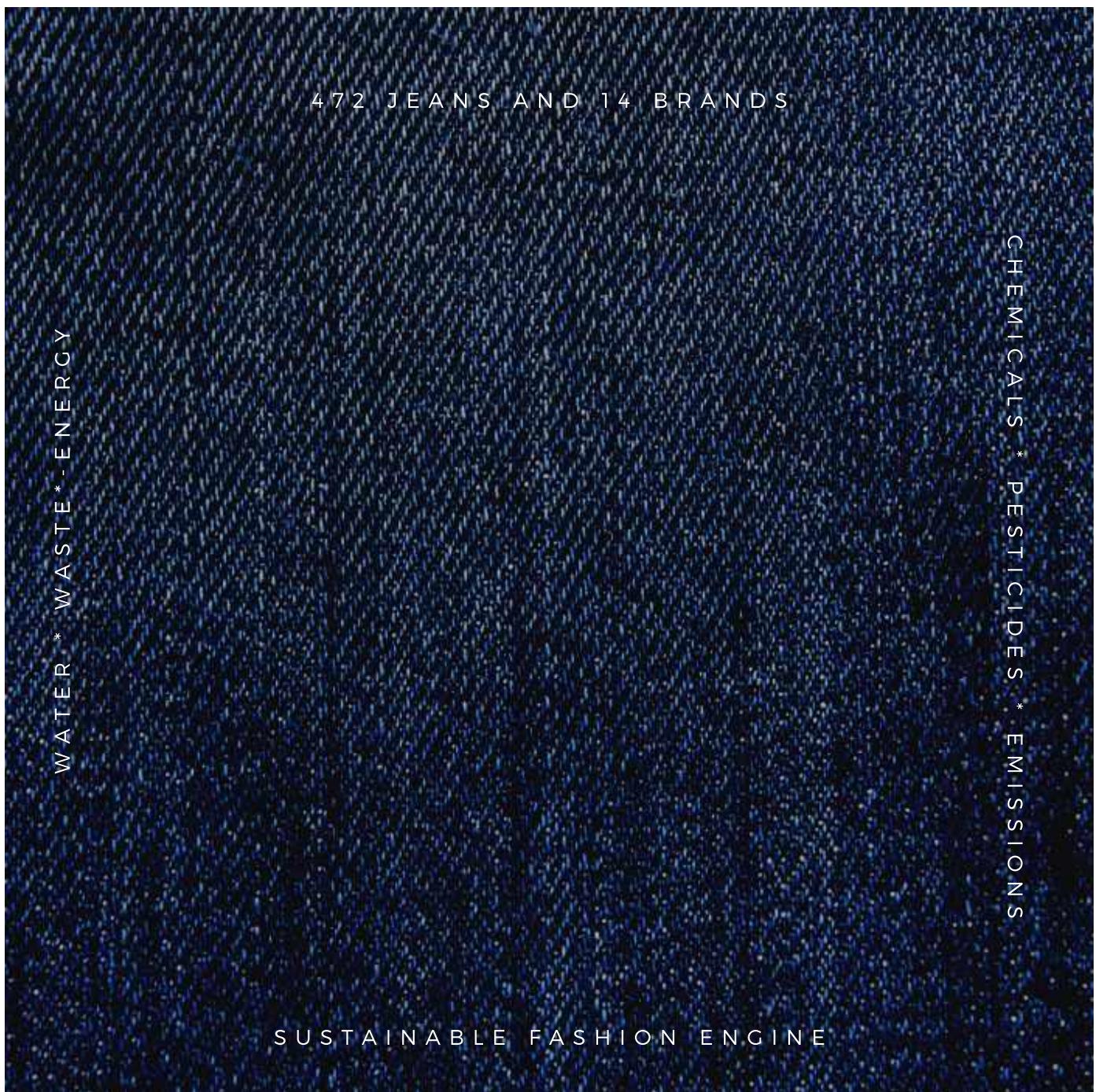


PROJECT CECE



JEANS

SUSTAINABLE IMPACT ANALYSIS

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GOALS

WHAT DO WE AIM FOR WITH THIS PROJECT?

1

To increase transparency

2

To quantify the impact that Project Cece is making

3

To identify gaps in transparency

4

To provide our customers with data on their sustainable choices

What are you doing good, in numbers?

THE ANALYSIS

WHAT ARE WE TAKING INTO ACCOUNT?



Complexity

There is a large amount of data available on the impact and footprint of the different materials, however, this data is not consistent as the fashion industry is enormous, quick and therefore very complex. Accordingly, a selection is made to provide the most valuable, transparent and consistent data as possible.

