



Reframing Our Journey to Net Zero

The Importance of Reducing Greenhouse Gas Emissions

Climate change has become one of the most pressing global challenges of the 21st century. The Intergovernmental Panel on Climate Change (IPCC) has reported that human activities, particularly the burning of fossil fuels and deforestation, are responsible for releasing significant amounts of greenhouse gases (GHGs) into the atmosphere.¹ These emissions are causing global temperatures to rise, leading to severe consequences such as extreme weather events, loss of biodiversity, and rising sea levels. As a result, it is crucial for all industries, including fashion, to take aggressive steps to reduce their greenhouse gas emissions.

The Textile Value Chain and Its Impact on Emissions

The fashion industry is a complex and interconnected web of processes, from raw material extraction to end-of-life disposal. The textile value chain includes multiple stages, such as ginning, yarn spinning, fabric weaving or knitting, dyeing and finishing, garment assembly, and transportation. Each of these stages contributes to the industry's overall greenhouse gas emissions.

Illustration of the LCA processes for an apparel product.



Figure 1: LCA Update of Cotton Fiber and Fabric Life Cycle. Cotton Incorporated (2017). <https://cottontoday.cottoninc.com/wp-content/uploads/2019/11/2016-LCA-Full-Report-Update.pdf>

1. IPCC Sixth Assessment Report. <https://www.ipcc.ch/report/ar6/wg3/>
2. LCA Update of Cotton Fiber and Fabric Life Cycle. Cotton Incorporated (2017). <https://cottontoday.cottoninc.com/wp-content/>

Comparing the Emissions of Cotton Fiber Production and Textile Manufacturing

It is essential to consider the emissions from different stages of the textile value chain to develop effective strategies for reducing the industry's overall environmental impact. According to Cotton Incorporated research, cotton production contributes about 13% of a cotton t-shirt's GHG emissions, while textile manufacturing accounts for the remaining 87%.²

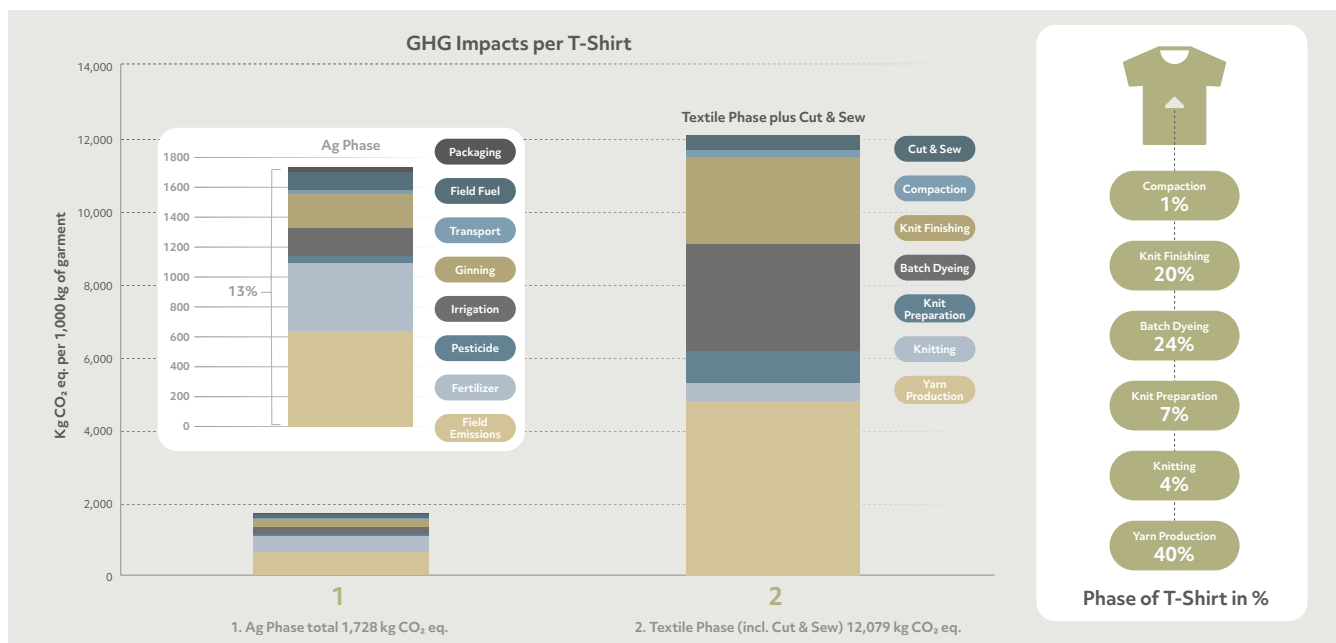


Figure 2: LCA Update of Cotton Fiber and Fabric Life Cycle. Cotton Incorporated (2017).
<https://cottontoday.cottoninc.com/wp-content/uploads/2019/11/2016-LCA-Full-Report-Update.pdf>

Continuous Improvement in Cotton Production

Addressing climate change and reducing greenhouse gas (GHG) emissions are crucial aspects of improving cotton production sustainability. The U.S. cotton industry has set a goal to reduce GHG emissions by 39% by 2025.³ While various ongoing efforts contribute to this objective, the list below highlights projects related to climate change and GHG emissions.



