July 5-8, 2023

Wageningen,
The Netherlands

SCORAI-ERSCP-WUR Conference

On the path to a circular textile economy

Dr. Frieder Rubik
(Institute for Ecological Economy Research)

www.scp-conference-2023.com

Background

Financed by:

GEFÖRDERT VOM
Bundesministerium für Bildung und Forschung

Programme:

ReziProK
Ressourceneffiziente Kreislaufwirtschaft – Innovative Produktkreisläufe

FONA
Forschung für Nachhaltigkeit

Duration: 1.8.2019 - 31.12.2022

Subsidy: 2,104,543 €

Project team:

i ö w
INSTITUT FÜR ÖKOLOGISCHE WIRTSCHAFTSFORSCHUNG

ifeu
INSTITUT FÜR ENERGIE- UND UMWELTFORSCHUNG HEIDELBERG

Hochschule Reutlingen
Reutlingen University

MEWA
TEXTIL-MANAGEMENT

DIBELLA
LONGLIFE TEXTILES

WILHELM WEISHÄUPL HOHENSTEIN

circular.fashion

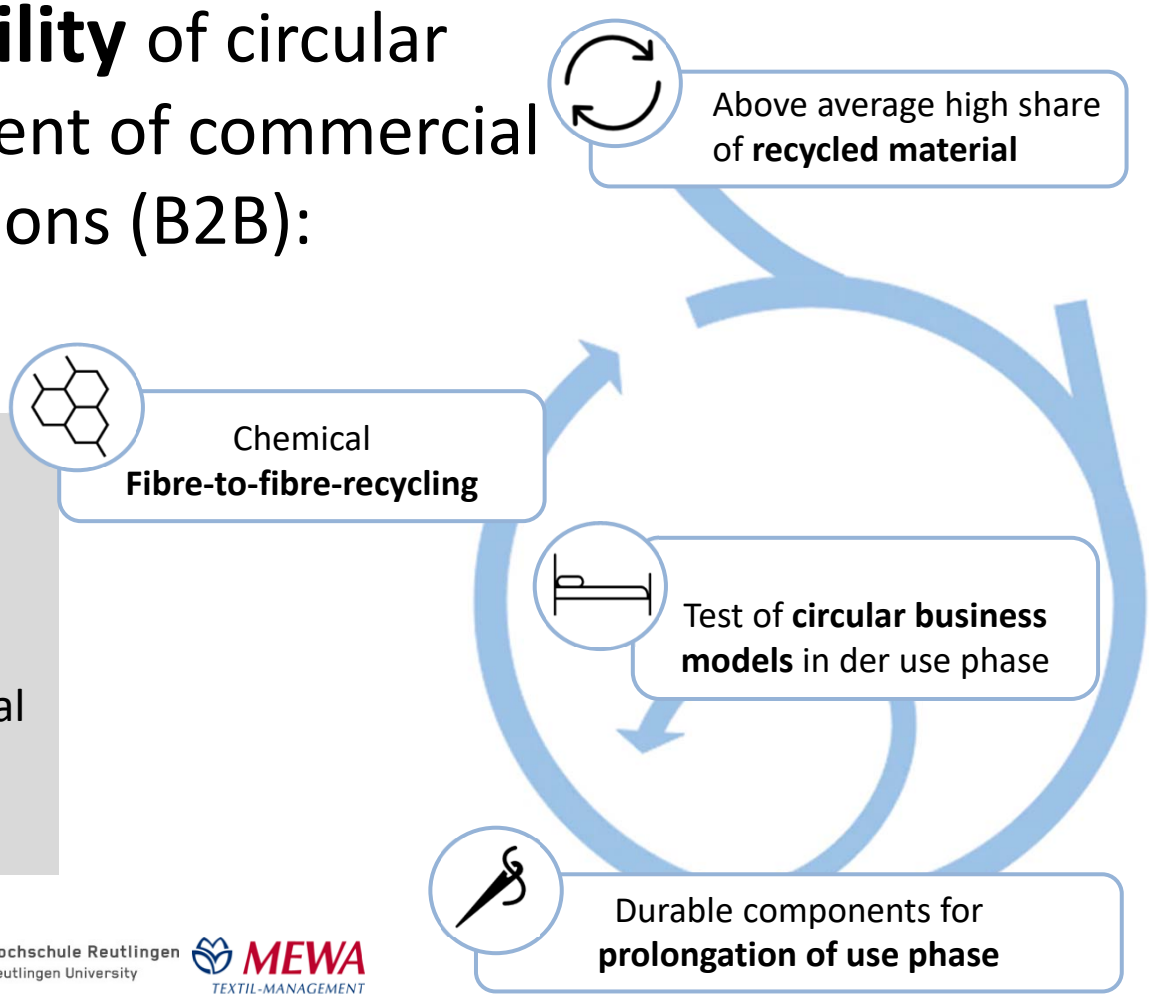
Background

Commercially used textiles and working clothes (B2B) offer potentials due to:

