

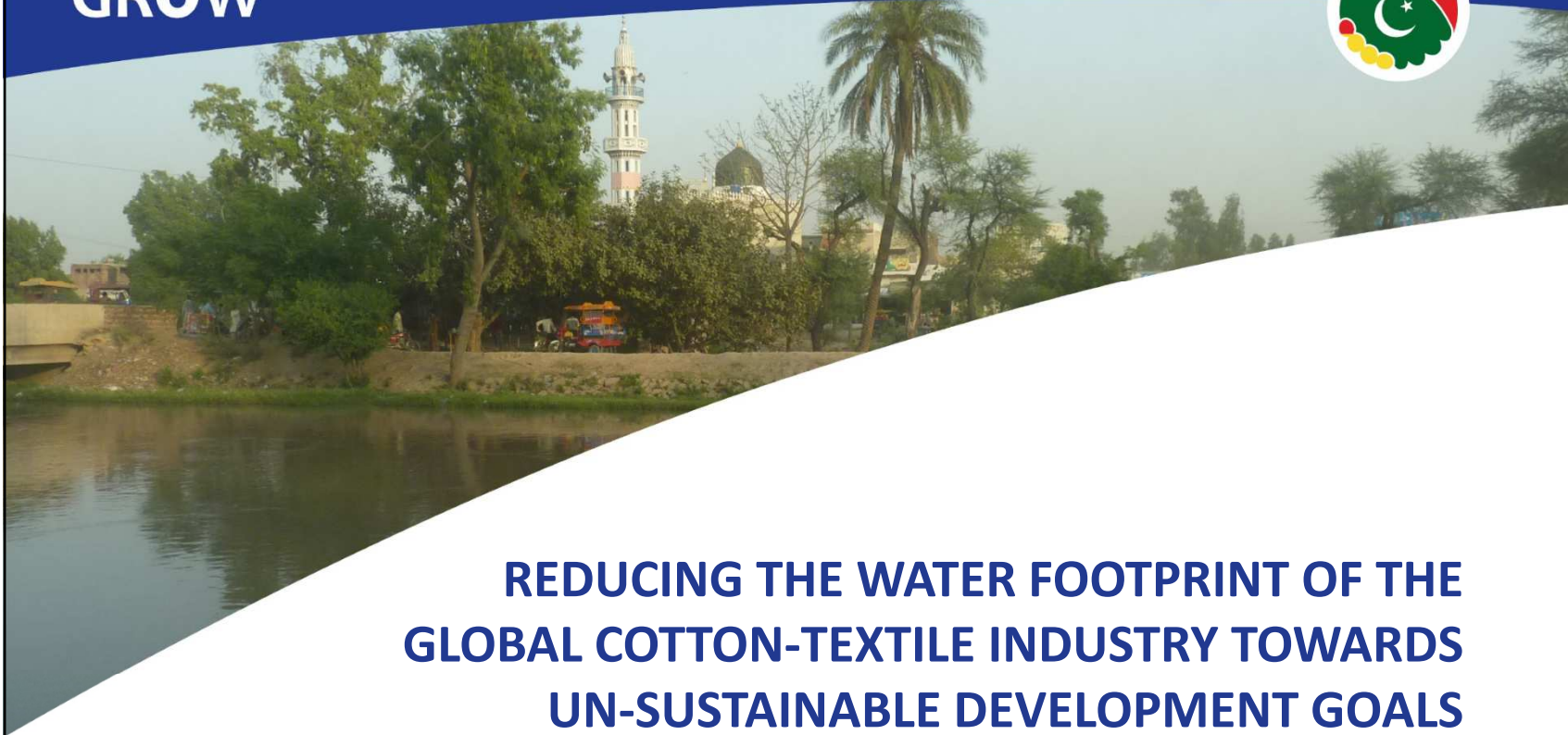


InoCotton GROW

SPONSORED BY THE
 Federal Ministry
of Education
and Research

GRoW
WATER AS A GLOBAL RESOURCE

InoCotton
GROW



REDUCING THE WATER FOOTPRINT OF THE GLOBAL COTTON-TEXTILE INDUSTRY TOWARDS UN-SUSTAINABLE DEVELOPMENT GOALS

Dr. Frank-Andreas Weber (FiW)
and InoCottonGROW Project Team

Policy Seminar in Lahore, 12 Feb 2020

SPONSORED BY THE



Federal Ministry
of Education
and Research



COOPERATION PARTNERS

German Partners



Pakistani Partners



New Partners



Turkish Partners

InoCotton
GROW



KICK-OFF AT NTU IN FAISALABAD IN JULY 2017



InoCotton
GROW



MORE THAN 400 DAYS OF FIELD WORK IN PUNJAB

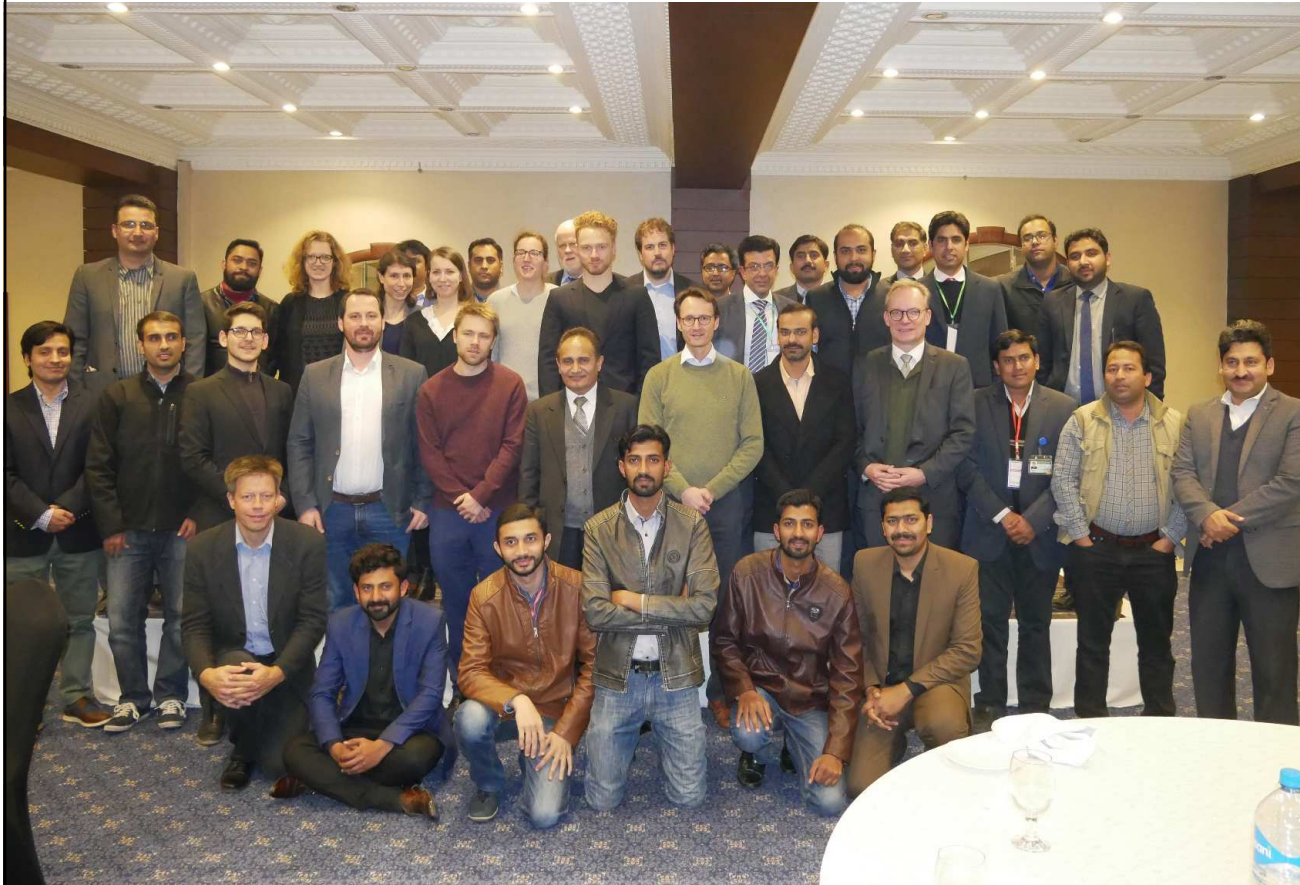


Photos © FIW

InoCotton
GROW



MID-TERM AT UAF IN FAISALABAD IN JANUARY 2019



SPONSORED BY THE
Federal Ministry
of Education
and Research



InoCotton
GROW



Invitation to
Mid-Term Conference

**Water Footprints of the
Cotton-Textile Value
Chain: Environmental
Repercussions from Field to
Hanger**

January 29 to February 02, 2019

VENUE
New Senate Hall
University of Agriculture Faisalabad

Jointly Organized by
Faculty of Agricultural Engineering & Technology,
UNIVERSITY OF AGRICULTURE FAISALABAD &
BMBF-InoCottonGROW Project Partners



InoCotton
GROW



ROADMAP WORKSHOP IN GERMANY IN DECEMBER 2019



Photos © FiW

InoCotton
GROW



FINDINGS AND POLICY OPTIONS
COTTON IRRIGATION

SPONSORED BY THE



Federal Ministry
of Education
and Research



KEY FINDINGS

1. LCC is an **undersupplied system**.
2. **Groundwater is storage:**
Canal lining is not the ultimate solution. Quality aspects first.
3. **Minimize unproductive losses** (i.e. evaporation):
