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Sustainability Improvement within a Textile Processing Mill – a case study

Planet Textiles, 18 March 2010, Hong Kong

Lode Vermeersch

Agenda

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- Concerns and targets in term of sustainability
- Measuring sustainability in textile wet processing
- Living proof of sustainable innovation and implementation

What are the concerns?

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- Minimise pollution: air, water, land
- Optimise resources, energy, water, chemicals & time → efficient and right-first-time processing
- Ensure worker safety, EHS standards in mills
- Ensure consumer safety and satisfaction
- Communication brands & retailers

→ All factors need to be taken into consideration

Market Dynamics in Asia

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- Chinese government led industry targets – China Textile Invigorating Plan 2009 – 2011:

  - ***Energy: 5% reduction per value-added unit per year for the whole industry***
  - ***Water consumption will be lowered by 7% per year***
  - ***Wastewater discharge will be lowered by 7% per year***

- In India existing and foreseen water shortages

- In Bangladesh gas shortages are prevalent

- Global and regional brands & retailers in Asia, focusing on the increasing performance demands of the growing Asian middle class consumer population

→ Market dynamics require innovative sustainable textile processing solutions

The main ecological & social challenges

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- Production phase: highest effects in water, energy and chemical usage for dyeing & finishing (wet processing)

	Water	Effluent	Energy	Chemistry	Land	Society
Cotton cultivation	●	●	○	●	●	○
Spinning	○	○	●	○	○	○
Weaving/knitting	○	○	●	○	○	○
Wet Processing	●	●	●	●	○	○
Garmenting	○	○	○	○	○	●

Legend: ○ no effect, ○ some effect, ● large effect, ● very large effect

Source: Otto group/ 2006

Holistic view sustainability in wet processing

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- Water and energy in the textile production

Source: bluesign® 2008

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Measuring Sustainability in Textile Processing

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- Water Footprint (WF)
- Life Cycle Analysis (LCA)
- Carbon Footprint (CF)
- Energy Profiles & Resource Utilization (→ audits)

→ No standardized methodology

→ Concentrate on water, chemicals, energy and time savings

Water Footprint in Textile Processing

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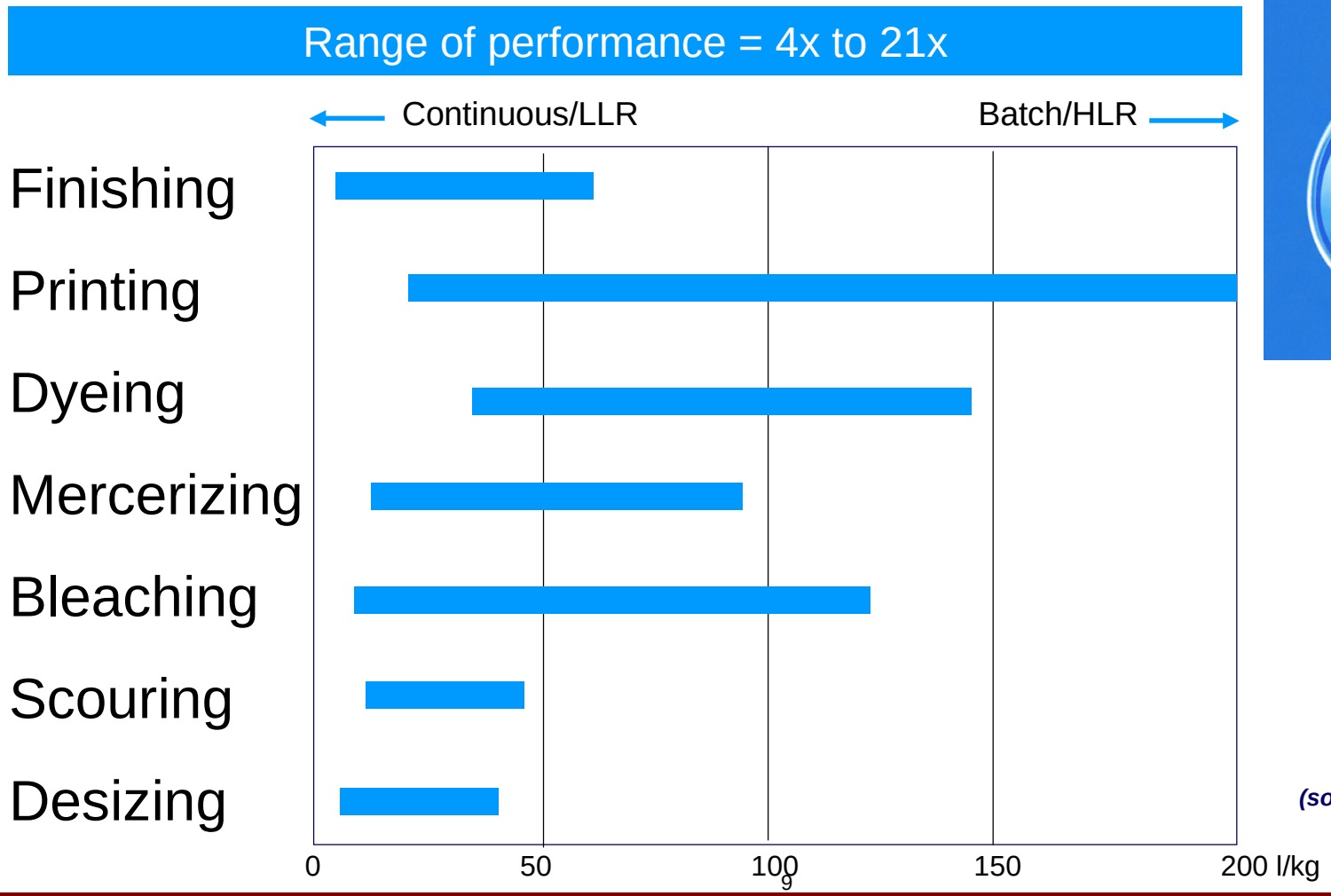
- Water consumption by Wet Processing Step