- **large quantity of identical textiles** of known composition
- established **logistics by textile services** in the usage phase
- long-term **business relationships** among commercial consumers, textile services and manufacturers

Aims

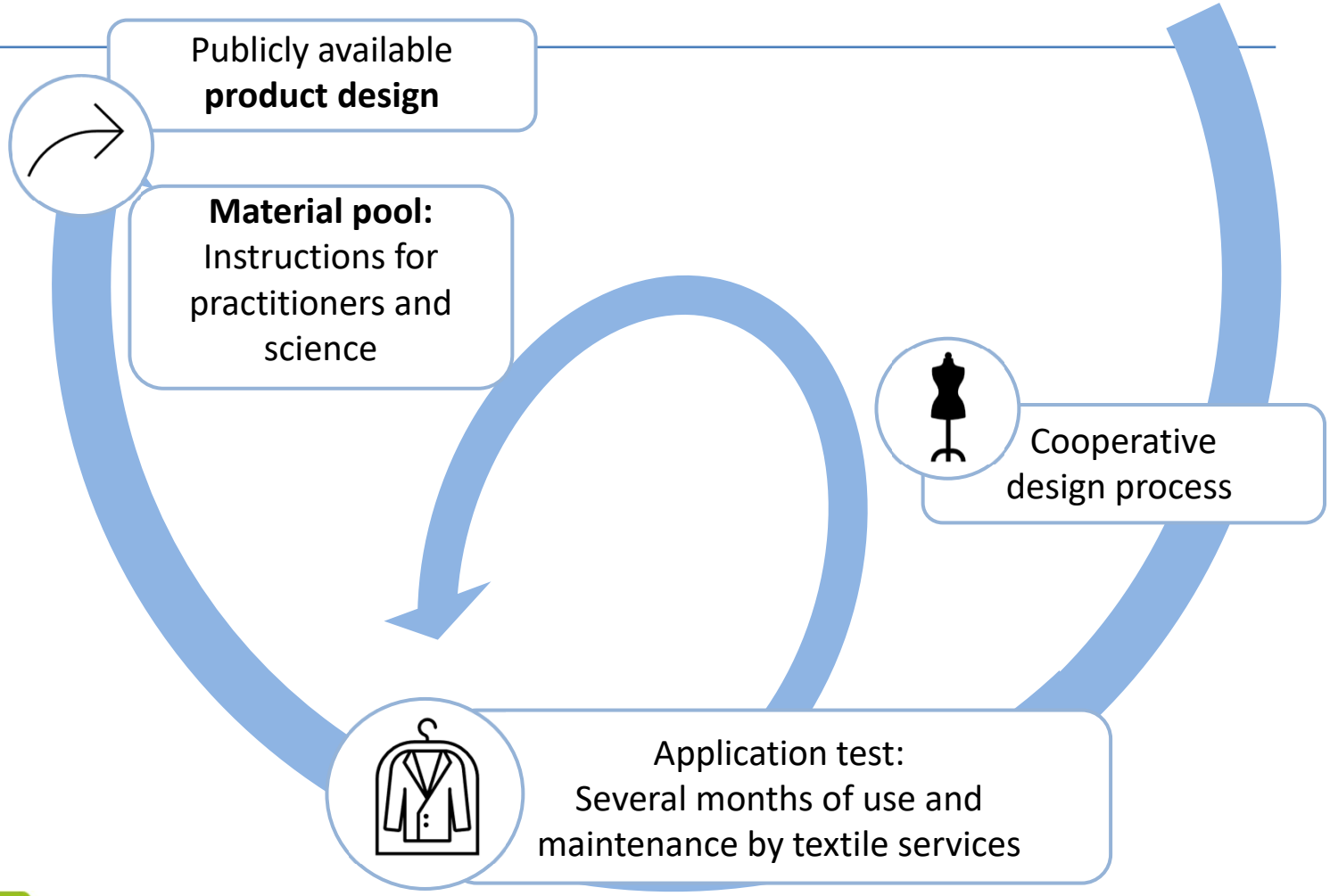
Proof of the **feasibility** of circular textiles in the segment of commercial clients and applications (B2B):