Focus

The following phases of the total supply chain are taken into account: material growth (fiber production), textile production and textile manufacturing. Due to lack of transparent data, the transportation and the consumer use phase are left out of the analysis

Comparison

Organic cotton and recycled cotton are compared to conventional cotton. Tencel is as well compared to conventional cotton, as Tencel is often found as a sustainable alternative to cotton.

Sources

This analysis is based on sustainability reports from the brands as well as general life-cycle assessment reports.

Measures



Water



Toxic chemicals and
pesticides



Waste



Energy



Emissions



ASSUMPTIONS

WHERE DO WE BASE OUR ANALYSIS ON?



The impact is calculated taking the following weights into account¹

Jeans: 500 g

Cotton t-shirt: 150 g (short sleeve) : 200 g (long sleeve)



Jeans are taken into account when made out of cotton-denim or tencel-denim.



To calculate the numerical impacts, the data is normalized to 1 kg to translate it to the weight of the certain textile product.



The weight of one jeans is equal to amount of cotton required for that jeans. The data that is used is cotton lint data.



For this analysis, the impact of the textiles and production process is analysed, leaving the impact of the transport and packaging out of account as this differs per brand and we currently have not enough data available to provide truthful information.



7000 L water is used per jeans in **the total process** of cotton growing (blue water), ginning, spinning, dyeing and weaving. This is an average of different countries and production processes.²



The weight of a conventional cotton garment is equal to the weight of an organic cotton garment piece³



For the production of 1 kg conventional cotton, up to 3 kg chemicals are used.⁴



The weight of Tencel products is equal to the weight of conventional products.



The growth process of conventional cotton requires 2120 L **blue** water/ kg. Therefore, 1060 L blue water is required for the cotton lint of one jeans.⁵



The growth process of organic cotton requires 182 L **blue** water/kg.⁵ Therefore, 91 L blue water is required for the cotton lint of one organic jeans.



The CO₂ emissions are only taking the production process into account: the transportation process is excluded from this analysis.



If a certain percentage of a brand collection is made from recycled materials, this is calculated as the percentage of each product from this collection in order to provide an approximate number of how much kg is saved from landfill.



There are 472 jeans on Project Cece, from 14 brands.





THE BRANDS

alchemist

bleed

wunder[werk]
more than organic

Kings Of Indigo.

enna[®]
NATURMODE



MUD JEANS



ARMEDANGELS



BRAINTREE
environmental clothing since 1995

Nudie Jeans co

brainshirt.
where ratio meets fashion

LANIUS[®]

People Tree

Sustainable and Fair Trade Fashion



b.young[®]

W A T E R





COTTON GROWTH

BLUE WATER CONSUMPTION DURING THE GROWTH PROCESS

Blue Water Consumption

The blue water consumption is the amount of water that has been sourced from surface or groundwater resources: it takes all fresh water into account, except for rainwater.⁵ Irrigated agriculture has a blue water footprint. In this section, we focus solely on *blue water* and on *water consumption*: which is based on the losses of freshwater during water use. Hereby we follow the logic of Textile Exchange,^{5,6} who argue based on ISO14046 that blue water consumption is the impact category with highest environmental relevance and therefore most interesting to take into account while conducting a LCA. They assume that precipitation (green water footprint) would follow the natural hydrologic cycle regardless of the land use type and will eventually transpire or evaporate through the plants: therefore it has no environmental burden.⁶ However, it remains arguable when green water should or should not be taken into account during water assessments.

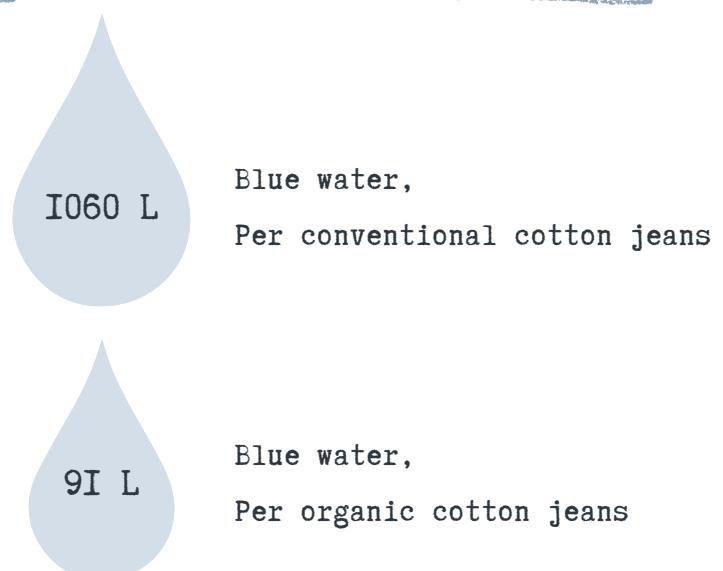
Conventional cotton vs organic cotton

The growth process of cotton requires a large amount of water.

