary, secondary and semi-specific data

This table presents the articulation between primary, secondary and semi-specific data.

		PCR						IMPACTS BASE		
		Primary data		Semi-specific data		Secondary data				
								Generic inventory data		
Stage	Sub-stage	Activity-related data, to be linked to in-Base inventory data	Elementary flows and data without direct links to the Base	Activity-related data, to be linked to in-Base inventory data	Elementary flows and data without direct links to the Base	Activity-related data, to be linked to in-Base inventory data	Elementary flows and data without direct links to the Base	Processes	Technical representativeness	Geographical representativeness
Raw materials		— Amounts and types of materials (including, where relevant, percent recyclate) in the clothing (accessories included).						— Production of **spun yarns** and **filament yarns** (including the spinning and fibre-preparing processes systematically associated with these fibres), including recycled yarns	**Yarn (natural fibres):** — staple cotton, sheepwool, silk and linen — organic cotton, recycled cotton, merino wool, angora wool, cashmere, alpaca, eiderdown — "better cotton", GMO cotton, hemp, jute, ramie, camelhair, cowhair, goathair, horsehair, silk-cotton, abaca, esparto, coconut, broom, sisal hemp, sunn hemp, henequen, maguey **Spun yarn and filament yarn (artificial man-made fibres):** — viscose — modal, Lyocell — cupro **Spun yarn and filament yarn (synthetic mad-made fibres):** — polyester, polyamide (nylon), acrylics, polyurethane, aramids, polyethylene — recycled polyester, recycled polyamide — elastodiene, acetate, alginate, protein fibre, triacetate, chlorofibres, fluorofibres, modacrylics, polyimides, polylactides, polypropylenes, polycarbamides, vinylal, trivinyl, elastomultiester, elastolefin, melamine, polypropylene/polyamide bicomponents	National (aggregated with spinning)
		— Amounts and types of materials (including, where relevant, percent recyclate) in the finished primary packaging (e.g. plastic shirt-wrap), secondary packaging (e.g. groupage carton) and tertiary packaging (e.g. pallets)						— Production of packaging materials — Forming of packaging materials		Worldwide

		PCR						IMPACTS BASE		
		Primary data		Semi-specific data				Secondary data		
Stage	Sub-stage	Activity-related data, to be linked to in-Base inventory data	Elementary flows and data without direct links to the Base	Activity-related data, to be linked to in-Base inventory data	Elementary flows and data without direct links to the Base	Activity-related data, to be linked to in-Base inventory data	Elementary flows and data without direct links to the Base	Generic inventory data		
								Processes	Technical representativeness	Geographical representativeness
Make-up and embroidery	Make-up	— Country			— Rate of losses per product category	— Electricity consumption for the 5 groups of clothing make-up processes as defined herein*		— Electricity generation — Make-up (infra, water…) excluding energy consumption	Mean consumption figures of the energy mix	National Worldwide
	Embroidery	— Country			— Rate of losses per product category	— Electricity consumption per embroidered surface*		— Electricity generation — Embroidery (infra, water…) excluding energy consumption	Mean consumption figures of the energy mix	National Worldwide
Composites, coatings and bondings	Composites			— Country		— Electricity consumption* — Rate of losses*		— Electricity generation — Production of composites (production of foam sheeting and support) excluding energy consumption	Mean consumption figures of the energy mix	National Worldwide
	Coating			— Country		— Electricity consumption* — Rate of losses*		— Electricity generation — Production of coated fabric (production of coatstock and support) excluding energy consumption	Mean consumption figures of the energy mix Coating (acrylic, polyurethane, PVC and polyester) with different masses per unit area NB: For PVC coatings, account for the type of VOC treatment	National Worldwide
	Bondings			— Country		— Electricity consumption* — Rate of losses*		— Electricity generation — Production of bonded fabric (production of films and support) excluding energy consumption	Mean consumption figures of the energy mix Bonded films (polyrurethane, PES or PTFE)	National Worldwide

		PCR						IMPACTS BASE		
		Primary data		Semi-specific data		Secondary data				
								Generic inventory data		
Stage	Sub-stage	Activity-related data, to be linked to in-Base inventory data	Elementary flows and data without direct links to the Base	Activity-related data, to be linked to in-Base inventory data	Elementary flows and data without direct links to the Base	Activity-related data, to be linked to in-Base inventory data	Elementary flows and data without direct links to the Base	Processes	Technical representativeness	Geographical representativeness
Production of fabrics	Fabric Weaving			— Country — Unit of weave (number of picks per cm and mass per unit area)		— Electricity consumption per unit of weave * — Rate of losses *		— Electricity generation — Weave (infra, water…) excluding energy consumption	Mean consumption figures of the energy mix	National Worldwide
	Fabric knitting (including knitted lacework)			— Country — Type of knitting (hosiery or not)		— Loss Rate * — Electricity consumption ('traditional' knitting) — Electricity consumption hosiery knitting *		— Electricity generation — Knitting excluding electricity consumption	Mean consumption figures of the energy mix — Traditional knitting (infra, water…) — Hosiery knitting	National Worldwide
	Sizing			— Country		— Electric power consumption		— Electricity generation — Sizing excluding electricity consumption	Mean consumption figures of the energy mix	National Worldwide
	Lacework (from leavers-lace looms)			— Country		— Electricity consumption * — Rate of losses *		— Electricity generation — Production of leavers lace excluding energy consumption	Mean consumption figures of the energy mix	National Worldwide
	Nonwoven fabric			— Country		— Electricity consumption * — Rate of losses *		— Electricity generation — Production of non-woven fabric excluding energy consumption	Mean consumption figures of the energy mix	National Worldwide