Irrigation technology and scheduling is key.
4. Increasingly variable environment expected in future:
Flexibility within Warabandi - start at farm-level.
5. **Low cotton yield** only partly due to water stress.
6. **Climate Change impacts:** Heat stress will dominate.
7. **Good water governance is key:** Also groundwater needs governance.



FISHBOWL: WHICH POLICY OPTIONS ARE FEASIBLE

1. How to increase **flexibility within Warabandi** system ?
2. **Storage for early Kharif needed:**
Could Managed Aquifer Recharge (MAR) be an option ?
3. **How to adapt to Climate Change ?**



COTTON IRRIGATION AND IRRIGATION SCHEDULING

KEY FINDINGS AND CONCLUSION

- **farmer education** is cornerstone
- **small ponds** at the farm level can increase flexibility, should be implemented bottom-up
- high-quality, resistant **seed** are important
- **crop shifting** is an easy option to adapt to expected water supply and soil conditions
- **flood plains** help with diverting flood waters and recharging groundwater
- Rain water harvesting for recharging groundwater be promoted
- **pricing** of surface and groundwater is an important instrument for management, but increases crop cost



STORAGE FOR EARLY KHARIF NEEDED (PROF. BAKHSH)

- Storage at farm level is a prerequisite for efficient irrigation because it is light and frequent, which requires adequate availability of irrigation water.
- Similarly storage at outlet level or Upstream or in water Reservoirs need to be promoted
- Canals may be kept flowing during flood season, which of course may require sediment entrap strategies to minimize sediment loading in canal system.