According to the Textile Exchange data,⁶ organic cotton requires approximately 15000 L per kg, of which almost everything is consumed. This is 7500 L water for the cotton weight of one jeans. Nonetheless, 95% of this water is green water (precipitation) and this is stored in the soil as moist or used for plant growth.

Organic cotton requires **91% less blue water** than conventional cotton.⁶ This is due to the soil conservation practices that go hand in hand with organic cotton cultivation in arid areas (for instance, crop rotation). Rich soils with high levels of carbon store water better, which results in less irrigation requirements. Organic cotton is hence predominantly relying on natural rainfall, based on the data from Textile Exchange.⁶ Keep in mind that these numbers are an average of the locations that were analyzed: these numbers are highly region and climate dependent.

The I4 jeans brands on Project Cece all work with organic cotton. As a result, you save 969 L blue water that should have been taken from a surface or groundwater resource, when you buy an organic cotton jeans instead of a conventional cotton jeans.





TOTAL WATER CONSUMPTION

GROWING-GINNING-SPINNING- DYEING- WEAVING-WASHING



7000 L

The industry average per jeans

Project Cece's Jeans Brands

The majority of jeans brands on Project Cece did not (yet) have the data from a life-cycle analysis of the water consumption of their denim jeans.

However, **MUD Jeans** and **Kings of Indigo** did an LCA, resulting in the following water footprint over the total process from cottonseed to jeans.

Moreover, **People's Tree⁹** produced the Ariel Wide Leg jeans with 87.2% less water than the industry average.

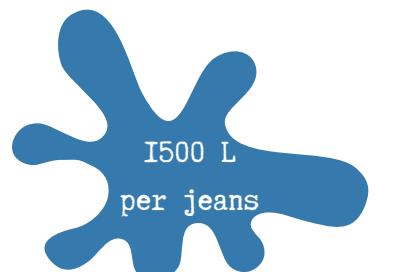
Wunderwerk¹⁰ offers the Josy Navy jeans, made from Tencel Lyocell. Tencel does not require any blue water during its growth process and therefore any jeans saves 1060 L blue water.

Data uncertainty

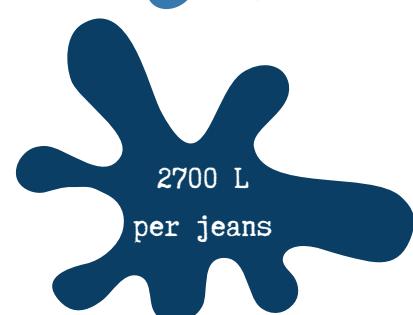
The process from cotton to denim jeans knows large differences between brands. Each jeans manufacturer decides on his own practices and therefore, there is no solid number on the amount of water that is required for one jeans in the total process.

The average of the data that we analyzed is a water consumption **7000 L per jeans** throughout the process of conventional cotton growing, ginning, spinning, dyeing and weaving. In this number, only blue water is taken into account, since we have seen that this number is way larger if you take green water into account