Resulting in

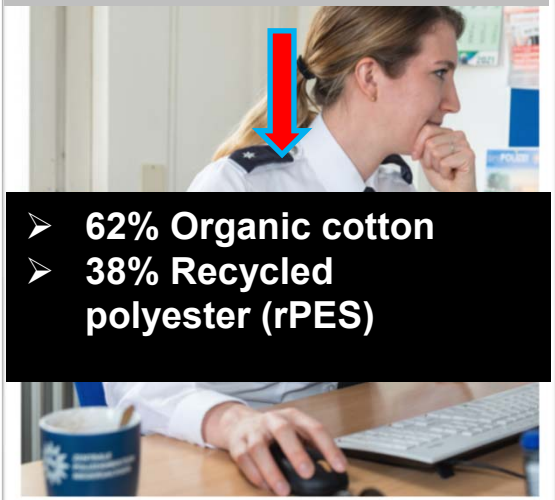
- Constricting, decelerating and closing of material cycles
- Decrease of environmental and ressource-related burdens

Process


Publicly available
product design
Material pool:
Instructions for practitioners and science
Cooperative design process
Application test:
Several months of use and maintenance by textile services

Application test

Standard textile:
- **70% Cotton**
- **30% Polyester**



- **62% Organic cotton**
- **38% Recycled polyester (rPES)**

© ZPD NI 2022

WILHELM WEISHÄUPL

Business shirt:
Interior Ministry Lower Saxony – Police officers in indoor and outdoor service

