

Table 1: Sustainability and the CE in the Fashion Industry Literature

	Sustainability	CE	
		Business Model	Product Lifecycle
Beh et al., 2016		X	
Bocken et al., 2015		X	
Brundtland, 1987	X		
Centobelli et al., 2020		X	
Choi, 2017		X	
Cocquyt et al., 2020	X		
Crainer, 2013		X	
Evans et al., 2017		X	
Ferasso et al., 2020		X	
Flanders DC, 2020			X
Fletcher & Tham, 2014		X	
Franco, 2017		X	
Geissdoerfer et al., 2017	X		
Ghosh et al., 2017		X	
Hazen et al., 2017		X	
Hawley, 2008		X	
Kant Hvass & Pedersen, 2019		X	
Linder & Williander, 2017		X	
McKinsey & Company, 2019		X	
Mishra et al., 2020		X	
Morlet, 2017	X		
Murray et al., 2017	X		
Niinimäki, 2017	X		
Pal & Gander, 2018		X	
Pedersen et al., 2018		X	
Stewart & Niero, 2018		X	
Sener et al., 2019	X		
Todeschini et al., 2017		X	
Vecchi, 2020			X
Yuan et al., 2006		X	

X: relevant focus

Table 2: The stages of the Close the Loop Framework and the CE key principles involved					
		Product-life extension	Reuse	Recycle	Remanufacturing
Resources	Deciding on what fabrics and materials to use – “materials matter”	✓	✓	✓	✓
Production	Turning design into physical products focusing on sustainability – “produce clean, local and with respect”	✓	✓	✓	✓
Retail	“Hack the take-make-waste model”	✓	✓	✓	✓
Consumption	How to plan and fill the wardrobe - “go slow and take good care”	✓	✓	✓	✓
End-of-Life	Considering alternatives to throwing garments - “consider every ending as a new beginning”.	✓	✓	✓	✓

Table 3: Interview Protocol

Themes	Interview Topics
Company Profile	Interviewees' position Business sector Stage in the supply chain Size of the company
Resources	Low-impact materials Recycled or recyclable fibers Reuse and redesign waste
Design	Design to last Design to rebirth Design to minimize waste Design to reduce for rapid consumption Design with new technologies
Production	Reduce the environmental impact Experiment with new technologies Produce locally Match supply and demand avoid waste and surplus Long life and durability
Retail	Keep your textiles in the loop Rethink the definition of ownership More service-oriented business Second life in the online marketplace The impact of your marketing
Consumption	Plan your wardrobe Teaching consumers how to take good care of your clothes Facilitating swap, rent or second-hand buy Equipping the consumers with some basic skills Take-back systems
End-of-life	Biodegrade organic textile Create new life through redesign and upcycling Textile recycling Organize collection and take-back systems Prolong life through reuse

Table 4: CE Practices by Stage of the Close the Loop framework

	Candiani Denim				WRAD				Dress You Can				Gucci			
	Product-life extension	Reuse	Recycle	Resource preservation	Product-life extension	Reuse	Recycle	Resource preservation	Product-life extension	Reuse	Recycle	Resource preservation	Product-life extension	Reuse	Recycle	Resource preservation
Resources	Production of premium denim that is long lasting	Recovery of water Recovery of waste heat Recovery of emitted CO2 Recovery of 100% of cotton waste	A closed-loop system of dye baths in 1976 Fabrics are produced using 100% recycled fibers Recycling of 100% of cotton waste	Savings of water per pair of jeans Savings linked to Indigo juice and Kitotex Waste reduction going to landfill Recovery of CO2			Upcycling industrial waste	Use of 100% organic cotton						Reuse around 11 tons of leather scraps "Re-verso" Project to reuse wool scraps	Newlife polyester, ECONYL regenerated nylon Switch from virgin plastic to recycled	The "Scrap-Less" project Experimenting with metal-free leather treatment Cutting leather before tanning 3D printers Reduction in the energy, water consumption and CO2 production
Design	Textile design to last, to recycle, to minimize waste and to reduce the need for rapid consumption		The "Re-Gen" Project		Long-lasting products by using one single fiber	"What is Real?" collection made of reused military fabrics	One single fiber products can more easily be recycled								Prototypes cannot be recycled	
Production			Effective textile recycling					Savings linked to the production of Graphi-Tee and to smart-indigo dyeing process				Rental service is potentially apt to curb production			Upcycling of saris	
Retail									The lifecycle of the clothes is extended through the rental service	"The wardrobe Airbnb"						
Consumption	Design and production of durable premium denim to curb overconsumption					Non-profit educational movement			Cleaning, repairing services, styling advice, made-to-measure clothing to curb overconsumption			Rental service is potentially apt to curb consumption	Personalization might clash with the stylistic view of the fashion house and is limited		Increased amount of recycled and plant-based fiber	
End-of-Life			Waste from jute bags, fibers and semi-finished products is recycled by external companies	The "Re-Last" Programme	Avoidance of short-lived materials	Reusable packaging	Take-back programs			Wooden hangers, clothing covers reused every time				"I was a Sari"		