(source Cotton Inc., 2009)

Water Footprint - Dyeing Process

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Liquor ratio	Tempera-ture	Dyeing cycles (hours)	Washing off (baths)	Equivalent to l/kg water
Best Available Technology				
5:1	60˚C	1.5	4-5	25-30
12:1	80˚C	3	5-7	72-96
Current Industrial Practice				

SMART Jet - batchwise process
More then 60 % savings in water usage

Life Cycle Assessment (LCA) – Defintion & Inventory

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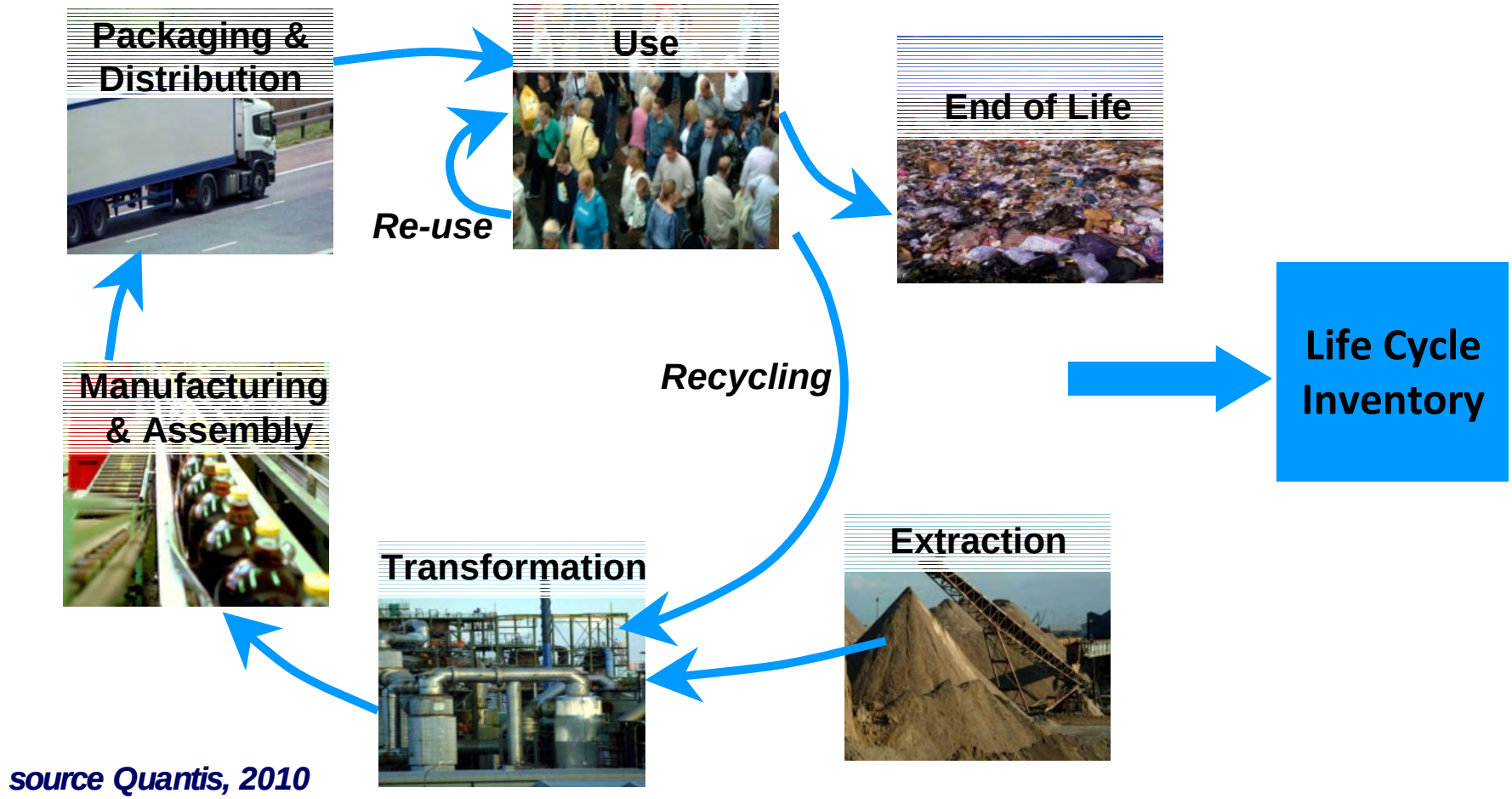
In each step **resources** & **emissions** are evaluated



source Quantis, 2010

Life Cycle Assessment – Impact

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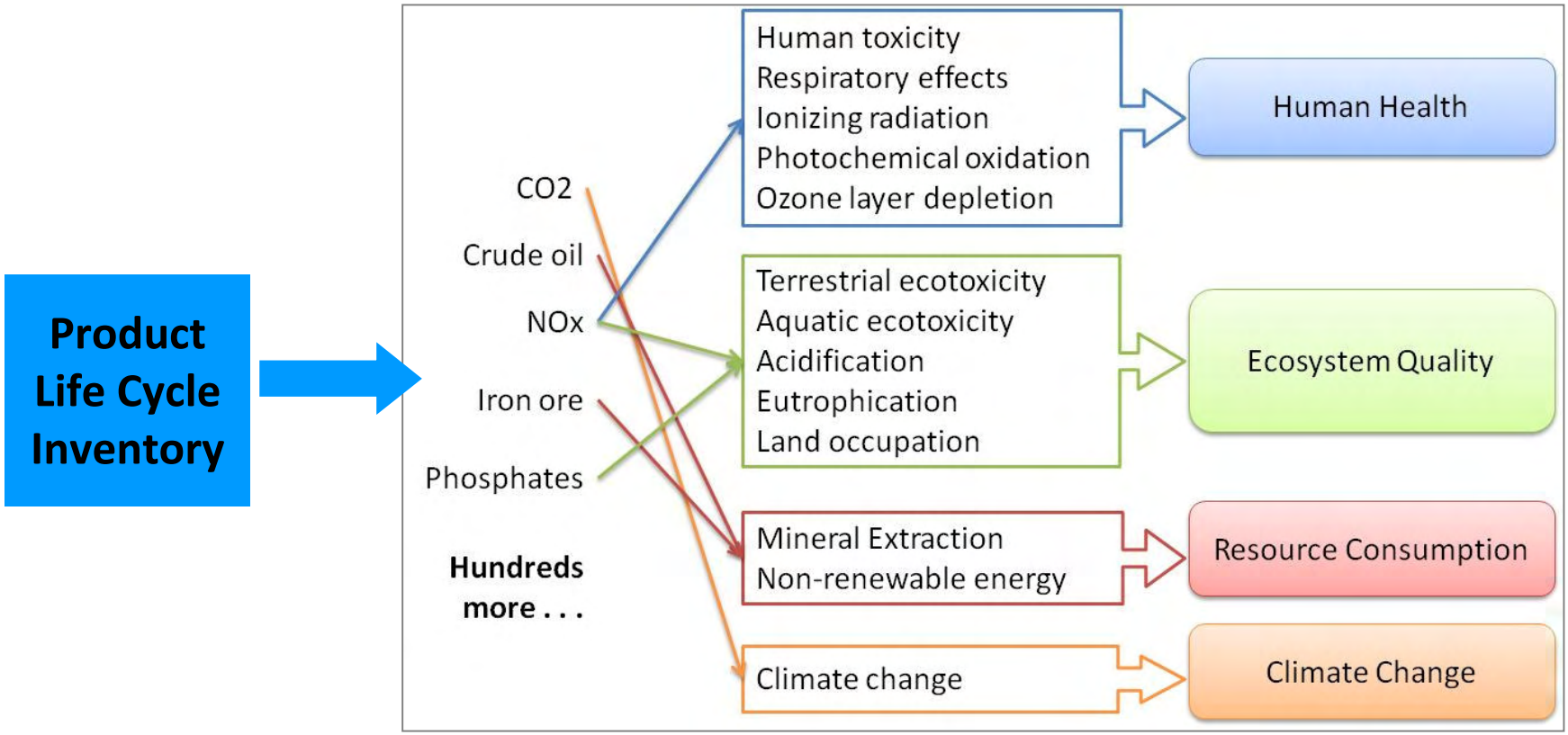