		PCR						IMPACTS BASE		
		Primary data		Semi-specific data		Secondary data				
								Generic inventory data		
Stage	Sub-stage	Activity-related data, to be linked to in-Base inventory data	Elementary flows and data without direct links to the Base	Activity-related data, to be linked to in-Base inventory data	Elementary flows and data without direct links to the Base	Activity-related data, to be linked to in-Base inventory data	Elementary flows and data without direct links to the Base	Processes	Technical representativeness	Geographical representativeness
Finishing	Level 1 (rough)			— Country — Type of heat energy, if needed		— Electricity consumption* (upper-bound value) — Heat energy consumption, if needed (upper-bound value) — finishing-process consumption (physical value to key in according to process units)		— Electricity generation — Heat generation — Textile finishing processes to level 1 excluding energy consumption (with upper-bound water consumption figures; mean type and amount of chemicals, WWTP included)	Mean consumption figures of the energy mix 4 types of energy source: coal, biomass, fuel oil and gas — Dyeing — Printing — Composite chemical finish — Mechanical finish — Denim bleaching	National Europe Worldwide
	Level 2 (moderate)			— Country — Type of heat energy, if needed		— Electricity consumption* (upper-bound) — Heat energy consumption, if needed (upper-bound value) — Finishing-process consumption (physical value to key in according to process units)		— Electricity generation — Heat generation — Textile finishing processes to level 2 excluding energy consumption, each process differentiated into the 3 WWTP levels (good, moderate/poor, none) (with upper-bound water consumption figures; mean type and amount of chemicals, WWTP included)	Mean consumption figures of the energy mix 4 types of energy source: coal, biomass, fuel oil and gas (Each process shall be differentiated into the 3 WWTP levels) — Yarn dyeing — Fabric dyeing — Garment dyeing **Ultimately according to type of material: polyester, cotton, etc**. — Discharge printing — Digital printing — Transfer printing — Pigment printing — Stain-repellent — Flame-retardant — Rain-repellent — Mite-repellent — Anti-microbial — UV-repellent — Micro-encapsulation — Mercerization — Napping — Shearing — Chemical bleaching — Mechanical bleaching — Laser bleaching — Ozone bleaching	National Europe Worldwide

		PCR						IMPACTS BASE		
		Primary data		Semi-specific data				Secondary data		
Stage	Sub-stage	Activity-related data, to be linked to in-Base inventory data	Elementary flows and data without direct links to the Base	Activity-related data, to be linked to in-Base inventory data	Elementary flows and data without direct links to the Base	Activity-related data, to be linked to in-Base inventory data	Elementary flows and data without direct links to the Base	Generic inventory data		
								Processes	Technical representativeness	Geographical representativeness
	Level 3 (finer-grained on energy)	— Electricity consumption — Heat energy consumption per energy source type (gas, fuel oil, coal, etc.)		— Country				— Electricity generation — Heat generation	Mean consumption figures of the energy mix 4 types of energy source: coal, biomass, fuel oil and gas	National Europe
						— Water consumption — Presence and efficiency of the wastewater treatment plant / DIRECTLY PROCESSES-LINKED — Type and amount of chemicals* — Amount of textile waste*		— Production of softened water — Wastewater treatment plants differentiated into the 3 levels (good, moderate/poor, none) — Production of the chemicals used in the finishing-process steps — Treatment of production waste	(Each process shall be differentiated into the 3 WWTP levels) — Yarn dyeing — Fabric dyeing — Garment dyeing — **Ultimately according to type of material: polyester, cotton, etc**. — Discharge printing — Digital printing — Transfer printing — Pigment printing — Stain-repellent — Flame-retardant — Rain-repellent — Mite-repellent — Anti-microbial — UV-repellent — Micro-encapsulation — Mercerization — Napping — Shearing — Chemical bleaching — Mechanical bleaching — Laser bleaching — Ozone bleaching	
	Foams							— - Foam	— Polyurethane (PU)–high-density — PU – low-density — PU – memory foam — PU – moulded foam — Natural latex — Synthetic latex	Worldwide

		PCR						IMPACTS BASE		
		Primary data		Semi-specific data		Secondary data				
Stage	Sub-stage	Activity-related data, to be linked to in-Base inventory data	Elementary flows and data without direct links to the Base	Activity-related data, to be linked to in-Base inventory data	Elementary flows and data without direct links to the Base	Activity-related data, to be linked to in-Base inventory data	Elementary flows and data without direct links to the Base	Generic inventory data		
								Processes	Technical representativeness	Geographical representativeness
Transport	Upstream			— Scenarios on upstream transport (mode of transport and distance travelled)				— Transport-mode processes	— Truck — Ship — Air	
	Downstream	— Mode of transport and distance travelled to Paris if the depot is outside France				— Mode of transport — Distance travelled		— Transport-mode processes	— Truck — Ship — Air	
Use	Machine-wash at 30℃ – gentle cycle Machine-wash at 40℃ – gentle cycle Machine-wash at 30℃ – normal cycle Machine-wash at 40℃ – normal cycle Dry-cleaning		— Wash or not? — Type of wash programme			— Amount of water, energy, laundry detergent used — Amount of water, energy, laundry detergent used — Amount of water, energy, laundry detergent used — Amount of water, energy, laundry detergent used — Amount of electricity, water and perchloroethylene	— VOC emissions	— Electricity generation — Production of liquid or powdered detergent — Wastewater treatment — Production of tap water — Production of perchloroethylene		France France
	Drying		— Dry or not?			— Amount of energy		— Electricity generation		France
	Ironing		— Iron or not? — Time on ironing			— Electricity consumption per hour		— Electricity generation		France

		PCR						IMPACTS BASE		
		Primary data		Semi-specific data		Secondary data				
								Generic inventory data		
Stage	Sub-stage	Activity-related data, to be linked to in-Base inventory data	Elementary flows and data without direct links to the Base	Activity-related data, to be linked to in-Base inventory data	Elementary flows and data without direct links to the Base	Activity-related data, to be linked to in-Base inventory data	Elementary flows and data without direct links to the Base	Processes	Technical representativeness	Geographical representativeness
End-of-life	Treatment of end-of-life made-up textile-articles							— End-of-life textile waste treatment processes	— Landfilling — Incineration with waste-to-energy recovery — Incineration without waste-to-energy recovery — Recycling processes (tbd—the guide does not ask for specifications)	France
	Treatment of production waste							— Textile production waste treatment processes	0/100-basis allocation: recycling textile fibre into textile fibre 50/50-basis allocation: recycling non-textile material into textile fibre Mean inventory	Worldwide
	Treatment of end-of-life packaging waste							— End-of-life waste packaging treatment processes	— Landfilling — Incineration with waste-to-energy recovery — Incineration without waste-to-energy recovery	France

* Activity-stream data expected to be integrated into the ADEME database.