- Flood water can be stored either at farm level or may be stored in the aquifer



HOW TO ADAPT TO CLIMATE CHANGE (PROF. BAKHSH)

- Climate change usually causes frequent occurrence of extreme events in the form of very high temperature peaks in summer, very low temperature in winter, very high intensity / amount rainfall.
- Therefore management practices such availability of adequate soil moisture in the root zone using drip irrigation or bed –furrow can help crop survive during peak weather conditions.
- As learnt from farmer during field visit, early sowing of cotton can help sustain climate change because of getting more time to mature prior to peak temperature days.

InoCotton
GROW



FINDINGS AND POLICY OPTIONS
**TEXTILE PRODUCTION
AND WASTEWATER**

SPONSORED BY THE



Federal Ministry
of Education
and Research



KEY FINDINGS

1. **Installation of functioning effluent treatment** is key for reducing grey water footprint in Punjab.
2. **Low-hanging fruits do exist:** positive amortization of investments in process- and product-integrated measures
3. Process-integrated measures often go along with **energy savings**, but little effect on water footprint.
4. **Maintenance and training** for operation personnel is key.



FISHBOWL: WHICH POLICY OPTIONS ARE FEASIBLE

1. **Capacity building** for the operational personnel on operation and maintenance **in regional centres across the country.**
2. **Common effluent treatment plants** to be built and operated at textile clusters by the Government, wherever possible.
3. **Support textile industry** for national standard and ZDHC compliance (chemical management & effluent treatment).