Standard textile:
- **60% Polyester**
- **40% Cotton**

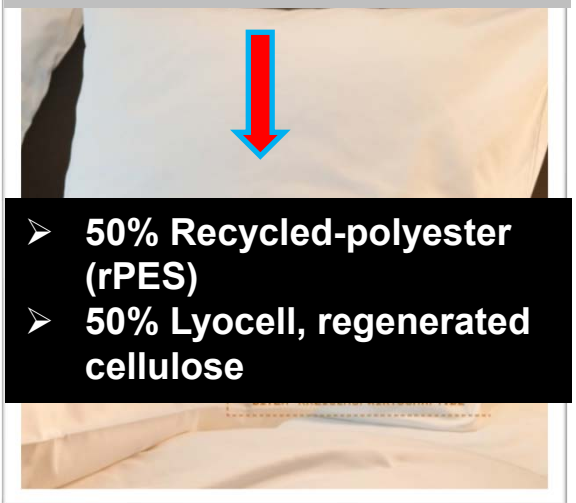
- **100% Recycled polyester (rPES)**

© Kreis Lippe FC Lembke 2021

WILHELM WEISHÄUPL

Polo shirts:
Emergency service Kreis Lippe/DE

Standard textile:
- **50% Polyester**
- **50% Cotton**



- **50% Recycled-polyester (rPES)**
- **50% Lyocell, regenerated cellulose**

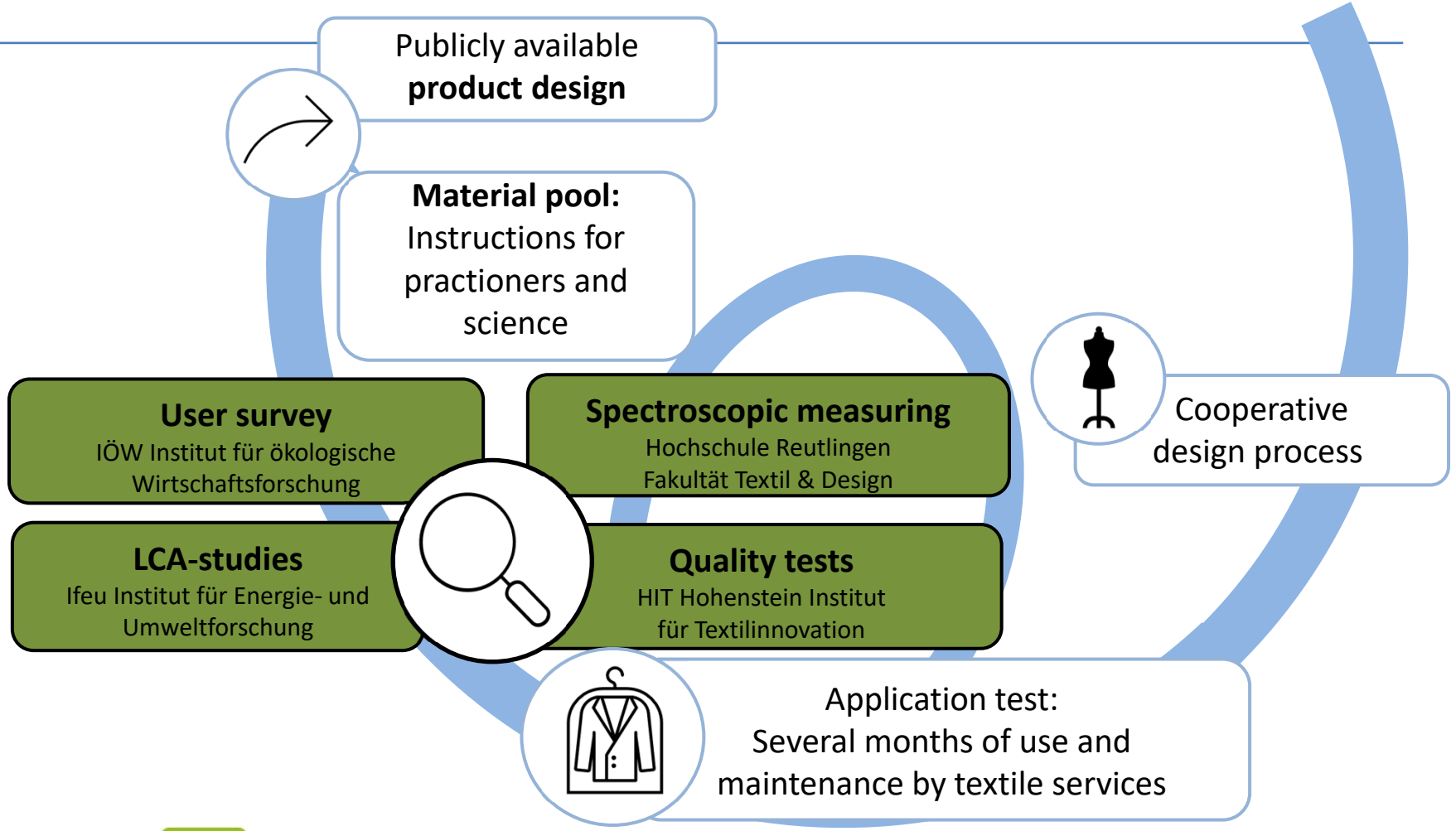
© Dibella 2020

Dibella longlife textiles

Bed linen:
Federal Police Directorate Munich/DE

Download of product designs:
https://www.ditex-kreislaufwirtschaft.de/projekt/textile-kette