source Quantis, 2010

Carbon Footprint (Climate Change Impact)

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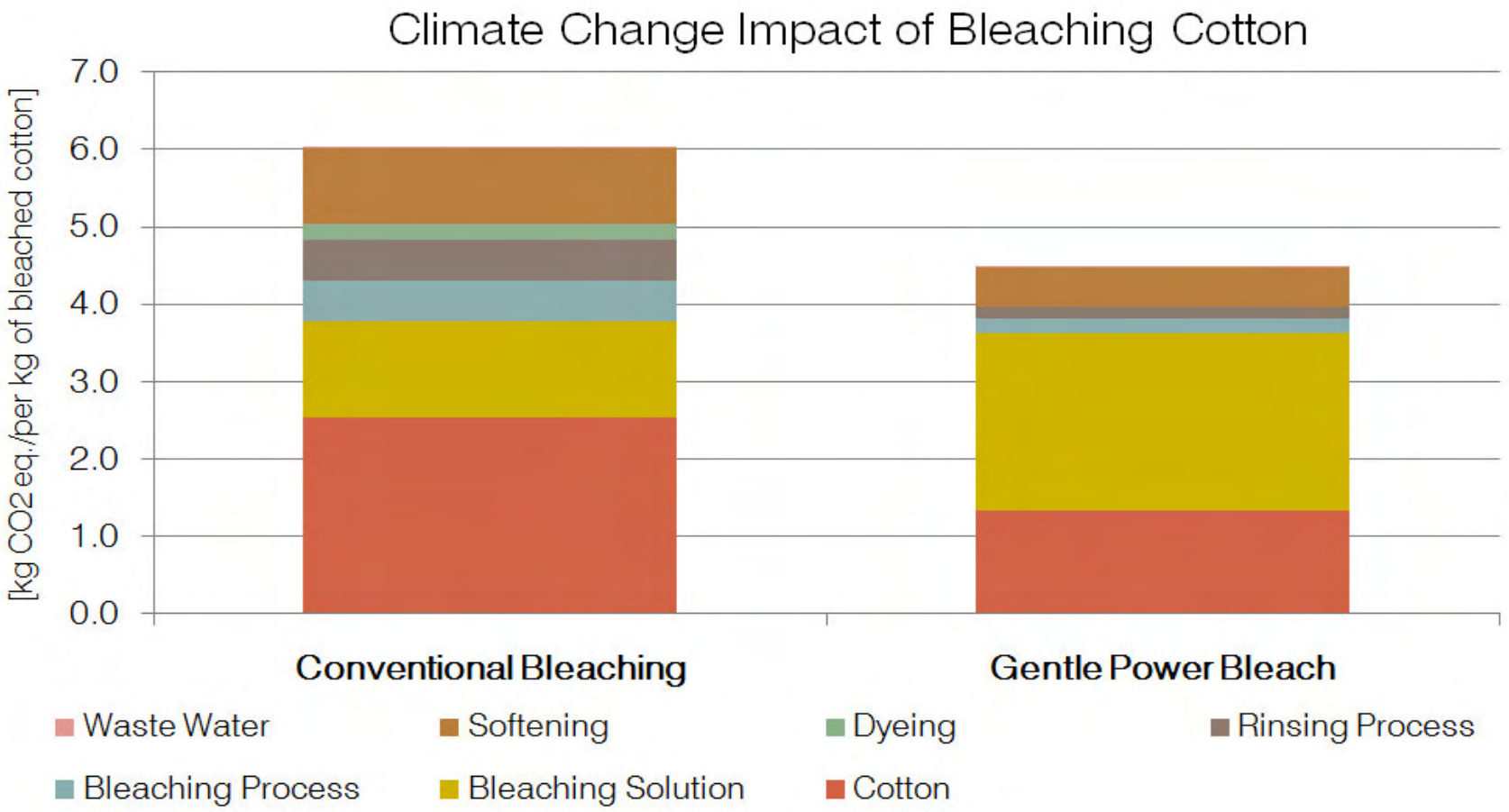
25 % savings in Climate Change Impact for Gentle Power Bleach™