TEXTILE WASTEWATER TREATMENT KEY FINDINGS AND CONCLUSION

- treatment plants first, training accordingly
- **trainings** need to be short, practical and frequent
- **cleaner production** can reduce treatment need
- **pricing** companies according to pollution
- **waste** is a challenge and opportunity, infrastructure needed
- **platform for exchange** on existing best practices between industry and academia
- **regulations** are in place, implementation is lacking
- improvement needs time, start early
- Doable, cheap wastewater treatment may be promoted

InoCotton
GROW



FINDINGS AND POLICY OPTIONS
**RESPONSIBILITY ALONG
THE COTTON-TEXTILE
VALUE CHAIN**

SPONSORED BY THE



Federal Ministry
of Education
and Research



WATER FOOTPRINT AS STEERING INSTRUMENT

Policy and planning:

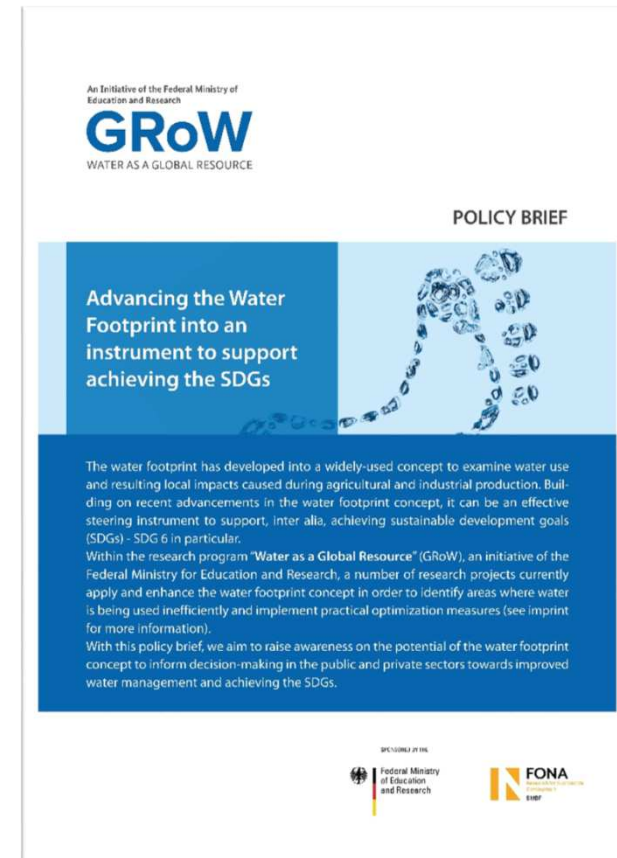
- Guide sectoral policies

Producers:

- Support sustainable production
- Broaden corporate environmental strategies
- Reduce water risks in supply-chain

Consumers:

- Raise awareness and promote consumption of sustainably produced textiles



M. Berger et al. (2019)

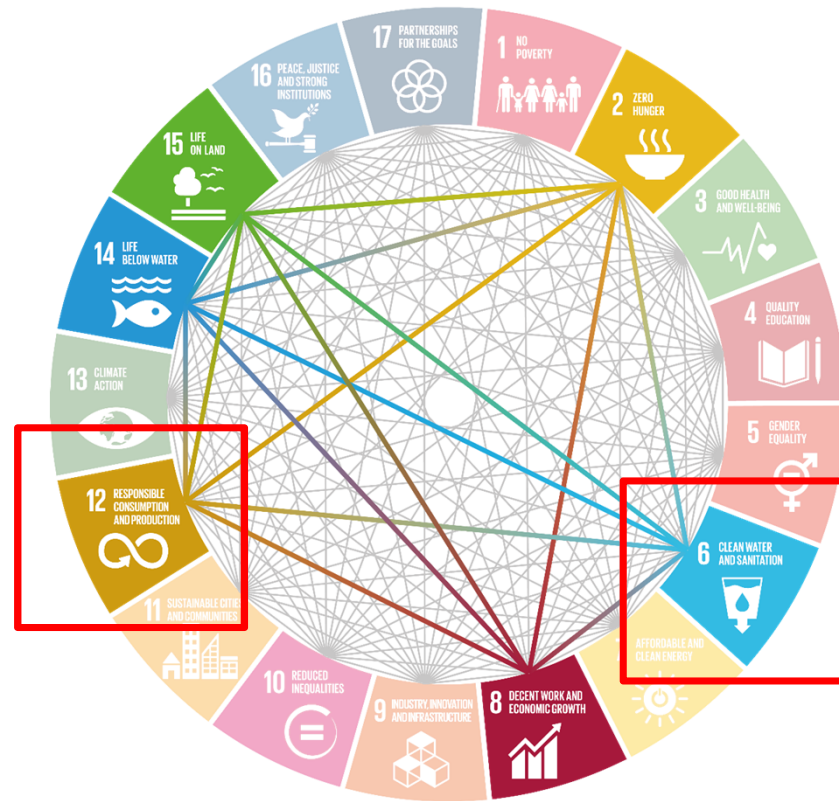
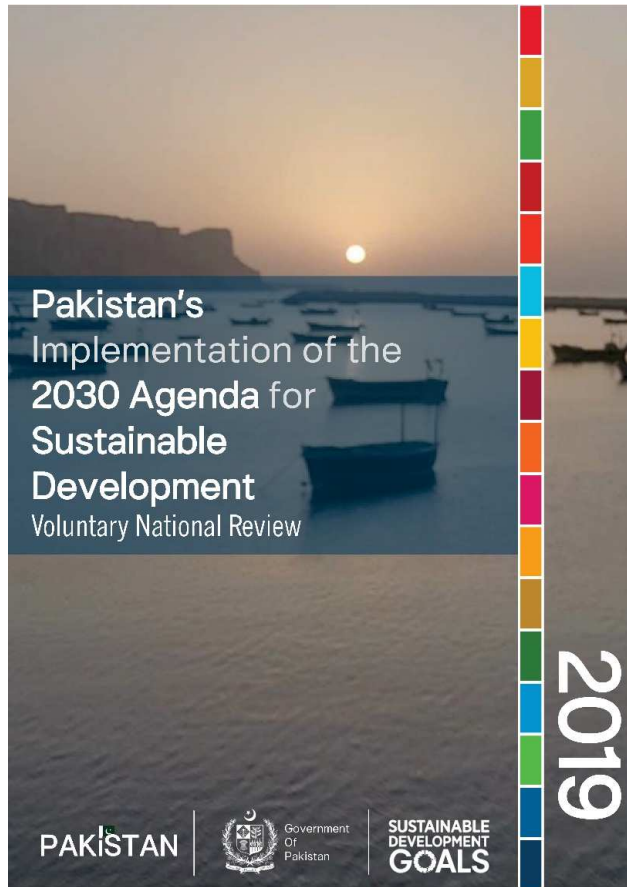


MY CONCLUSIONS AND OUTLOOK

- 1. New opportunities for science-based water policy:**
 - Multiple actors, Time to act is now.
 - Water Footprint promotes Integrated Water Resource Management: Integrate technical, financial, and management options across different sectors (agriculture, textile, water, trade) into coherent policy.
- 2. InoCottonGROW results freely available:**
 - Final report under way, all models will be available on website.
 - Dissemination of knowledge, policy implementation.
- 3. GIZ has launched new project FABRICS to support Punjabi textile industry. WWF has taken the initiative in ILES (International Labour and Environmental Standards Application in Pakistan's SMEs) with ILO.**
- 4. Far more ambitious approaches needed to set the global framework for sustainable cotton-textile production.**



UN SUSTAINABLE DEVELOPMENT GOALS





InoCotton
GROW

**Research Institute for Water and Waste Management
at RWTH Aachen (FiW) e.V.**

Dr. sc. Frank-Andreas Weber
Dr.-Ing. Friedrich-Wilhelm Bolle

Kackertstraße 15 – 17
52056 Aachen, Germany
Phone: +49 (0) 241 8023952
weber@fiw.rwth-aachen.de
www.fiw.rwth-aachen.de

آپ کی توجہ کے
لئے آپ کا شکریہ.

SPONSORED BY THE



Federal Ministry
of Education
and Research

The project is funded by the
Federal Ministry of Education and Research (BMBF)
within the framework of the funding measure
“Water as a Global Resource (GRoW)”

www.inocottongrow.net