** As regards the impact of the materials, users of this methodology shall make the distinction between:

— the units that are equipped to deal with effluents and those which are not, for activities that have a potential impact on water (particularly for tanning, textile finishing, etc.);

— the countries' energy mixes for the materials.

9.3. Special case of textile finishing

Textile finishing is modelled as set out below:

— country where textile finishing is effectively done is a semi-specific data;

— the fibre-preparation processes systematically associated with these fibres (e.g. scouring of the raw wool) shall be integrated as fibre production-stage processes);

— for the other processes, it is necessary to:

  — either select out the processes per article (see below) at a rough (level-1) level or at a finer-grained (level 2) level;

  — or collect the finisher factory's activity-stream data ratioed to 1 kg of finished articles, without differentiating the different textile finishing operations run inside the company (level 3);

In cases where a process-oriented selection is opted for, the two modelling levels are as follows:

Level 1	Level 2
Dyeing	Yarn dyeing
	Fabric dyeing
	Made-up article dyeing
	Ultimately according to type of material: polyester, cotton, etc.
Printing	Discharge printing
	Digital printing
	Transfer printing
	Pigment printing
Composite chemical finish	Stain-repellent
	Flame-retardant
	Rain-repellent
	Mite-repellent
	Anti-microbial
	UV-repellent (UV: Ultra-Violet)
	Micro-encapsulation
	Mercerizing
Mechanical finish	Napping
	Shearing
Denim bleaching	Chemical bleaching
	Mechanical bleaching
	Laser bleaching
	Ozone bleaching

Important remarks:

— the data on (electrical and heat) energy and water consumption are defined as upper-bound data. The rationale is that as levels 1 and 2 can be operator-specified, it is necessary to start out from conservative upper-bound data figures;

  That said, when populating the database on the dyeing process (and any other processes selectable from the level-1 and level-2 lists), type and amount of chemicals is defined as a mean (and not, therefore, an upper-bound) data value as a differentiation is irrelevant here;

— in cases where woven fabrics are produced, the consumption of sizing agents is allocated to weaving (amounts and types defined as secondary/generic data), but any 'desizing' process shall automatically be allocated to the finishing stage;

— again in cases where a process-oriented selection is opted for, defining the heat-energy mix hinges on level of knowledge of the producer-country (just like for the case of electricity mix) – semi-specific data, i.e.:

  — by default: heat-energy mix with the greatest impacts;

  — otherwise: heat-energy mix of the country concerned.

If the option chosen is to take finisher-factory values, the data to be collected is as follows:

— electricity consumption: primary (or specific) data;

— heat energy consumption per energy source type (gas, fuel oil, coal, etc.): primary (or specific) data;

— water consumption: primary (or specific) data;

— presence and efficiency of the wastewater treatment plant (WWTP): primary (or specific) data.

The methodology to employ for defining 'efficiency' is to be validated at a later date, in response to proposals put forward by the data developers. The approach could, for example, involve a 3-level selection scheme (as already proposed for leather goods): no WWTP or inefficient WWTP / moderate-efficiency WWTP / highly effective WWTP.

— Type and amount of chemicals: secondary (or generic) data

It is effectively difficult to find databased data that can adequately segregate between chemicals, and ecotoxicity did not get selected as a first-line indicator for environmental communication. Note, however, that the good practices guide reads as follows: "*When the guide comes up for revision, points requiring urgent attention will be whether it is relevant to include the ecotoxicity indictor and to integrate the chemicals consumption data (type and amount) as semi-specific data.* "

— Amount of textile waste: secondary (or generic) data

In this case, the data collected is related to the year before the calculation (and thus production).

9.4. Use case

The use-case scenario for wearing apparel depends on mode of care (based on the care labelling) and consumer behaviour patterns.

— Care

Dry-cleaning	Washing		Instructions
forbidden	forbidden		zero-care clothing
	allowed	hand-wash	machine-wash only [a], gentle ('delicates') cycle [b]
		machine-wash	machine-wash only [a], normal cycle
allowed	forbidden		dry-clean only
	allowed	hand-wash	machine-wash only [a], gentle ('delicates') cycle [b]
		machine-wash	machine-wash only [a], normal cycle

[a] Machine-wash, programme temperature:
30 °C for wool or silk-based clothing;
40 °C for other-material clothing.

[b] Gentle 'delicates' cycle: milder wash with reduction of mechanical action (slower spin speeds, smaller loads, etc.).

— Bleaching: bleaching programmes are not considered here.

— Drying

  — If care label states do not tumble dry: natural drying (line-dry or flat dry).

  — If care label states tumble drying possible: 32,2 % in the tumble-dryer, the rest being natural drying.

— Ironing

  — If care label states do not iron: no ironing.

  — If care label states ironing possible: time on ironing per product category is detailed in Annex C.

— Detergent: amount of detergent used is a secondary (or generic) data.

— Professional cleaning (dry-cleaning): professional cleaning (dry-cleaning) is collated as a secondary (or genetic) data integrating electricity, water and perchloroethylene consumption levels and VOC emissions levels.

10. Data validity over time and update frequency

The rules of procedure are specified in the general principles for an environmental communication on mass-market products (Part 0).

11. Validation process for data and results

The validation method for the data and results of the environmental communication currently envisaged for the textiles category is as follows:

The manufacturers keep a product reference file logging the primary (or specific) data. Validation consists in:

— making sure the indicator calculations are reproducible based on the file content;

— looking for proof of the information contained in the file, based on a sampling scheme.