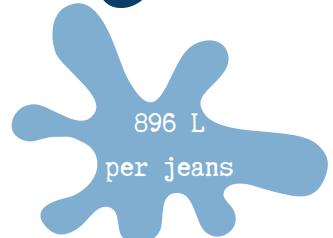
MUD JEANS



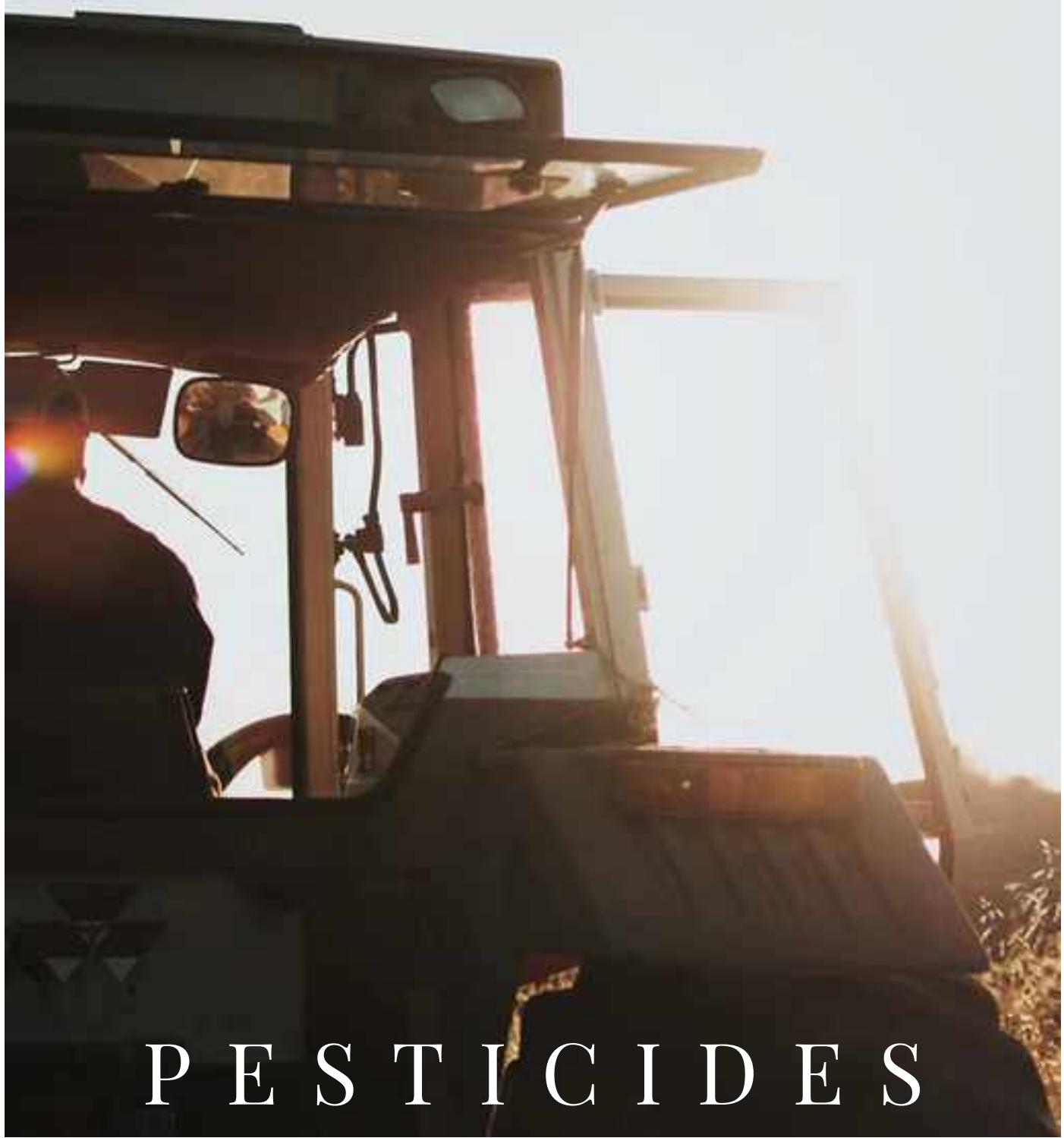
KINGS OF INDIGO



PEOPLE'S TREE
ARIEL WIDE LEG
JEANS



T O X I C C H E M I C A L S

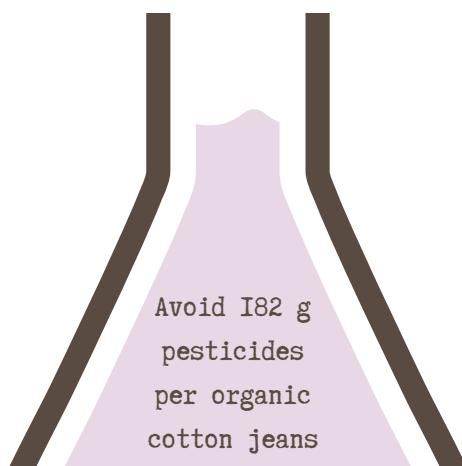


P E S T I C I D E S

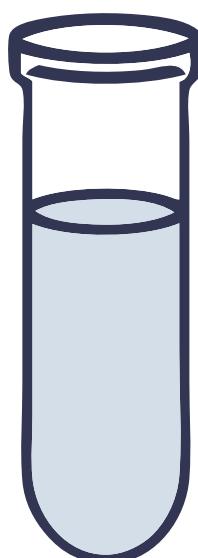
PESTICIDES

During the growth of conventional cotton, an average of 364 g pesticides is used per kg cotton lint.¹¹ This is, for a jeans of 500 g, **182 g pesticides.**

During the growth of organic cotton, no pesticides are used and the cotton plants are non-GMO. The methods and materials have a lower impact on the environment, enhances biologically diverse agriculture and maintains soil fertility. As all jeans on Project Cece are made with organic cotton, 182 g toxic pesticides are avoided per jeans on Project Cece.



