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APPENDIX A

Laundry interview questions

Purpose: Explore the perspective of laundries on a project with circularity processes as well as understanding the level of awareness and compromise they have with the management of their solid waste.

Overview of the interview process

Participants: Industrial laundries in Catalonia that offer textile renting services.

Methodology: Girbau took ownership of this interviews and contacted the laundries via email and phone call.

Interview questions:

1. What is the composition of the textile you work with, is it 100% cotton or other compositions (in flat textile)?
2. How many cycles does each piece of flat textile normally last?
3. When do you decide to retire the piece and for what reasons?
4. How many kg of pieces are retired each week/month? (What are your total purchases?)
5. What approximate proportion is retired versus the total production each month/year?
6. What do you do with this retired textile?
7. Do you receive anything in exchange for retired textile?

APPENDIX B

Waste management/recycling companies interview questions

Purpose: Explore the perspective of these companies on a project with circularity processes as well as understanding the how the industry is currently managing the waste they generate.

Overview of the interview process

Participants: Waste management or recycling companies that worked with solid textile waste.

Methodology: We identified this companies from the Circular Pact members and reached out via phone call.

Interview questions:

- i. What is the end product generated by your company?
 1. What is the composition of said product?
 2. What is the end product used for/by whom is it used?
 - ii. What does the process look like from acquisition of the textiles (from where do you receive the textiles) up until the end? Are you involved in any spinning, or only shredding of the textiles? Is there any process outsourced?
- iii. How do you manage textiles of different compositions?
- iv. At what average price/kg do you buy this textile waste?

APPENDIX C

Hotel group manager interview

Purpose: Understand the establishments' practices in terms of room compositions and textiles' washing processes.

Overview of the interview process

Participants: Hotel group manager

Methodology: We were introduced by EADA's program director of the Master in Tourism & hospitality management and we further contacted him via email.

Interview questions:

- v. How many days a year is your hotel open?
 - vi. What are the criteria for changing the textiles? (e.g.: every two days and every time a guest checks out)
- vii. How many beds does your hotel have?
 - viii. What is the % or proportion of double and single beds out of the total amount of beds in your hotel? (e.g.: 2/3 are single beds, and 1/3 are double)
 - ix. What are the bed compositions and quantity of each textile? (e.g.: 4 pillow covers per double bed and 2 per single bed)
- x. How many towels does each guest get? (e.g. one hand towel, and one bath towel)

APPENDIX D

Hotel group manager responses

xi. How many days a year is your hotel open?

- All year.

xii. What are the criteria for changing the textiles? (e.g.: every two days and every time a guest checks out)

- for ecohotels, you change the room one night out of three.
- For upper scale you change one out of two or when a guests as for it no matter the day.

xiii. How many beds does your hotel have?

- Ibis Mollet 2* - 100 rooms (20% twins)
- Ibis Ripollet 2* - 128 rooms (10% twins)
- Novotel Cornella 4* - 153 rooms (10% twins)
- Indigo Barcelona Plaza España 4* - 189 rooms (20% twins)

xiv. What is the % or proportion of double and single beds out of the total amount of beds in your hotel? (e.g.: 2/3 are single beds, and 1/3 are double)

- see above.

xv. What are the bed compositions and quantity of each textile? (e.g.: 4 pillow covers per double bed and 2 per single bed)

- All standards are the same, sheet, duvet cover, pillow cover.
- The composition varies on a % of polyester and cotton, upper in the scale, the less polyester you will use.

xvi. How many towels does each guest get? (e.g. one hand towel, and one bath towel)

- In economic hotels - 1 hand towel, 1 bath towel, 1 bath rug
- In middle hotels – Idem
- In upper hotels - 2 hand towels, 4 bath towels, 1 bathmat, 1 bathrobe, 1 make up hand towel.
- The quality and composition might vary depending on the quality of the hotel (adding more cotton conglomeration for more quality).

APPENDIX E

Raw material price trends

Access the raw material price comparative in the following link:

https://docs.google.com/spreadsheets/d/16joEDbstNW8_79n4ulSQObOMtEBdCE8w/edit?usp=sharing&ouid=105469738328967455597&rtpof=true&sd=true