Information related to the elaboration of labelling shall be made free, transparent and accessible to all, via appropriate channels (reports, websites, etc.). This information relates to the hypotheses, the data acquisition methods, the articulation between primary (or specific) and secondary (or generic) data, the emission factors and the assessment's limitations.

There is no obligation to give consumers the data needed to calculate the impact indicators.

This data shall, however, be kept for the market surveillance and inspection authorities, and as such it shall specify and retain (within the bounds of process confidentiality):

— the primary (or specific) data;

— the sources of the secondary (or generic) data;

— the default values adopted.

The data retention period will be set later.

12. Integrating delayed GHG (greenhouse gas) emissions

Clothing, including lingerie, is not considered long-lifespan products.

Consequently, it is not relevant to integrate time-deferred embodied GHG emissions for this category of products.

Annex A
(informative)

Values for the secondary (or generic) and semi-specific data

A.1. Semi-specific data

— **Upstream transportation**

Model assumptions on the production sites

	Worldwide circuit	Turkey [a]	Euromed	Europe	France[b]
Extraction	There is always 20,000 km by ship and 800 km by truck for raw materials procurement				
Spinning	Asia / South America	Asia	Asia	Asia	France
Production of fabrics	Asia / South America	Asia 25 % / Turkey 75 %	Asia 45 % / Turkey 25 % / Europe 30 %	Asia 45 % / Turkey 25 % / Europe 30 %	France
Finishing	Asia / South America	Turkey	Asia 15 % / Turkey 35 % / Europe 50 %	Asia 15 % / Turkey 35% / Europe 50%	France
Make-up	Asia / South America	Turkey	North Africa	Europe	France
Storage	France	France	France	France	France

[a] In cases where make-up is done in North Africa rather than Turkey, it will be necessary to refer back to the Euromed circuit.

[b] Provided each step is done in France, otherwise it will be necessary to refer back to the Europe circuit.

Default modes of transport and distances travelled for the production stages

	WORLDWIDE circuit (Asia / South America)	TURKEY [a] circuit	EUROMED circuit	EUROPE circuit	France [b] circuit
Extraction / production of fibres – Spinning	20,000 km by ship 800 km by truck				
Spinning – Production of fabrics	Asia / South America → Asia / South America 1000 km by truck	- 25 % Asia → Asia 0,25 × 1000 km by truck - 75 % Asia → Turkey 0,75 × (20,000 km by ship + 800 km by truck)	- 45 % Asia → Asia 0,45 × 1000 km by truck - 25 % Asia → Turkey 0,25 × (20,000 km by ship + 800 km by truck) - 30 % Asia → Europe: 0,30 × (20,000 km by ship + 800 km by truck)	- 45 % Asia → Asia 0,45 × 1000 km by truck - 25 % Asia → Turkey 0,25 × (20,000 km by ship + 800 km by truck) - 30 % Asia → Europe: 0,30 × (20,000 km by ship + 800 km by truck)	France → France 500 km by truck
Production of fabrics – Finishing	Asia / South America → Asia / South America 1000 km by truck	- 25 % Asia → Turkey 0,25 × (20,000 km by ship + 800 km by truck) - 75 % Turkey →Turkey 0,75 × 1000 km by truck	- 15 % Asia → Asia 0,15 × 1000 km by truck - 10 % Asia → Turkey 0,10 × (20,000 km by ship + 800 km by truck) - 25 % Turkey → Turkey 0,25 × 1000 km by truck - 30 % Europe → Europe 0,30 × 1000 km by truck - 20 % Asia → Europe 0,20 × (20,000 km by ship + 800 km by truck)	- 15 % Asia → Asia 0,15 × 1000 km by truck - 10 % Asia → Turkey 0,10 × (20,000 km by ship + 800 km by truck) - 25 % Turkey → Turkey 0,25 × 1000 km by truck - 30 % Europe → Europe 0,30 × 1000 km by truck - 20 % Asia → Europe 0,20 × (20,000 km by ship + 800 km by truck)	France → France 500 km by truck
Finishing – Make-up	Asia / South America → Asia / South America 1000 km by truck	Turkey → Turkey 1000 km by truck	- 15 % Asia → North Africa 0,15 × (20,000 km by ship + 800 km by truck) - 35 % Turkey → North Africa 0,35 × (3500 km by ship + 800 km by truck) - 50 % Europe→ North Africa 0,50 × (2500 km by ship + 2000 km by truck)	- 15 % Asia → Europe 0,15 × (20,000 km by ship + 800 km by truck) - 35 % Turkey → Europe 0,35 × (2500 km by truck) - 50 % Europe → Europe 0,50 × (1000 km by truck)	France → France 500 km by truck
Make-up – Storage	Asia / South America → France 50 % by ship / truck (20,000 km / 800 km) 50 % by air / truck (10,000 km / 800 km)	Turkey → France 80 % by ship / truck (3000 km / 2000 km) 20 % by air / truck (3000 km / 1000 km)	North Africa → France 30 km by ship 2000 km by truck	Europe → France 2000 km by truck	France → France 500 km by truck
Recap	30,000 km by ship 4600 km by truck 5000 km by air	37,400 km by ship 5400 km by truck 600 km by air	42,505 km by ship 6030 km by truck	40,000 km by ship 6125 km by truck	20,000 km by ship 2800 km by truck

a In cases where make-up is done in North Africa rather than Turkey, it will be necessary to refer back to the Euromed circuit.

b Provided each step is done in France, otherwise it will be necessary to refer back to the Europe circuit.

— **Composites, laminates and bondings**

Country of production: Default energy mix proposed in the ADEME database

— **Make-up and embroidery**

Processes	Default data values proposed [1]		Sources
Make-up Group 1 (belt, shawl, hat, bag, scarf)	Losses (%)	10	[2]
Make-up Group 2 (sleeveless shirt, t-shirt, bodysuit)	Losses (%)	15	[2]
Make-up Group 3 (waistcoat, skirt, trousers, pullover)	Losses (%)	20	[2]
Make-up Group 4 (blouse, overcoat, jacket, cloak, dress)	Losses (%)	20	[2]
Make-up Group 5 (jeans)	Losses (%)	22	[1]
[1] Référentiel d'Affichage Environnemental « Jean » (BIOIS - Levi Strauss & CO, Ober, Marks & Spencers, Apparel products - 2011) [3] Analyse de l'impact environnemental des produits textiles (RDC – Redcats, Somewhere - 2010)			

— **Fabric manufacturing (woven, knitted, lacework, nonwoven)**

County of manufacture: Default energy mix proposed in the ADEME database

The highest impacts are obtained for high-pick-count and low mass-per-surface-area fabrics, hence the default values defined in the table below.