CHEMICALS



Avoid 1500 g
Toxic chemicals per jeans

During the total production of cotton garments, an average is 3000 g toxic chemicals per kg cotton is used. This is approximately 1500 g per jeans.⁴

The process of dyeing and washing the jeans often relies on chemicals to obtain colour, softness or fading effects. However, there are radical transformations taking place in the sustainable fashion industry to reduce this toxic environmental impact. New techniques are used that require less water and less chemicals.

Project Cece's Brands

The jeans brands on Project Cece that have a **GOTS certified production process** do not use harmful chemicals throughout the total production process. Hence, with these jeans brands, 1500 g toxic chemicals are avoided per jeans. The jeans brands on Project Cece are constantly looking for less hazardous ways of producing. In Appendix II, you are able to read several initiatives.



G O T S
C E R T I F I E D
P R O D U C T I O N
P R O C E S S

THE BRANDS

alchemist

bleed



MUD JEANS

LANIUS®

Mudie JEANS co

brainshirt
where ratio meets fashion

People Tree
Sustainable and Fair Trade Fashion

Kings Of Indigo®

wunder[werk]
more than organic



BRAINTREE
environmental clothing since 1995



ARMEDANGELS

W A S T E



RECYCLED MATERIALS

CIRCULARITY



In their 2018 collections, 4 of the 14 jeans brands have used recycled materials in their jeans that are sold on Projecy Cece. This is a great step towards a circular future, in which a value is given to material that is labeled as waste. In Appendix I, a more detailed explanation of the recycled materials is provided.

Kuyichi launched a PCRD-collection with jeans made from 20% post-consumer recycled denim. The waistband and the pockets of **Brainshirt's** jeans are made with residual material from their shirts. **Mud Jeans** saved 5500 jeans from landfill and incineration in 2018, as reported in their sustainability report, used to make new denim products. Currently, MUD Jeans used either 23% or 40% recycled cotton in the majority of their jeans.

At **Kings of Indigo**, both the waistband patches and pocketing is made with 30% recycled polyester and they generally use 15% recycled cotton for each jeans in the 2018 collection. Last year, **Nudie Jeans** has collected 10557 jeans. The denim of these jeans is either use for patches used for their free repair services, or for recycling . The 2018 fall collection contained buckets hats made with recycled denim: 23kg post-consumer recycled denims was used here. More recycled denim is used in the 2019 collections. Several Nudie Jeans from the 2018 collection contain recycled polyester (6%). A total of 1,466 kg recycled polyester was used in 2018. It is important to mention that polyester (even though it is recycled) releases microplastics into the environment while washing the jeans.



KUYICHI: SAVE FROM 60 UP TO 150 G MATERIAL PER JEANS FROM LANDFILL



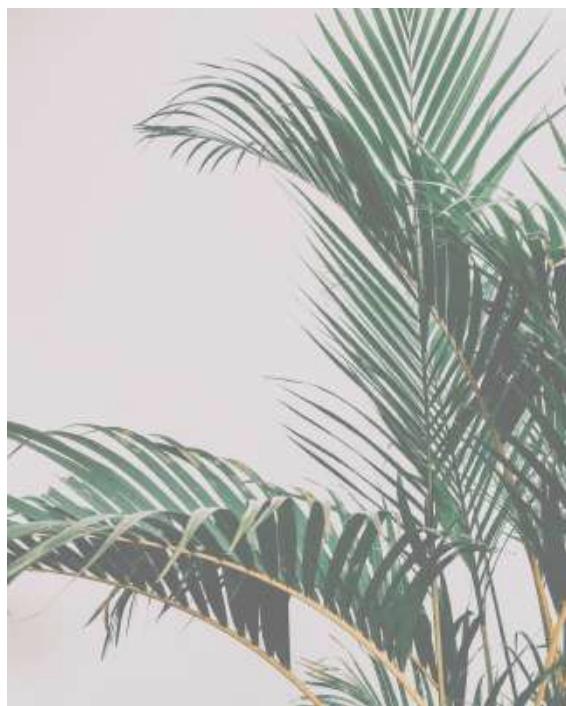
MUD JEANS: SAVE FROM 115 G UP TO 200 g MATERIAL PER JEANS FROM LANDFILL



