

REDUCING WATER FOOTPRINT IN TEXTILE BY DEVELOPING A MODEL AND AN ONLINE TOOL

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Abstract: Exploitation of finite and vulnerable water resource significantly impacts the world ecosystems. Exacerbated by climate change, excessive use and pollution of freshwater systems has created environmental imbalances and placed numerous species at risk.

The textile sector, which is among the oldest and most complex manufacturing networks worldwide, contributes significantly to these water issues. First, the textile industry is water-intensive. Textile production, including cotton farming, takes around 93 billion cubic meters of water yearly, accounting for 4% of worldwide freshwater withdrawal. Textile manufacturing consumes an estimated 1.8 billion m³ annually. Second, the sector is responsible for around one-fifth of global water pollution [1], causing significant human and environmental health issues.

Industries increasingly recognize their role in contributing to water scarcity and pollution, but to date take limited action to effectively mitigate these risks. Here, the water footprint (WF) concept can help. The water footprint is an important breakthrough in the evolution of methodologies, approaches, and indicators for measuring freshwater appropriation and assessing the wastewater discharge. The water footprint measures the amount of freshwater used for productive activities, including consumptive (green and blue WF) and degradative (grey WF) water use. A water footprint assessment not only accounts for WFs, but also assesses their sustainability, and identifies strategic steps to reduce and improve them [2].

It is crucial to educate and raise awareness among producers about the influence of their actions on freshwater use. Improving environmental performance in the garment supply chain is crucial for the sector's long-term viability, ecosystem sustainability, and community well-being. Water Footprint Assessment accounts for water consumption and pollution in the supply chain, assesses sustainability, efficiency, and equitability, and develops strategic responses to address global water challenges.

The REWAFT project (<https://textilewaterfootprint.eu/>) aimed to increase awareness of the textile industry's water footprint and improve sustainability skills among students and companies. In the framework of the project, a model and online tool for textile companies to measure and reduce their water impact were developed.

Depending on the level of readiness of the textile producing company in terms of their understanding of water issues, the tool allows a more generic assessment of textile water footprints at factory level or a more detailed assessment at the level of each process step. Figure 1 shows the online tool for water footprint of textiles.

This paper aims at advancing the research field of water reduction in textile industry by identifying emerging trends in the textile manufacturing and their impact on freshwater resources, and also, introduces the model and online tool developed in REWAFT project. We anticipate that this research could act as a roadmap for decision makers in the textile and fashion industries to develop state-of-the-art strategies for water-efficient textile products.



Figure 1 Online tool for water footprint of textiles

Keywords: sustainability, water reduction, textile industry, water footprint

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