Categories of woven fabrics manufactured for the following articles of clothing:	**Pick count** (picks/m)		**GSM (mass per unit area)** (g/m²)	
	Standard-practice interval	**Default value**	**Standard-practice interval**	**Default value**
Shawl / scarf / overcoat / cloak	800 to 1600	**1600** (i.e. 16 picks/cm)	140 - 400	**140**
Trousers / jeans / jacket	1700 to 3000	**3000** (i.e. 30 picks/cm)	140 - 400	**140**
Lined garment (overcoat / cloak / jacket / trousers)	3100 to 5000	**5000** (i.e. 50 picks/cm)	70 - 400	**70**
Blouse / shirt / dress / skirt	3100 to 5000	**5000** (i.e. 50 picks/cm)	40 - 200	**40**
Lingerie / silks / cocktail dresses	5100 to 9000	**9000** (i.e. 90 picks/cm)	40 - 150	**40**
Lining	3100 to 5000	**5000** (i.e. 50 picks/cm)	40 - 120	**40**
Windbreaker / puffa	5100 to 9000	**9000** (i.e. 90 picks/cm)	30 - 90	**30**

The following equation can be used to determine unit of weave for a mixed-fabric article *k*, each fabric being characterized by a pick count, a mass per unit area, and a mass.

(Equation 1)

$$unit\ of\ weave = \sum_{k=1}^{n}\left(\frac{pick\ count_k}{GSM_k} \times mass_k\right)$$

where

unit of weave: common-denominator unit characterizing all fabrics required to produce the article (picks per m);

$mass_k$: mass of fabric *k* required to produce the article (g). This mass figure is calculated from the rates of loss and the mass of fabric *k* incorporated in the article (g) -> primary data;

$pick\ count_k$: pick count of fabric *k* (picks per m) -> semi-specific data;

GSM_k: mass per unit area of fabric *k* (g/m²) -> semi-specific data.

The environmental impact tied to the weaving stage is then determined using equation 2:

(Equation 2)

$$impact\ of\ weaving = impact\ by\ unit\ of\ weave \times unit\ of\ weave$$

where

impact of weaving: weaving-stage environmental impact per article (impact);

impact by unit of weave: environmental impact per unit of weave (impact/(picks per m)) -> secondary data;

unit of weave: common-denominator unit characterizing all fabrics required to produce the article (picks per m).

Special case of lined garments: 2 options for calculating unit of weave

<u>Option 1</u>: the only known data is total mass of fabric.

In this case, unit of weave can be evaluated using the following equation:

(Equation 3)

$$unit\ of\ weave = \frac{pick\ count}{GSM} \times mass_{total}$$

In this case, account for the total mass of fabric required to produce the article, $mass_{total}$ (in g), which is calculated from the total mass of fabric incorporated in the article—taken as primary data—and the rates of loss. The pick count and GSM values are taken from the table above, under the category headed “Lined garment (overcoat / cloak / jacket / trousers)”.

Option 2: the mass of each fabric incorporated in the article is known (mass of the lining(s) and mass of the main fabric).

In this case, unit of weave is calculated via equation 1 using the pick count and GSM figures given in the table. The table differentiates the core fabric (modelled on the basis of apparel category) and the lining.

EXAMPLE A lined jacket featuring the core fabric and the lining.

The pick count and GSM values are taken from the table above. For the outer shell fabric, refer back to the category headed “Trousers / jeans / jacket”. For the lining, refer back to the category headed “Lining”.

— **Spinning**

Spinning-mill country: Default energy mix proposed in the ADEME database

A.2. Secondary (or generic) data

Spinning

Manufacture of continuous filament in the case of synthetic or artificial man-made materials: data (including water consumption and heat-energy mix) integrated under production of the fibres.

— **Distribution of the clothing**

Mode of transport: by truck.

Distance travelled: 500 km.

NOTE For depots that are outside France, mode of transport and distance travelled to Paris (see subsection 8.1) need to be added as primary (or specific) data.

— **Use**

Machine wash	Electricity	30 ℃: 0,39 kWh / cycle 40 ℃: 0,554 kWh / cycle 60 ℃: 0.86 kWh / cycle [1][4] *Gentle cycle: the electricity consumption figures given above are halved.*
	Water	29,1 L / cycle [4]
	Detergent	115 mL (standard liquid laundry detergent) for a 4,5 kg-load wash [6][7]
	Cycle	3 kg [4]
Professional cleaning (dry-cleaning)	Electricity	Ⓟ and Ⓕ : 9 kWh/cycle for a 12 kg capacity machine loaded to 80 % capacity or < 1 kWh/kg [4]
	Water	Ⓟ 14 L / kg (wash-phase water can be recovered to cool the machine in the drying phase) Ⓕ 35 L / kg [4]
	Perchloroethylene	Ⓟ and Ⓕ : 0.0125 L / kg [4]
	VOC emissions	10 g / kg [4]
Machine-drying	Electricity	2,01 kWh / cycle for 6 kg [4]
Ironing	Electricity	1,6 kWh / hour Time on ironing: see table below

[1] GfK Retail and Technology, GIFAM GEM Conférence, September 2008 and Energy Foundation.

[2] Retail and Technology, GIFAM GEM, Conference September 2008.

[3] Life Cycle Assessment of Disposable and Reusable Nappies in the UK. Environment Agency May 2005.