Table 5. CE Implementation – Challenges and Opportunities into Competitive Advantage			
Case Study	Challenges	Opportunities	Competitive Advantage
Candiani Denim	Detrimental environmental impact of production in terms of resources (Technical Challenge)	Production process that makes efficient use of resources	<ul style="list-style-type: none"> • Development of unique dyeing technologies • Production of long-lasting denim textile • Reduction of waste using recycled fiber
	Raw materials mostly from developing countries that provide precarious working conditions to the workers (Operational Challenge)	Raw materials sourced locally from environmentally friendly sources	Realization of durable and biodegradable denim fabric
WRAD	A catastrophic event for society (i.e. Rana Plaza event) (Consumer-related Challenge)	Satisfying a growing new set of consumers' needs	<ul style="list-style-type: none"> • Realization of the Graphi-Tee –core element of WRAD's distinctive design • Development of holistic approach to more conscious consumption
	Waste of an enormous amount of resources in the production of t-shirts (Technical Challenge)	Production process with upcycled resources and industrial waste	<ul style="list-style-type: none"> • Reduction of waste and energy consumption • Avoid using short-lived materials • Realization of durable, reusable and recyclable products
Dress You Can	Overconsumption and waste , associated with fashion-driven consumer behavior (Consumer-related Challenge)	Fashion renting coupled with added value services	Development of a business model that fosters a pattern of conscious consumption
Gucci	Luxury industry often associated with detrimental effects both for the environment and for society at large (Consumer-related Challenge)	A different image to inform the consumers' perceptions of the luxury market segment	Dedicated projects to reduce environmental impact and to provide social value
	Detrimental impacts of tanneries (Technical Challenge)	Reduction of waste from leather scraps and reduce the chemicals for tanning	Reuse of 11 tons of scrap leather by partnering with social cooperatives
	Energy and resource consumption of the textile industry (Technical Challenge)	Recycled plant-based materials such as Newlife polyester and ECONYL	Cost effective practice that leads to the optimization of resources
	Exploitation of resources from developing countries (Operational & Consumer-related Challenge)	Sourcing in a responsible manner	The Responsible Jewellery Council Chain of Custody certification scheme
	Lack of accountability of the luxury global players (Consumer-related Challenge)	Access to local production in Tuscany and in Campania.	Capitalizing on the country-of-origin effect with the “Made in Italy” label
	Negative environmental impact of cashmere (Technical Challenge)	Use of reformed wool scraps	Cost effective practice that leads to the optimization of resources
	Thousands of discarded saris every year	Employment of disadvantaged women	<ul style="list-style-type: none"> • “I was a Sari” project allows Gucci to produce new and

	(Operational Challenge)		original fashion items and accessories <ul style="list-style-type: none"> • New value for saris in the global fashion market
	Overconsumption (Consumer-related Challenge)	Personalization strengthen the emotional attachment with products to lengthen their lifecycle	Products can become bespoke and unique

Figure 1: Data structure