KINGS OF INDIGO: SAVE 75 G MATERIAL PER JEANS FROM LANDFILL



BRAINSHIRT : SAVE 50 G MATERIAL PER JEANS FROM LANDFILL



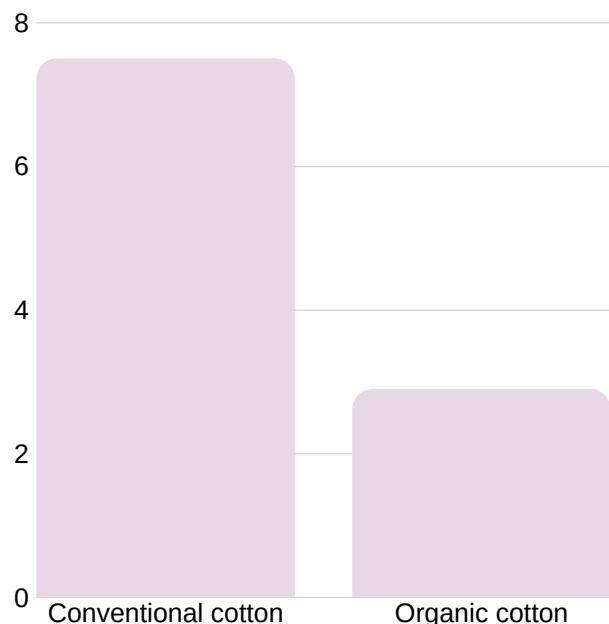
E N E R G Y



The primary energy demand for conventional lint cotton for one jeans is 7,5 MJ, according to the lifecycle-analysis of Textile Exchange.¹² This is the energy demand for non-renewable resources, which is important to take into account for its link with resource depletion and its connection with climate change.

The energy demand of non-renewable resources for organic cotton lint for one jeans is 2,9 MJ.¹³ Hence, choosing a jeans of organic cotton instead of conventional cotton **saves 4,6 MJ** in the cotton growth process.

This energy is mainly used in the ginning process and any process during growth that is done with machinery. Moreover, the transportation to gin requires energy from non-renewable resources as well. The difference in energy use between conventional and organic cotton could be explained according to the use of mineral fertilizer. This mineral fertilizer has a high primary energy demand as it is derived from petroleum.



In the process after ginning to your final jeans, each jeans brand uses a certain amount of energy. Several jeans brands on Project Cece are trying to use green energy during their production processes. However, precise data on the amount of energy that is used in the production process is not available yet for each brand in this 2019 report.



GREEN ENERGY

PRODUCTION PROCESS & SUPPLIERS

Hudie Jeans co



MUD JEANS

WAREHOUSE



OFFICE

Hudie Jeans co



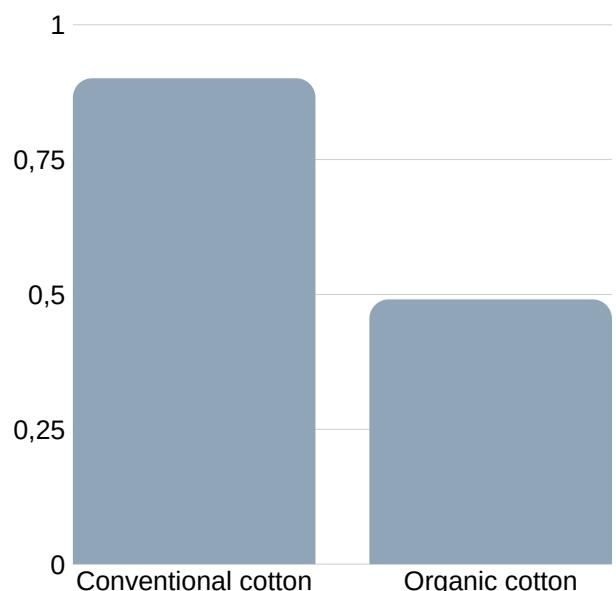
E M I S S I O N S



The use of organic cotton instead of conventional cotton results in a reduce of CO₂ emissions. According to a life-cycle assessment of Textile Exchange, the cultivation of 1 kg organic cotton emits **46% less CO₂** than the same system with conventional cotton.¹⁴ This is mainly due to less agricultural practices on the land, less tractor operations, less irrigation and less fertilizer.

During the growth process, approximately 900 g CO₂ is emitted for a pair of conventional jeans. Per jeans of organic cotton, this is 490 g CO₂.

That saves **410 g CO₂** per organic cotton jeans, solely based on the cotton growth process.