Preliminary result, source Quantis, 2010

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Living proof : Gentle Power Bleach™

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- Peroxide bleach preparation at mild conditions
  - Low temperature of 65° C
  - Neutral pH
- Enhanced quality
  - No fiber damage →more durable garment
- Responsible technology
  - Savings in energy and water
  - Less cotton weight loss
  - Right-first-time production
  - bio-based solution with latest enzyme technology

Living proof : Auditing – Masco Textile

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Technical audit to improve sustainability

Country: Bangladesh
Processing: Cotton Knit, exhaust
Brands: H&M, C&A, Tschibo
Total prod. : 20 tons/day, 6000 tons/year

MASCO

Processing route

Pretreatment
Bio-Polishing
Dyeing
Washing-off
After-treatment (fixing/softening)

Living proof : Auditing – Masco Textile

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Resource consumption per Year

	Before audit	March 2010	Coming soon
Water:	960000 m^3	660000 m^3	360000 m^3
Electricity:	2.1 mio KW	1.5 mio KW	0.8 mio KW
CO_2:	428 t	300 t	163 t

One process optimisation step with a huge impact on sustainability.

Immediate reduction of 30% and 60% coming up

Living proof : Auditing – Masco Textile

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Total Bangladesh resource consumption per Year

(based on a production of 700'000 t of CO knit)

Water :	116 mio m3
Electricity:	243 mio KW
CO2:	50000 t

In the future 70 mio m^3 of water and 30000 tons of CO_2 could be saved

→ additionally 1.3 liter of fresh water per day for the entire population during 1 year

Sustainability in textile processing – Brand & Retailers

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Many Brands & Retailers take initiatives beyond the restricted substance list (RSL) e.g.:

- Patagonia (The footprint chronicles)
- C&A (Biocotton products)
- H&M (Water footprint)
- IKEA (Better cotton project)
- KiK (Carbon footprinting)
- Walmart (Sustainability Index)
- COOP (Naturaline)
- Otto Group (Garment carbon footprint)
- Levi‘s (Eco-jeans)
- M&S (**Plan A** and ***Eco-Dyehouse Project***)

Contribution Huntsman Textile Effects for Sustainable Textile Development

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- Innovation: product & process development that enable textile mills to conserve resources
- Highest standards in product stewardship
- In-depth textile know-how, cooperation with machine manufacturers and fiber producers
- Implementation new processes at textile mills
- Auditing dyehouses
- Dedicated business development team, brand & retail marketing

Sustainability in textile processing – Conclusion

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- Joint effort and co-operation needed with all stakeholders