

WATER-INTENSIVE COTTON TEXTILES

Pakistan is the world's fourth-largest producer of cotton. A major share of textiles sold in Germany is produced in Pakistan. The irrigation of cotton plants as well as dyeing and finishing processes in textile production require large amounts of water. In addition, rivers, soil, and groundwater are polluted by salinisation, intensive use of pesticides and fertilisers, and the discharge of untreated textile wastewater.

In InoCottonGROW, fourteen German research and industry partners work in collaboration with thirteen Pakistani partners under the coordination of the Research Institute for Water and Waste Management at RWTH Aachen (FiW). The aim is to identify technically, economically and institutionally feasible ways of increasing the efficiency and productivity of water consumption along the entire cotton-textile value chain in Pakistan. Our goal is to further develop the concept of the water footprint to become a management tool that will support Pakistani decision-makers in managing scarce water resources and that assist German consumers in making informed choices when purchasing textiles. In cooperation with Pakistani partners, current water consumption and levels of pollution in the province of Punjab are analysed. The following methods are combined:

- satellite remote sensing,
- hydrological and hydraulic modelling,
- surveys with cotton farmers,
- company audits in the textile industry and
- measurement campaigns in irrigation canals, the groundwater and central drains

GERMAN PROJECT PARTNERS



PAKISTANI COOPERATION PARTNERS



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CONTACT

Research Institute for Water and Waste Management at RWTH Aachen (FiW)
 Dr. sc. Dipl.-Ing. Frank-Andreas Weber
 Phone +49 (0)241 - 80 2 39 52 / weber@fiw.rwth-aachen.de
 Aachen, Germany
 www.fiw.rwth-aachen.de

www.inocottongrow.net



InoCotton GROW

Global Cotton Textile Industry: The German Water Footprint in Pakistan

WATER AS A GLOBAL RESOURCE

Germany is a country rich in water. Our demand for water-intensive cotton textiles (jeans, t-shirts, towels, and others) has a major impact on water scarcity and water pollution in the mainly Asian manufacturing countries, where additional pressure factors such as climate change and the population growth exacerbate the tremendous water-related challenges.

The joint research project InoCottonGROW aims at contributing to the sustainable use of water in Pakistan along the textile value chain "from cotton field to hanger" through case studies and demonstrations.

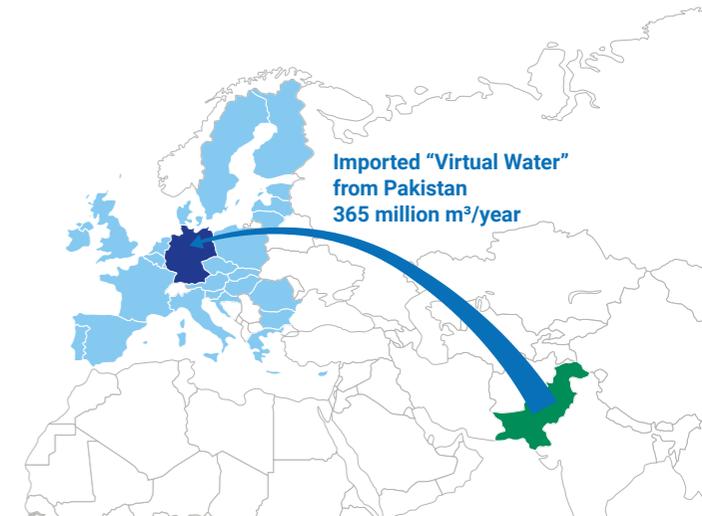
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DEMONSTRATION PROJECTS

Five pilot projects illustrate strategies for reducing the water footprint of the cotton textile industry and examine their feasibility in the economic and institutional context in Pakistan:

1. Effective irrigation strategies to increase water productivity
2. Use of environmentally friendly dyestuffs
3. Water-saving textile machinery units
4. Textile wastewater treatment, particularly the anaerobic treatment of highly polluted wastewater from the desizing process
5. Pollutant analysis and regulatory monitoring of water quality to control wastewater threshold standards

Textile wastewater treatment is an essential part of FiW's work, as only few of the 220 textile companies in the textile region of Faisalabad have functioning treatment plants, several of which are not in used due

to high energy costs. Untreated textile wastewater is discharged into the Chenab and Ravi rivers via central drains or contaminates the groundwater which is intensively used for irrigation. In cooperation with the project partners A3 Water Solutions GmbH and University of Stuttgart, a pilot plant for the anaerobic treatment of wastewater from desizing was designed, engineered, and shipped to Pakistan. Once the plant arrived at Kohinoor Mills Ltd. south of Lahore, FiW tested the purification performance and biogas production of the plant under various operating conditions, in cooperation with the National University of Science and Technology (NUST). The pilot plant is intended to demonstrate the suitability of anaerobic treatment for textile effluents and will serve as a model for full-scale operation.



AWARENESS RAISING

Workshops and capacity development together with Pakistani partners, such as farmers' organisations, textile companies, universities, authorities and ministries, will contribute to the implementation of the measures investigated. By creating video documentaries, developing a water footprint tool and conducting studies on incorporating InoCottonGROW into textile labels, the project aims at raising the awareness of internationally operating brands & retailers as well as German consumers for sustainably produced textiles.



WATER FOOTPRINT AND SUSTAINABLE DEVELOPMENT GOALS

The water footprint approach will be extended to include a region-specific inventory database and an impact assessment method that models the impact of the cotton textile industry on water scarcity, human health, ecosystems, and freshwater resources in the Punjab and links it to selected target indicators of the UN Sustainable Development Goals (e.g., SDG 6: Clean Water and Sanitation). The analysis of different scenarios then gives an insight into the effect which the reduction of the water footprint of the cotton textile industry will have for achieving the UN SDGs. The transferability to other producing countries will be assessed analysing Turkey as an example.

