



water
footprint
network

fair & smart use
of the world's
fresh water

From field to fashion: examining textile's grey water footprint

Dr Christopher Briggs

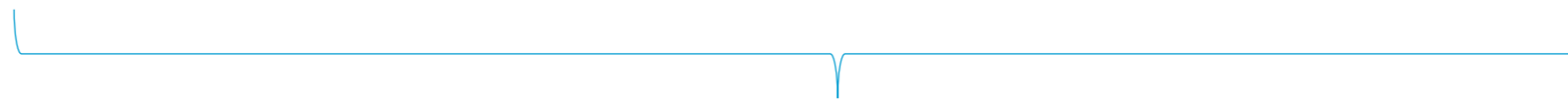
Executive Director

Water Footprint Network

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Stockholm WWW, August 29 2017

Water Footprint through a supply-chain



Garment water footprint



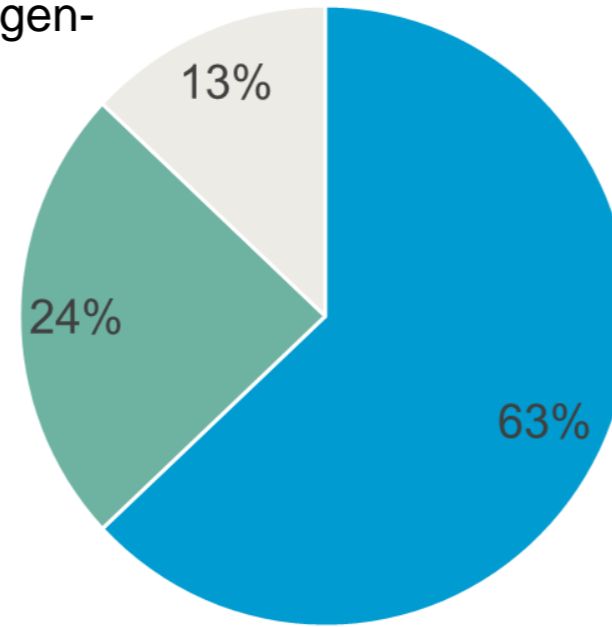
Case Study 1: Cotton in the field

- Water footprint studies of cotton at across 702 farms in 3 regions of India
- Water Footprint of the different agricultural practices
- Grey water footprint of different pesticides and fertilizers
- **conventional cotton farming:** mostly synthetic agrochemicals for pest control and fertilisers and has the least restrictions in terms of the chemicals
- **better cotton farming (REEL):** farms are stricter in the use of synthetic chemical pesticides and fertilizers than conventional farms
- **organic cotton farming:** use more compost, urea, neem and organic seeds

Original Global Study 1996-2005

Grey water footprint
Pollution from Nitrogen-based fertilisers

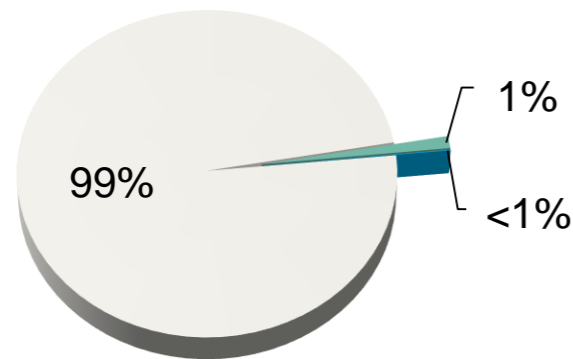
Green water footprint
The volume of rain - or soil moisture - consumed by plants during the growing period



Blue water footprint
The volume of water used for irrigation from surface or groundwater during cotton farming

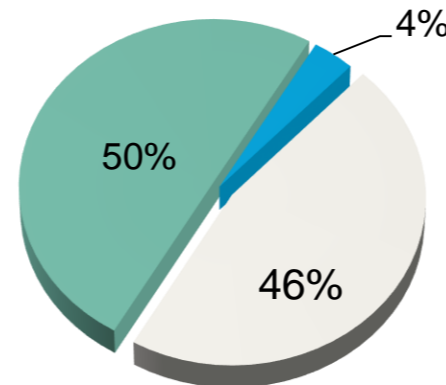
Farm Level Study 2013

Madhya Pradesh WF (m³/t)