[4] Centre Technique de la Teinture et du Nettoyage *www.cttn-iren.com* / Société Française de chimie - *http://www.sfc.fr/Donnees/mine/soch/texsoch.htm*

[5] Environmental Improvement Potentials of Textiles (IMPRO-Textiles).

[6] Sector-specific guide on laundry detergents.

[7] Regulation (EC) No. 648/2004.

No ironing	3 min	6 min
T-shirt/short-sleeve polo shirt/long-sleeve polo shirt, and sleeveless shirt (synthetic) Polyester shorts Underwear (briefs, panties, boxer shorts, thong, tights, leggings) Sock Bra, corset Blouson Gloves Knit cap Scarf Fleece Swimwear Technical jackets (synthetic)	T-shirt/short-sleeve polo shirt/long-sleeve polo shirt, and sleeveless shirt (cotton or cotton blend) Pullover Trousers, jeans, overalls Pyjamas Skirt	Shirt Dress Jacket Coat

— **End-of-life**

See section 6 Conditions for taking into account end-of-life processes

Annex B
(informative)

Criteria grid

	Greenhouse gas emissions	Eutrophication	Acidification	Water consumption	Consumption of non-renewable energy	Depletion of natural non-renewable resources	Aquatic toxicity	Photochemical pollution
Relevance	**Compulsory**							
Evaluation of an environmental issue in the product category and attributable to product	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Importance of the issue		++	+	++++	+	Did not prove standardizable	+++	+++
Differentiation for a majority of products on the market	++ Differentiation possible according to producer countries and energy consumption rates.	+++ Differentiation possible, especially between materials	++ Same as for climate change	+++ Differentiation possible, especially between materials	+ Differentiation possible, especially for the use phase	+	+++ Differentiation possible, especially between materials	Yes (modes of transport, choice of materials, treatment processes and finishing processes)
Redundancy with other indicators			Partial redundancy with climate change (consumption of fossil-fuel resources) and saltwater eutrophication (elementary flows employed in both categories)		Redundancy with consumption of mineral and fossil-fuel resources			
Makes it possible to highlight eco-design opportunities	+++ Process optimization (energy efficiency)	+ Choice and weight of materials	++ Process optimization	+ Choice of materials	-		+ Choice of materials	Yes
Implementation, feasibility								
Possibility/ease to implement for the database	IPCC 2007	ReCiPe 2008	ReCiPe 2008	No. Flow indicator.	No. Flow indicator.	EDIP 97 (2004).	USETOX	ReCiPe 2008

	Greenhouse gas emissions	Eutrophication	Acidification	Water consumption	Consumption of non-renewable energy	Depletion of natural non-renewable resources	Aquatic toxicity	Photochemical pollution
Accessibility to primary (or specific) data required for the organization to characterize the indicator	++ (energy consumption rates, types of distribution-stage transport)	+ (type of distribution-stage transport, cotton source, etc.),	++ (energy consumption rates, types of distribution-stage transport)	+ (production-stage and make-up-stage water consumption)	++ (energy consumption rates, types of distribution-stage transport)	++ (energy consumption rates, types of distribution-stage transport)	1. The LCIs lack detailed data for the production of raw materials like linen and silk Struggle to get the primary data figures on potentially-toxic effluent discharges at the "make-up—manufacture" stages (textile finishing, weaving, etc.) 2. The UseTox methodology is missing characterization factors for certain toxic pollutants 3. The crux of the issue lies with collecting primary (or specific) data, as production is the key phase involved and the only source data on production available is secondary (or generic) data.	+ (yes for choice or materials and transport-related data, no for treatment processes and finishing processes)
Consistency								
Consistency with the recommendations of the ADEME/AFNOR platform	Yes	Yes.	Yes	Flow indicator accepted by the platform	No. Flow indicator.	Yes	Yes	Yes
Life cycle scope	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Product/packaging scope	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

	Greenhouse gas emissions	Eutrophication	Acidification	Water consumption	Consumption of non-renewable energy	Depletion of natural non-renewable resources	Aquatic toxicity	Photochemical pollution
Robustness, reliability								
Scientific and international recognition	Featured in the ILCD handbook	Featured in the ILCD handbook	Featured in the ILCD handbook	Not featured in the ILCD handbook	Not featured in the ILCD handbook	Featured in the ILCD handbook	Featured in the ILCD handbook	Featured in the ILCD handbook
Methodological robustness	IPCC 2007. Consensus-built method ILCD class-I	ReCiPe 2008. Consensus-built method ILCD class-II	ReCiPe 2008. Consensus-built method ILCD class-II	Temporary methodology defined in BP X 30-323	ReCiPe 2008. Consensus-built method	ILCD class-II	ILCD class-II	ILCD class-II
Reliability of the modelling component (computation rule)								
Expected reliability of primary (or specific) data	Good on the country of production Moderate on electricity and heat energy consumption through the production cycle	Good on the country of production Moderate on electricity and heat energy consumption through the production cycle	Good on the country of production Moderate on electricity and heat energy consumption through the production cycle	Moderate on water consumption	Good on the country of production Moderate on electricity and heat energy consumption through the production cycle	Good on the country of production Moderate on electricity and heat energy consumption through the production cycle	Poor – little primary (or specific) data available	Moderate-to-poor
Reliability of the secondary (or generic) data available	Moderate-to-poor for silk	Moderate-to-poor for silk	Moderate-to-poor for silk	Moderate for cotton LCIs Moderate-to-poor for silk	Moderate-to-poor for silk	Moderate-to-poor for silk	Moderate for cotton LCIs	
Conclusion								
Indicator selected?	**Indicator selected**	**Indicator selected**	**Indicator excluded as there is redundancy with climate change**	**Indicator selected**	**Indicator excluded**	**Indicator excluded**	**Indicator excluded**	**Indicator excluded**

Other indicators

	Destruction of the ozone layer	Human toxicity (with or without carcinogenic potential)	Depletion of water resources	Inorganic particulate emissions	Ionizing radiation	Terrestrial eutrophication	Ecotoxicity (terrestrial and saltwater)	Land and soil change
Conclusion								
Indicator selected?	**Not studied**	**Not studied**	**Studied under "water consumption"**	**Not studied**	**Not studied**	**Not studied**	**Not studied**	**Not studied**

Annex C
(informative)

Points to be further specified when the guide comes up for 1st revision

AT each revision, all methodology-related points need to be re-addressed.