Climate Change and GHG Emissions Reduction in Cotton Production:

- Soil health and carbon sequestration:** Implementing farming practices that enhance soil health, increase carbon capture in the soil, and reduce greenhouse gas emissions.⁴
- Climate Smart Cotton Program** has the goal of supporting cotton producers' adoption new regenerative and climate smart agriculture practices on their farms that reduce GHG emissions and improve overall sustainability of cotton production.⁵
- Energy efficiency:** Adopting energy-efficient technologies and practices in cotton farming and processing to reduce energy consumption and associated GHG emissions.⁶
- Bioenergy from cotton waste:** Exploring opportunities to produce bioenergy from cotton waste, which can replace fossil fuels and reduce GHG emissions.⁷
- Carbon storage in cotton products:** Researching the benefits of carbon sequestration in cotton textiles and products, which could help mitigate climate change.⁸
- Climate-resilient cotton varieties:** Developing climate-resilient cotton cultivars that can better withstand extreme weather events and maintain productivity in the face of climate change.⁹
- Water management:** Employing water-saving technologies and practices in cotton farming to reduce the water footprint, which indirectly contributes to lowering GHG emissions.¹⁰

3. <https://cottontoday.cottoninc.com/10-year-u-s-cotton-sustainability-goals/>
 4. <https://cottontoday.cottoninc.com/our-sustainability-story/land/soil-health/>
 5. <https://trustuscotton.org/u-s-cotton-trust-protocol-awarded-usda-grant-for-u-s-cotton-smart-commodity-program/>
 6. <https://cottontoday.cottoninc.com/our-sustainability-story/greenhouse-gases/emissions/>

7. <https://cottontoday.cottoninc.com/the-sweet-science-of-sustainability/>
 8. <https://cottontoday.cottoninc.com/carbon-in-your-closet-exploring-cotton-and-biogenic-carbon-sequestration/>
 9. <https://agrifetoday.tamu.edu/2021/10/13/adapting-crops-for-future-climate-conditions/>
 10. <https://cottontoday.cottoninc.com/our-sustainability-story/water/>

The Importance of Refocusing Efforts on Textile Manufacturing

By examining the various stages of the textile value chain, it becomes apparent that there is an urgent need to expand the industry's attention on reducing emissions within the textile manufacturing processes. To effectively combat climate change, it is crucial for the industry to shift its focus towards more efficient and sustainable manufacturing methods, as well as increased reliance on green energy technologies.

The Potential for Significant Emission Reductions in the Apparel Industry

The potential for substantial emission reductions in the apparel industry is immense, particularly when considering the significant gains that can be achieved by improving textile manufacturing efficiency and incorporating renewable energy sources. By implementing strategies such as increasing spinning and wet processing efficiency, transitioning from fossil fuels to renewable energy, and fostering collaboration among stakeholders, the industry has the capacity to reduce a garment's impact by 30-50% or more.¹¹ These efforts not only contribute to the industry's overall sustainability goals but also demonstrate a commitment to combating climate change and preserving our planet for future generations.



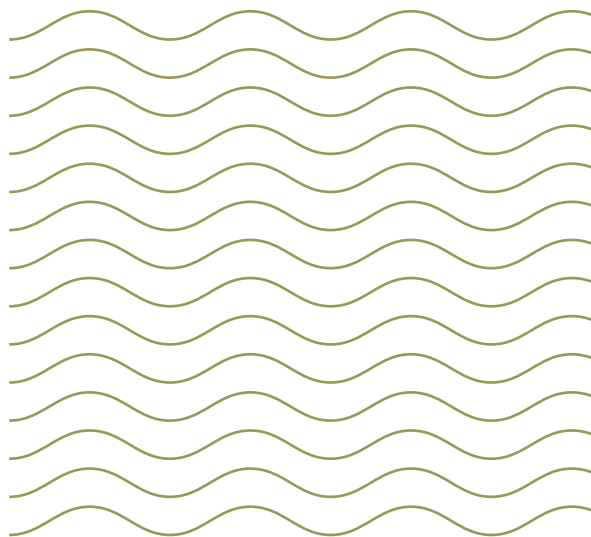
Reduce a garment's impact by
30% to 50%

The Collective Responsibility to Limit the Impacts of Climate Change

Sustainable fashion brands, manufacturers, governments, industry organizations, NGOs, and consumers all play a critical role in driving change and promoting a more sustainable fashion industry. Collaboration between these various stakeholders is vital for the successful implementation of sustainable practices, the development of innovative technologies, and the establishment of industry-wide standards.



For more information on greenhouse gas emissions and the textile supply chain, visit cottontoday.cottoninc.com



11. LCA Update of Cotton Fiber and Fabric Life Cycle. Cotton Incorporated (2017). <https://cottontoday.cottoninc.com/wp-content/uploads/2019/11/2016-LCA-Full-Report-Update>.