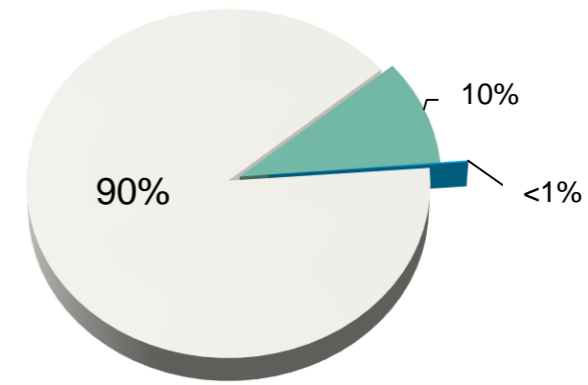
Total 338,039 m³/t

Gujarat WF (m³/t)



Total 4,184 m³/t

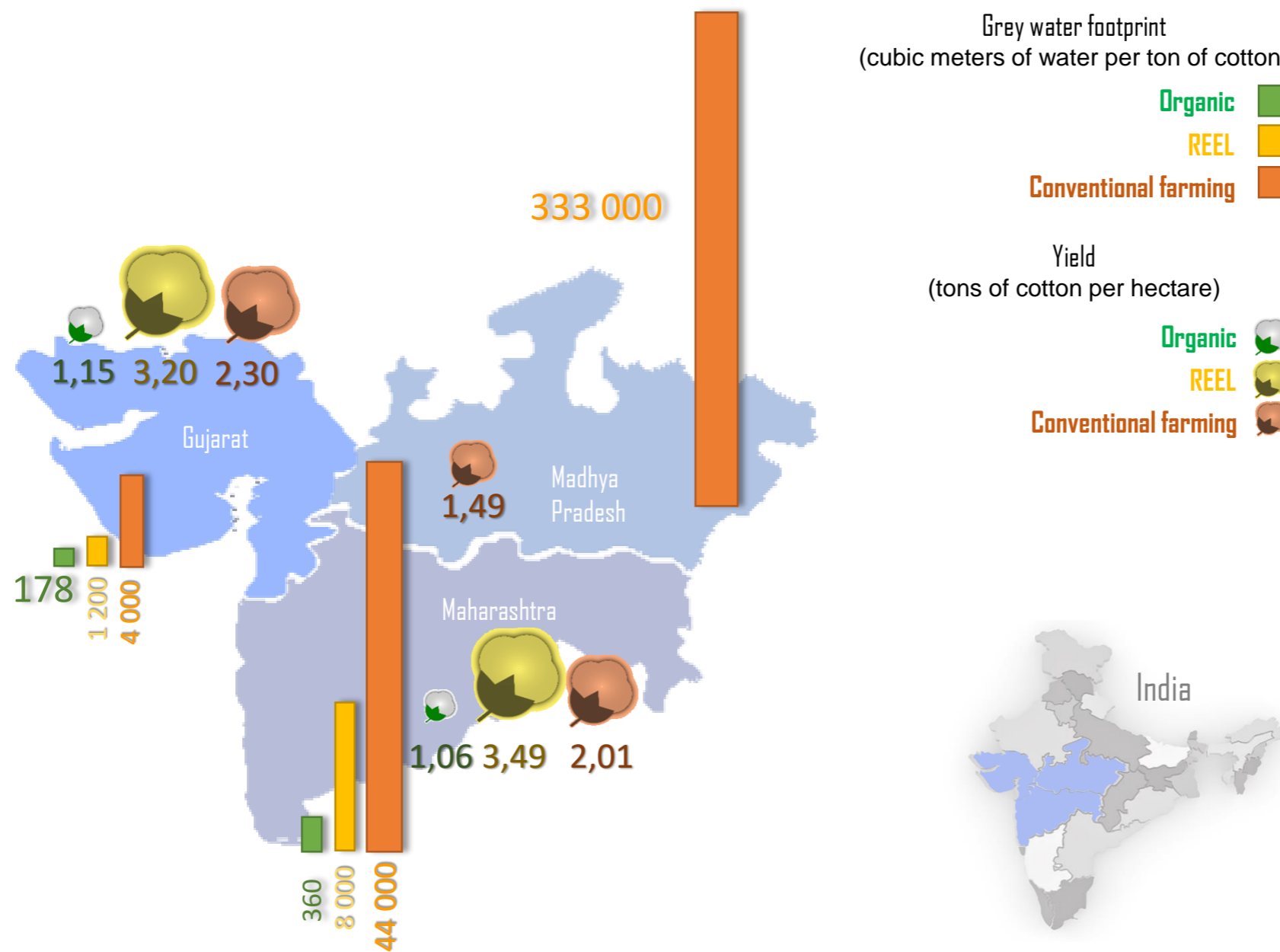
Maharashtra WF (m³/t)