When the guide next comes up for revision, the following points warrant close attention;

Specifics of technical clothing

It will be necessary to work on the specificities of technical clothing. The bulk of the work will focus on defining this category of products and devising a method for determining a lifespan differentiated down to article level.

Care phase

It will be necessary to consolidate the number of care cycles completed during the use-phase, per category of clothing. Along the same lines, there is room to improve the modelling of patterns of use of tumble-dryers.

List of indicators

The guide revision process will offer the opportunity to confirm or amend the list of indicators adopted in light of feedback captured by the working group. In-depth discussions on eutrophication will provide grounds to confirm or change the sub-indicator adopted for this particular environmental issue (freshwater eutrophication).

Production of fabrics

The modelling of the weaving stage warrants full-scale revision to be improved. Likewise for the knitting stage.

Annex D
(informative)

Rationales

Definition of the functional unit

WG5 Apparel was forced to address the issue of integrating an absolute-value lifespan of a piece of clothing into the definition of the FU. However, without access to reliable sources, and despite the best efforts of an *ad hoc* focus group on the in-wear durability of clothing—durability that is essentially dictated by the effects of care (shrinkage/stretching, colourfastness/fade, etc.) and use (changes in surface look, such as pilling; wear due to rubbing, etc.)—WG5 Clothing was unable to come up with an explicitly time-framed definition of the FU.

Note that the information on user behaviour patterns, which concern the use-phase of the life cycle, has never been explored through in-depth studies.

This is why, in an effort to ensure that the definition of FU factors in the entire life cycle, including the use-phase, the FU adopted is predicated on a number of care cycles undergone by the clothing—clothing design accounts for care by the user.

This definition of the FU thus implicitly gives a “relative” lifespan (that is equally dependent on each individual user’s wear-and-care regime). In other words, under the same care conditions, the same piece of clothing may last two years for one user and three years for another user depending how each of them uses the article (how often they wear it and care it).

List of organizations involved in the follow-up, drafting and/or making of this guide