In the jeans production process, a large part of the total CO₂ emissions is emitted in the process after the cotton ginning. However, most brands on Project Cece did not, or not yet, conduct an analysis on the amount of CO₂ that is during this process. Therefore, it is currently not yet possible to provide transparent data from each brand on their emissions.

MUD Jeans conducted such an analysis with Bluedot Lifecycle, which resulted in a total emission of 9 kg CO₂ per jeans. **Armedangels** calculated that they use 64% less CO₂ per meter of their DetoxDenim in comparison to conventionally produced jeans.

Levi Strauss & Co have conducted a lifecycle analysis in 2013, from which resulted that 14.4 kg CO₂ is emitted in the production process of a jeans.¹⁵ Hence, MUD Jeans saves **5,4 kg CO₂** with their process compared to a conventional LS&Co jeans.

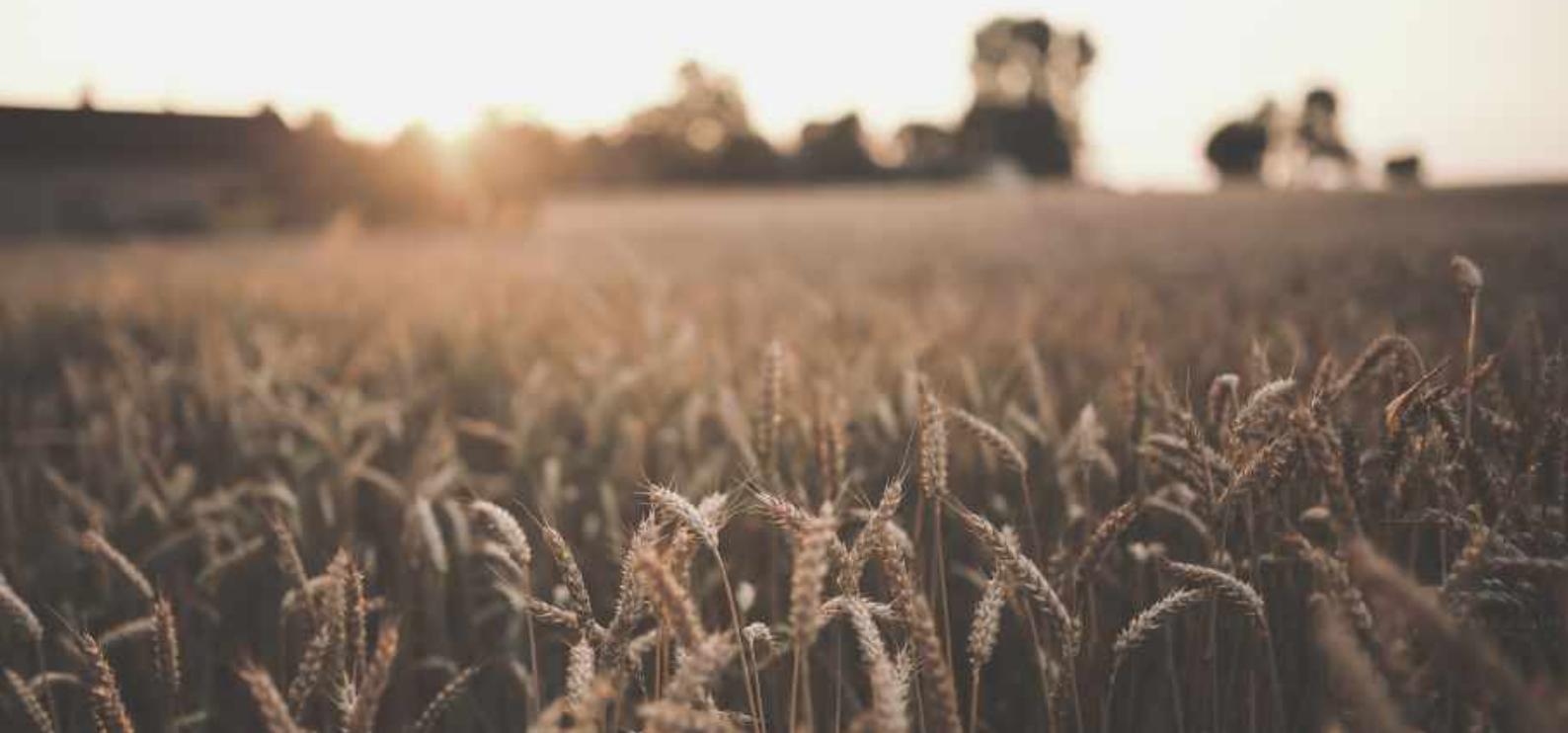
It is important to take into account that consumers play a large role in the emissions and water use in the lifecycle of their pair of jeans. According to the LS&Co lifecycle analysis, fiber growth accounts for 9% of the total CO₂ emissions in a jeans lifecycle, the production process accounts for 43% and the transport accounts for 11%. The consumer care phase accounts for the leftover 37%, depending on the washing habits of the consumer.