Total 26,974 m³/t

Grey Water Footprint represents the largest share of the total water footprint and these values relate to farming practices

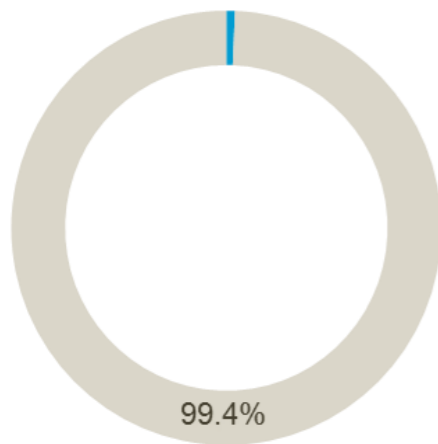
Grey water footprint and cotton yield in relation to farm practices



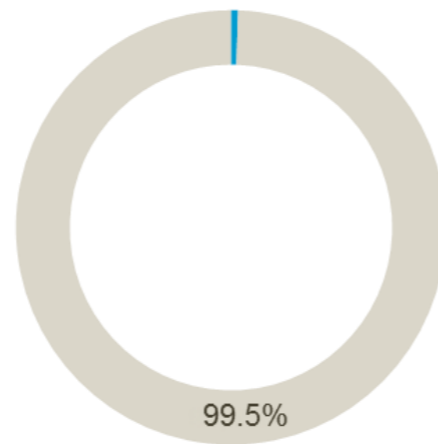
Case study 2: Polyester Fibres

From crude oil exploration up to fibre production

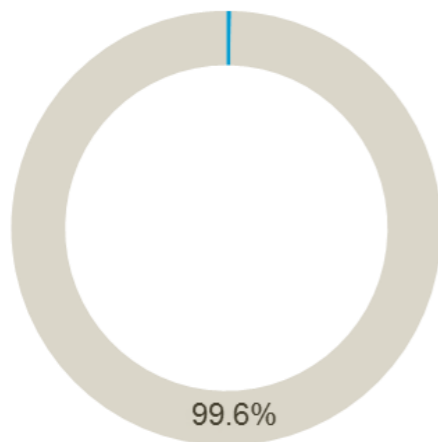
Polyester Filament Yarns (Min)



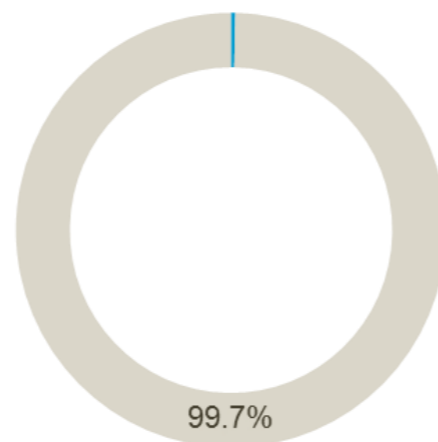
Polyester Filament Yarns (Max)



Polyester Staple Fibres (Min)



Polyester Staple Fibres (Max)



Blue WF

Grey WF

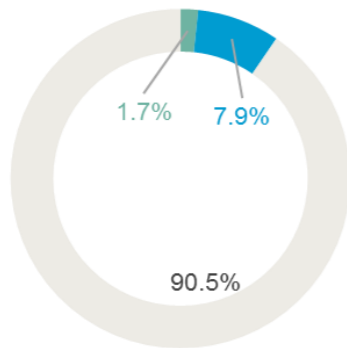
GREY WATER FOOTPRINT
50,690 – 71,033 m³/tonne

