

# From cotton field to hanger

InoCottonGROW – Global cotton textile industry: the german water footprint in Pakistan



*Cotton field in Pakistan.*

Germany is considered a country rich in water. However, our demand for water-intensive cotton textiles (jeans, T-shirts, bed linen and more) contributes significantly to water shortage and water pollution in the mostly Asian producing countries, where immense water management challenges are intensified by population growth and climate change. The joint project InoCottonGROW aims to contribute to sustainable water use along the cotton-textile supply chain „from cotton field to hanger“ in case studies and demonstration projects in Pakistan.

## Water intensive cotton textiles

Pakistan is the fourth largest cotton producer in the world and an important textile exporter for the German market. A lot of water is used to irrigate the cotton plants and for dyeing and other finishing processes in the textile industry. In addition, rivers, soil and groundwater are polluted by salinisation, intensive use of pesticides and fertilizers, and the discharge of untreated textile wastewater.

In InoCottonGROW, 14 German research and industry partners work together with 13+ Pakistani partners to identify ways to increase the efficiency and productivity of water

use along the entire cotton-textile value chain in Pakistan, which are technically, economically and institutionally possible on site.

The aim is to develop the concept of the water footprint into a management tool to support Pakistani decision-makers in managing scarce water resources and to provide German consumers with criteria for making informed purchasing decisions.

A status analysis of the current water use and pollution in the province of Punjab was made in cooperation with Pakistani partners. This will combine satellite remote sensing

methods, hydrological and hydraulic modeling approaches with surveys of cotton farmers, farm audits and measurement campaigns.

### Demonstration projects

In five demonstration projects, possible solutions for reducing the water footprint of the cotton textile industry are shown and their practicability in Pakistan will be analysed:

- ▶ effective irrigation strategies to increase water productivity
- ▶ use of environmentally friendly dyes
- ▶ water-saving textile machines
- ▶ textile wastewater treatment, including anaerobic partial flow treatment of highly contaminated wastewater from desizing
- ▶ pollutant analysis and water quality monitoring for monitoring wastewater limits

### Water footprint and the UN sustainability goals

In addition to the water footprint methodology, a region-specific database and an impact assessment will be made. The impact assessment method models the impacts of the cotton textile industry on water shortage, human health, ecosystems and fresh water resources in the Pun-



*Cotton textile value chain: cotton farmer at the harvest.*



*Industrial processing in Punjab, Pakistan.*



*Various measures support raise awareness among international brands & retailers and German consumers for sustainably produced textiles.*

job and establishes the link to selected target indicators of the UN sustainability goals (among others Goal 6: Clean Water and Sanitation). Scenario analyses are used to analyse the impact to which the package of measures can contribute to achieving the UN sustainability goals. The transferability to other producing countries is analysed using the example of Turkey.

### Dissemination and awareness raising

Workshops and capacity development with Pakistani practice partners, including farmer organisations, textile companies, universities, authorities and ministries, support the implementation of the evaluated measures. In order to sensitise internationally active brands & retailers and German consumers for sustainably produced textiles, InoCottonGROW will be accompanied by the production of a 12-minute documentary film, an internet-enabled water footprint tool and studies on integration into textile labels.



Made in Pakistan: cotton textiles on sale in Germany.

## Project overview

### PROJECT TITLE

InoCottonGROW – Global cotton textile industry: the german water footprint in Pakistan

### PROJECT PERIOD

2017 – 2020

### PROJECT PARTNERS

Technische Universität Berlin; Hochschule Niederrhein University of Applied Sciences, Krefeld; IWW Rheinisch-Westfälisches Institut für Wasserforschung gGmbH, Mülheim an der Ruhr; Julius-Maximilians-Universität Würzburg; Rheinische Friedrich-Wilhelms-Universität Bonn; RWTH Aachen University; Hochschule Ruhr West, Mülheim an der Ruhr; Thies GmbH & Co. KG, Coesfeld; A3 Water Solutions GmbH, Saerbeck; LAR Process Analysers AG, Berlin; SEBA Hydrometrie GmbH & Co. KG, Kaufbeuren; Lippeverband, Essen and 13+ Pakistani partners

### ASSOCIATED PARTNER

CHT Germany GmbH, Tübingen  
Im Unterauftrag: Universität Stuttgart (subcontractor)

### FUNDING

SPONSORED BY THE



Federal Ministry  
of Education  
and Research

**FONA**  
Research for sustainability

**GROW**  
WATER AS A GLOBAL RESOURCE

### SUPERVISED BY

Projekträger Karlsruhe (PTKA)

### CONTACT

Research Institute for Water Management and Climate Future at  
RWTH Aachen University  
Kackertstraße 15 – 17 / 52072 Aachen

Dr. sc. Dipl.-Ing. Frank-Andreas Weber

T +49 241 80 2 68 25 / weber@fiw.rwth-aachen.de

[www.fiw.rwth-aachen.de](http://www.fiw.rwth-aachen.de)

*As a member of the JRF research community, FiW is funded by the state of North Rhine-Westphalia.*

*The FiW is a member of the Zuse-Gemeinschaft.*

### STATUS

June 2022