By washing your jeans after wearing it 10 times instead of after every time you wear it, you save up to 1483 L water, 496 MJ energy and 25.1 kg CO₂.¹⁶

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WOULD YOU LIKE TO KNOW MORE?

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16. Levi Strauss & Co. (2015). *The Life Cycle Of a Jean: Understanding the environmental impact of a pair of Levi's 501 Jeans.* p. 29, 32, 36



THANK YOU

FOR READING THIS

In this first impact analysis, we have once again experienced the complexity of the fashion industry. We aimed to provide you, as a conscious consumer, with as much information as possible on our jeans brands. We like to thank our jeans brands for their collaboration and the publication of their own sustainability reports, points of attention and lifecycle analysis data.

The brands that we exemplified in this report are the brands that provided transparency in reports, on their websites or during direct contact. However, we are all still developing and we aim for more and more clarity in the future. Therefore, if you are amongst Project Cece's jeans brands: do not hesitate to contact us to provide more information about the practices of your brand. We will be happy to revise this report if this leads to more transparency.

CONTACT US

WE WOULD LOVE TO HEAR FROM YOU



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PROJECT **CECE**

APPENDIX I

PERCENTAGE RECYCLED MATERIAL PER BRAND

*derived from composition information and sustainability reports

Brand	Amount of Jeans Re-collected for recycling (2018)	Percentage recycled material	Amount of material saved from waste (in gram)
Alchemist		4.5% Currently, 4.5% of Alchemists collection is made from recycled materials.	The Alchemist jeans that are sold on Project Cece do not contain recycled material.
Wunderwerk		0%	
Brainshirt		10% Waistbands and pockets made from surplus shirts-material	50 g
Braintree		0%	
Kings of Indigo		15%*	75 g
Kuyichi		12-30%*	60-150 g
Lanius		0%	
MUD Jeans	5500	23%-40%*	115 g-200 g
Bleed Clothing		0%	
People Tree		0%	
Enna		0%	
B.young		0%	
Nudie jeans	10557 These jeans were either repaired and sold in the re-use range or used to make bucket hats and patches*	6% Nudie Jeans has several jeans in its collection made with 6% recycled polyester.	The Nudie Jeans that are sold on Project Cece do not contain recycled material
Armedangels		0%	

***Nudie Jeans** has started a new excited denim recycling project that they promised to provide more information on in 2019. Moreover, they began selling their old stock fabrics to Rekotex in 2018, where fabric can be bought and repurposed by other players.

***Kuyichi's PCRD- collection** (post-consumer recycled denim) consists of several jeans with 20% recycled material. You can track the PCRD jeans on Project Cece, named: Nick Lived In, Nick Pale Blue, Nick Classic Blue, Jamie Sympany Blue, Jamie Dark Blue, Nora Faded Blue, Scott classic blue, Jenna sympany blue, Amy faded black, Lisa Indigo, Carey Black Again (30%), Joy Classic Blue. Other jeans are made with recycled polyester: Roxy ever black (16%) and Amy herbal blue (12% recycled polyester).

***The MUD Jeans** sold on Project Cece are made with 23% and 40% post-consumer recycled cotton

***Kings of Indigo:** The Juno, Christina, Emi, Yama, Kimberley Mid Sky Used, Leila Gleam Rinse, Alice Gleam Light, Dido black rinse contain 15% recycled cotton

A P P E N D I X II:

Z E R O I M P A C T J E A N S

W H A T E L S E A R E T H E B R A N D S D O I N G ?



Vegan due Jacron paper or cork patches

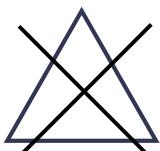
#DetoxDenim by Armedangels

MUD Jeans

Kuyichi

Bleed Clothing

Nudie Jeans



Chlorine-free bleaching: use of lazer and ozone techniques

Kuyichi

#DetoxDenim by Armedangels

MUD Jeans

Kings of Indigo



Heavy metal-free buttons

#DetoxDenim by Armedangels



Repair service

MUD Jeans

Nudie Jeans



Natural Indigo Dye

Kuyichi

MUD Jeans

Kings of Indigo