GREY WATER FOOTPRINT
51,066 – 71,409 m³/tonne

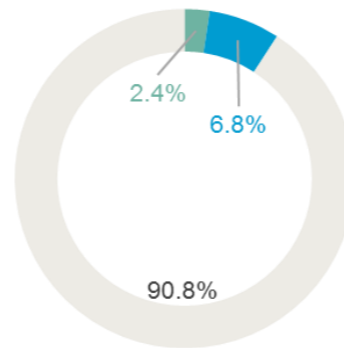
Case study 3: viscose fibres

From wood plantation up to fibre production

Viscose staple fibres (Brazil)

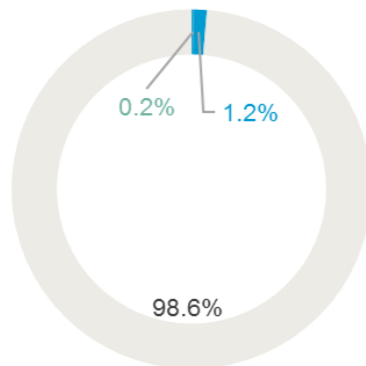


Viscose staple fibres (South Africa)

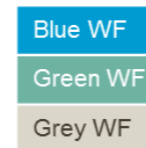
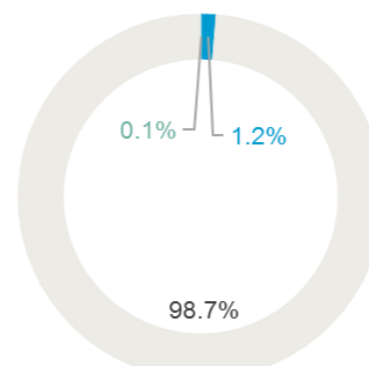


GREY WATER FOOTPRINT
678 - 996 m³/tonne

Viscose filament yarn (South Africa; continuous washing)

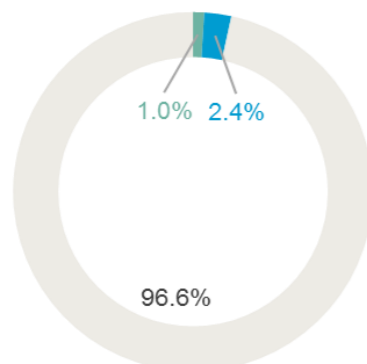


Viscose filament yarn (Brazil; continuous washing)

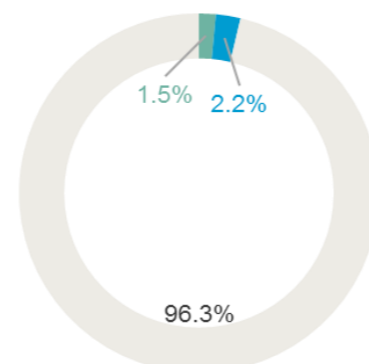


GREY WATER FOOTPRINT
30,596 – 30,914 m³/tonne

Viscose filament yarn (Brazil; batch washing)



Viscose filament yarn (South Africa; batch washing)



GREY WATER FOOTPRINT
3,305 – 3,624 m³/tonne

Case study 4: Water Footprints of Washing, Dyeing & Finishing Mills

- Studies done of 53 washing-dyeing-finishing mills located in Bangladesh and China
- Water consumption at washing-dyeing-finishing mills is proportionally smaller than at the raw materials stage of textile
- water footprint (annual and product) differs significantly among the mills according to processes involved, type of products, type and number of chemicals used and effluent treatment levels.
- The grey water footprint, derived from water pollution, is a major source of water footprint in the mills.
- BOD is the most critical measure of water quality parameter for most of the mills, indicating pollution from dyeing
- Reduction of amounts of chemicals and adequate effluent treatment are necessary to stop long term damage to water sources

Conclusions

- The grey water footprint is the most important component of the water footprint in textile production
- A high proportion of production sites (from field to finishing) are located in areas with high levels of water pollution and water scarcity problems
- The specific processes and practices greatly influence the grey water footprint of similar products
- The grey water footprint is a good metric to compare across the supply chain
- Specific production aspects and the local conditions need to be addressed

Thank you



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