APPENDIX F

Laundries' interview responses

QUESTION	Composition	Cycles	Discarding criteria	Discarding weight	Discarding weight vs total production	Discarding solution	Value of discard textiles
<i>PARTICIPANT</i>							
<i>La Soca Laundry</i>	100% cotton, with some linen/cotton mix for the tablecloths	no data	no data	no data	0,24% of 6M kilos	Ragman	"symbolic payment"
<i>Residencia Mas Angli</i>	mixed textile: 90% cotton, 10% polyester.	no data	grey coloring, holes	no data	new order every 9 months (2000€-3000€).	Downgraded and then thrown away	N/A
<i>Interhospitalaria Laundry</i>	mixed textile: cottonVpolyester (50/50 or 70/30) or 100% polyester	80	after cycle number completed	1000kg/month	1%	authorized companies take care of it	N/A
<i>Axioma Solutions Industrial Laundry</i>	100% cotton	90-100	number completed or after breakage (holes)	250kg/month	0,50%	they give to a recycler	no data
<i>Lavanderia de Hipotels</i>	100% cotton	8 a 10 seasons	breakage	high season 15000kg (100kg due to breakage)	5%	it is donated to an NGO	no data
<i>Lavanderia Lavamas, Cordoba</i>	cotton, except for some items with a 50/50 composition, such as bed spreads and most table linens, the latter also include poly/linen blends	150	breakage, premature or stains	no data	0,50%	authorized company takes care of it	depending on whether it is delivered separately, flat plush or all together
<i>Lavanderia Central Senator Hotels & resorts</i>	50% polyester - 50% cotton	100kg/month	breakage, premature or stains	500 kilos/year	no data	repurposed	donation
<i>Lavandería Cotton</i>	Normally 100% cotton for towels and terrycloth and 50% cotton +50% polyester for plain clothes.	2 years with 2 cycles weekly	breakage, premature or stains	100kg/month	750.000kg/year	sold to a repurposing company	0,35/kg

APPENDIX G

Waste management/recycling companies interview responses

Company Name	Company Type	Info Obtained From Calling
ANTEX - ANGLES TEXTIL S.A.	Textiles	They only recycle synthetic fibers like polyester, however, they only accept waste from certified treatment plants. They have rigorous quality standards and cannot accept any type of waste.
Augusto Bellini	Manufacturer	No info
Col&Bri	Waste Manager/Textiles	They only receive 1,000 kg minimum and they buy 1 EUR per kg normally; however, the more quantity the less they pay but it will never pass 1 EUR
Deleite Wear	Waste Manager/Manufacturer	Depends on the hotel, their partnership, their type and quality of waste. Their last price given for cotton waste was 1 EURO
Francisco Pagès Valentí	Textiles	They only buy cotton that has been already shredded.
Griñó	Waste manager	They valorize the waste according to the type of project and waste. They deal with a lot of different type of waste since their business consists of making energy with the waste produced
Hilaturas Arnau	Textiles	They don't buy the waste. Because in their business they transform the waste into yarns and give it back to the company. He told me nobody wants the waste from others because it can compromise the quality. They only accept waste above the 150 kg.
Hilaturas Jesus Rubio	Textiles	They don't accept cotton and only buy waste already shredded. They also recycle in big quantities. However they buy the cotton already shredded between 0.6-0.7 EUR per kg
Hilosa	Textiles	They are manufacturers of yarns. However, they only recycle from clothing post consumer
Margasa Proyectos e Ingeniería Textil, SL	Textiles	Their business model is only to recycle, so you contact them in order to produce for yourself recycled textile
Recovo	Waste Manager	For the recycling of waste they require a minimum of 1000 kg to manage the project. Once you have enough quantity they will evaluate the waste and valorize it.
Rutex	Manufacturer	No info
Teixits Torné SL	Textiles	They produce textile with virgin materials, however, their sustainable strategy is to recover the waste the own company generates and recycle it.
Textile BCH	Textiles	They only produce textiles. And in order to produce recycled textiles they have an alliance with Recovo.

APPENDIX H

Summary of research done on externalities

Interesting Papers	Year of Publication	Journal	Aspects Analysed in LCA																							
			GHG emission	Water footprint	Air pollution	Land use	Terrestrial acid/nutrient	Aquatic acidification	Aquatic eutrophication	Global Warming	Non-renew. energy	Mineral extraction	Climate Change	Ozone Depletion	Fresh Water Ecotoxicity	Human Toxicity	Marine Ecotoxicity	Water Depletion	Energy Use	Acidification	Eutrophication	Non-renewable resources	Oxidant formation	Human health impacts	Abiotic Depletion	Others
Life cycle environmental impact assessment of cotton recycling and the benefits of a Take-Back system	2023	Resources, Conservation & Recycling Advances (RCR Advances)	X	X	X	X																				
Comparative life cycle assessment of cotton and other natural fibers for textile applications	2019	Natural Fibers and Composites: Science and Applications				X	X	X	X	X	X	X														
A systematic review of the life cycle environmental performance of cotton textile products	2023	Science of the Total Environment					X		X																	
... Progress on Life Cycle Sustainability Assessment in Textile Industry: Applications for Environmental	2023	Progress on Life Cycle Assessment in Textiles and Clothing (book)																								