3 SUISSES FRANCE

ABCVERT

ACDLEC - ASSO CTRES DISTRIBUTEURS E LECLERC

ACV PLUS

ADEIC

ADEME

AFNOR

AFNOR CERTIFICATION

AFNOR DEVELOPPEMENT

AIGLE INTERNATIONAL SA

AIR - AGENCE INNOVATION RESPONSABLE

AIRELE

ALSATEXTILES

ALTADEV

ALTERNATIVE CARBONE

ANNE MARIE JOANNES DESPAUX

APESA INNOVATION

APTE SYSTEM

ASQUAL

ASSOCIATION UNIVERSAL LOVE

ASTEKA SARL

ATTITUDE DEVELOPPEMENT SAS

BABOLAT VS SA

BELMART SAS - DAMART

BENOIT DANDINE

BIENS COMMUNS

BIO INTELLIGENCE SERVICE

BLONDIN FLORENT

BNITH

BOSSA VERDE

BUREAU VERITAS

BUREAU VERITAS CPS FRANCE

BUYYOURWAY

C2MTEX

CACHE CACHE

CAMPINGAZ - SOCIETE APPLICATION DES GAZ

CARBONETEX

CAROLINE SOREZ - CAECO

CARREFOUR CMI

CARTON ONDULE DE FRANCE

CCD - CENTRE DE LA CONSOMMATION DURABLE

CCI DE SEINE ET MARNE

CCI REGION PARIS ILE DE FRANCE - BIOP

CEC - CIE EUROPEENNE DE LA CHAUSSURE

CELIO INTERNATIONAL

CGDD - COMMISSARIAT GEN DEVELOPPEMENT DURABLE

CHANEL COORDINATION SAS

CHANTELLE

CHRISTIAN DIOR COUTURE

CHRISTOPHE NADAL

CLIMAT MUNDI

CMC

CODDE - CONCEPTION DVPT DURABLE ENVT

COFRA PARIS

COFREET

COMPTOIR DES COTONNIERS FRANCE

COOPERATIVE MU

CRP HENRI TUDOR

CSO CNRS

CTC

CTP - CENTRE TECHNIQUE DU PAPIER

CWF CHILDREN WORLDWIDE FASHION

CYCLECO

DAMART SERVIPOSTE

DBAPPAREL

DECATHLON

DECATHLON SA - B TWIN

DELAPLACE CONSULTING

DELTA PLUS GROUP SA

DEVANLAY SA - DIV LACOSTE

DGCCRF

DGE / SEN

DHJ INTERNATIONAL SAS

DIRAMODE-PIMKIE

DMC

ECO CONCEVOIR

ECOACT

ECO-ADAPT

ECOEFF

ECOPULSE SARL

ECOVER FRANCE

EFFICIENT INNOVATION

EMINENCE SAS

ENVEHO

ERM FRANCE

ERNST&YOUNG AND ASSOCIATES EYES

ESPRIT EUROPE SERVICES GMBH

ETABLISSEMENTS PIERRE ROCLE

ETHIC AND LIFE

EVEA

EVEIO

FCBA

FCD - FEDE COMMERCE DISTRIBUTION

FCJT - FEDERATION CHAUSSURES JOUETS & TEXTILES

FED FSE TANNERIE MEGISSERIE

FEDERATION DE LA MAILLE ET DE LA LINGERIE

FEU VERT

FFC - FED FRANCAISE CHAUSSURE

FIFAS

FIZIANS ENVIRONNEMENT

FLORENT CHALOT

FLY

FPS - FED PRO ENTREPRISES SPORTS LOISIRS

GENERATION PLUME

GINGKO 21

GIRARDOT CEDRIC - CEDD

GISBERT ANNE FLORENCE

GREEN CAPITAL - LE CHEQUIER VERT

GREENEXT SERVICE

GROUP HYGIENE

GSA - GROUPE SALMON ARC EN CIEL SAS

H&M HENNES & MAURITZ

H3C-CARAIBES

HACOT COLOMBIER SA

HARP & ASSOCIES

HERMES INTERNATIONAL

HOLDING TEXTILE HERMES

HOP CUBE

I CARE ENVIRONNEMENT

IFM - INSTITUT FRANCAIS DE LA MODE

IFTH

IISG - ISTITUTO ITALIANO SICUREZZA DEI GIOCATTOLI

INTERTEK SUSTAINABILITY SOLUTIONS

JULES

KIABI EUROPE

KINDY

KOREA INSTITUTE FOR TECHNOLOGY - KITECH

LABELIA CONSEIL ENVIRONNEMENT

LES TISSAGES DE CHARLIEU

LIFE CYCLE STRATEGIES PTY LTD

MAISONS DU MONDE

MARIA FORTUNATO

MARION HUET

MAXIME CHOISEL

MEV - MAITRISE DE L ENERGIE EN VILLE

MOET HENNESSY

MONOPRIX SA

MOUZON TULLE GESTION

OIA SNC - AUCHAN

OKAIDI

OLIVIER RAYNAUD

OUTDOOR SPORTS VALLEY

OXYBUL EVEIL & JEUX

PATAGONIA EUROPE

PHILIPPE SONNETTE

POLE TEXTILE ALSACE

PPR - PINAULT PRINTEMPS REDOUTE

PROMOD

PROMOD SA

QUANTIS

RAUTUREAU APPLE SHOES

RDC ENVIRONNEMENT

RHOVYL SAS

ROGER WILLI

SALOMON SAS

SAMSON SAS

SAS CORDERIE MEYER SANSBOEUF

SC GALEC - GROUPEMENT EDOUARD LECLERC

SGS ICS

SGS MANAGEMENT SERVICES

SGS NORTH AMERICA INC.

SIGVARIS

SILVE

SIPLEC - SOC D'IMPORTATION LECLERC

SOKOA

SOLODI

SONOVISION

STE NOUVELLE INTERPLUME

STEPHANE RABEHANTA

STOCKETHIC

STRATEGREEN

SUBRENAT EXPANSION SA

SUSTAIN LTD

SYLVIE PUGNET

SYNDICAT NATIONAL COMMERC DE CHAUSSURE

SYNDICAT NATIONAL DES PLUMES ET DUVETS

SYNDICAT TEXTILE DE L'EST

TERRA 21

TF CREATION

TFT - THE FOREST TRUST

TISSAGE GERARDMER GARNIER-THIEBAUT

TISSUS GISELE

TRICOTAGE DES VOSGES

TUDO BOM

UCV - UNION GRAND COMMERCE CTRE VILLE

UFIH

UIT - UNION INDUSTRIES TEXTILES

UNITEX LYON & REGION

UNIVERSITE DE TECHNOLOGIE DE TROYES - SCD

UNIVERSITE PARIS DAUPHINE

VALOREX

VERTBAUDET

VF CORPORATION

WEAVE AIR

WECF FRANCE

WL GORE & ASSOCIATES GMBH

YAMANA

YOLIMA FAUCHET

YVES SAINT LAURENT

List of organizations attending the validation of this guide (at the Environmental Communication platform meeting held 25 June 2013)

ADEIC
ADEME
AFISE
AFNOR CERTIFICATION
L'ALLIANCE 7
ANIA
BNITH
CNIEL
COHN&WOLFE
CONSEIL NATIONAL DE L'EMBALLAGE
COOPERATIVE MU
CGDD - COMMISSARIAT GAL DEVELOPPEMENT DURABLE
CHANTELLE
COMITE FRANCECLAT / CETEHOR
DGALN - DG AMENAGEMENT LOGEMENT NATURE
ECOACT
ECOFOLIO
ECO SYSTEMES
ELIPSO
EMC DISTRIBUTION
ENVIRO STRATEGIES
ERNST&YOUNG AND ASSOCIATES EYES
FACCO
FPS - FED PRO ENTREPRISES SPORTS LOISIRS
GROUPE BEL
GIFAM
GS1 FRANCE
HARP & ASSOCIES
INSTITUT DES CORPS GRAS
INVIVO AGRO SOLUTIONS
LUDENDO INDUSTRIES
MANUFACTURE FSE PNEUMATIQUES MICHELIN
MINISTERE DE L'AGRICULTURE - DGPAAT
MOBIVIA GROUPE
OLIVIER D'ERCEVILLE
RDC ENVIRONNEMENT
RENZ SARL
SGS NORTH AMERICA INC.
SILVE
SMOBY TOYS SAS
SNFBM
QUANTIS

L'ADEME EN BREF

L'Agence de l'Environnement et de la Maîtrise de l'Énergie (ADEME) participe à la mise en œuvre des politiques publiques dans les domaines de l'environnement, de l'énergie et du développement durable. Afin de leur permettre de progresser dans leur démarche environnementale, l'agence met à disposition des entreprises, des collectivités locales, des pouvoirs publics et du grand public, ses capacités d'expertise et de conseil. Elle aide en outre au financement de projets, de la recherche à la mise en œuvre et ce, dans les domaines suivants : la gestion des déchets, la préservation des sols, l'efficacité énergétique et les énergies renouvelables, la qualité de l'air et la lutte contre le bruit.

L'ADEME est un établissement public sous la tutelle conjointe du ministère de l'Écologie, du Développement durable et de l'Énergie et du ministère de l'Enseignement supérieur et de la Recherche.

ADEME
Agence de l'Environnement et de la Maîtrise de l'Energie

Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE
MINISTÈRE DE L'ÉCOLOGIE, DU DÉVELOPPEMENT DURABLE ET DE L'ÉNERGIE
MINISTÈRE DE L'ENSEIGNEMENT SUPÉRIEUR ET DE LA RECHERCHE

ADEME
20, avenue du Grésillé
BP 90406 | 49004 Angers Cedex 01

www.ademe.fr