Methods application test

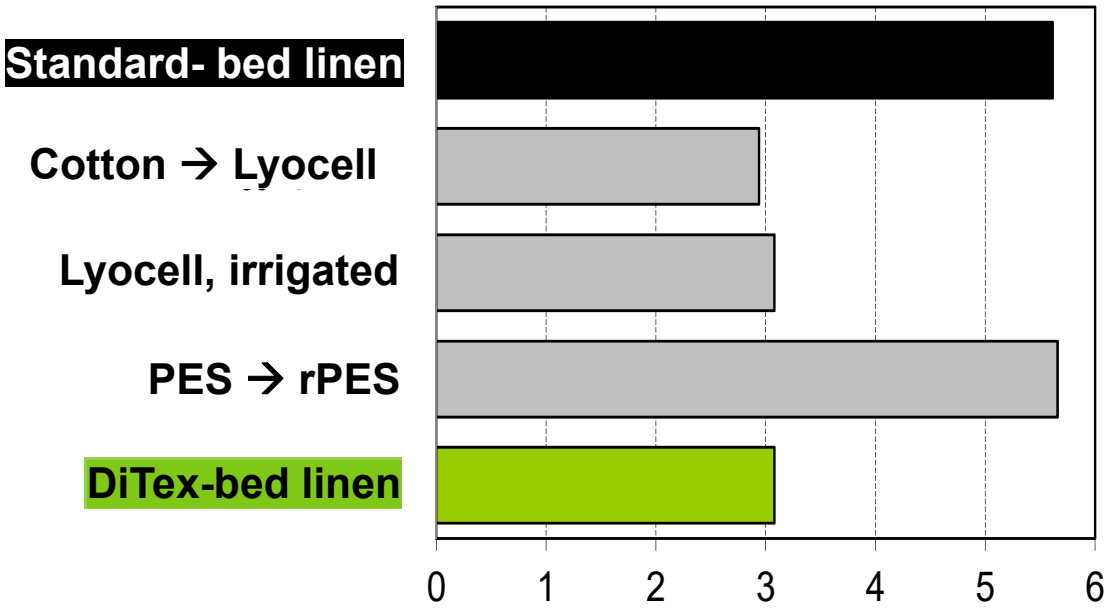


Results of textil-assessments and user survey

ReziProK
Ressourceneffiziente Kreislaufwirtschaft – Innovative Produktkreisläufe

- Fibre composition and weave construction conform to the quality requests of leasing textiles to a large extent.
- Challenges at tailoring: These are not due to fibres, but due to manufacturing.
- High satisfaction of textile services and commercial clients.
- Good user satisfaction of 2 DiTex textiles, minor acceptance of the 100% rPES-shirt.

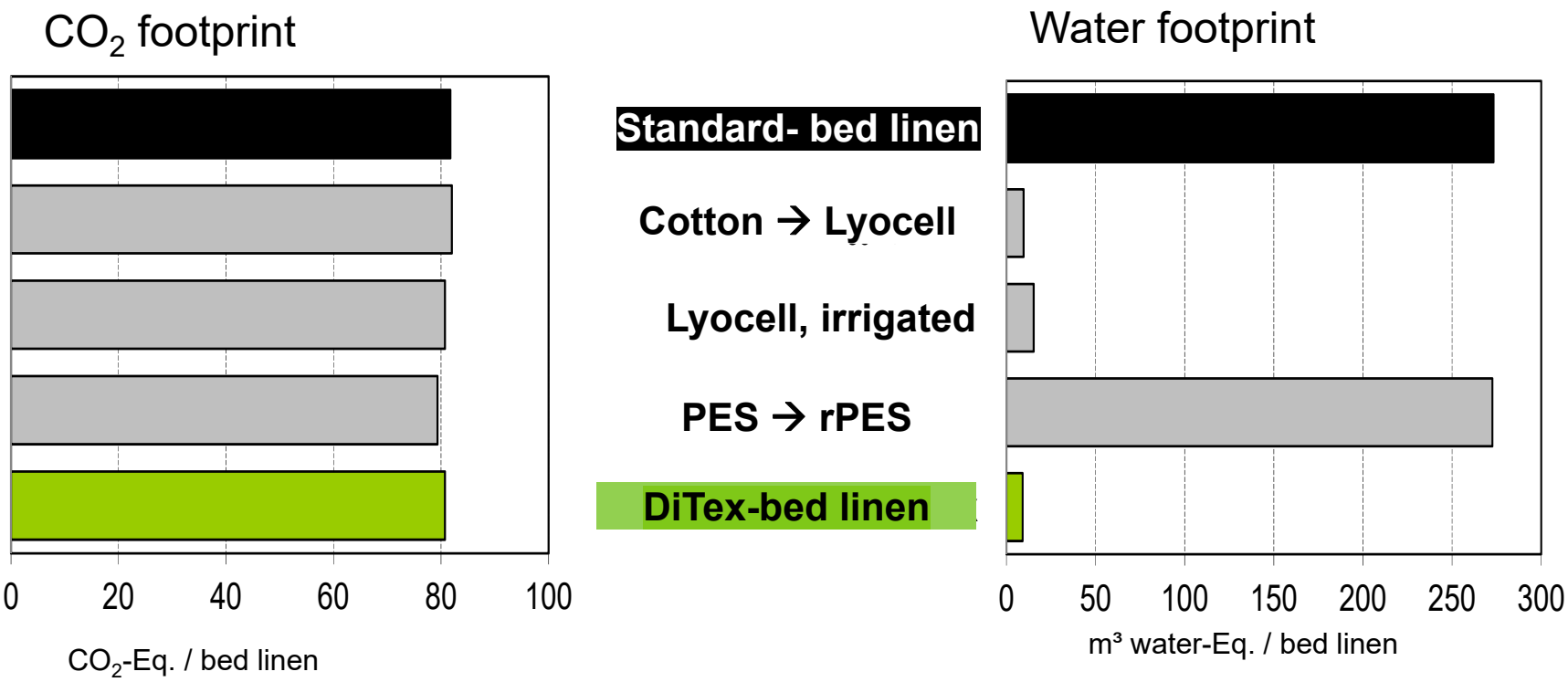
Results LCA bed linen: land consumption-footprint



Source: Gärtner et al. (2022)

Results LCA bed linen: CO_2 and water footprints

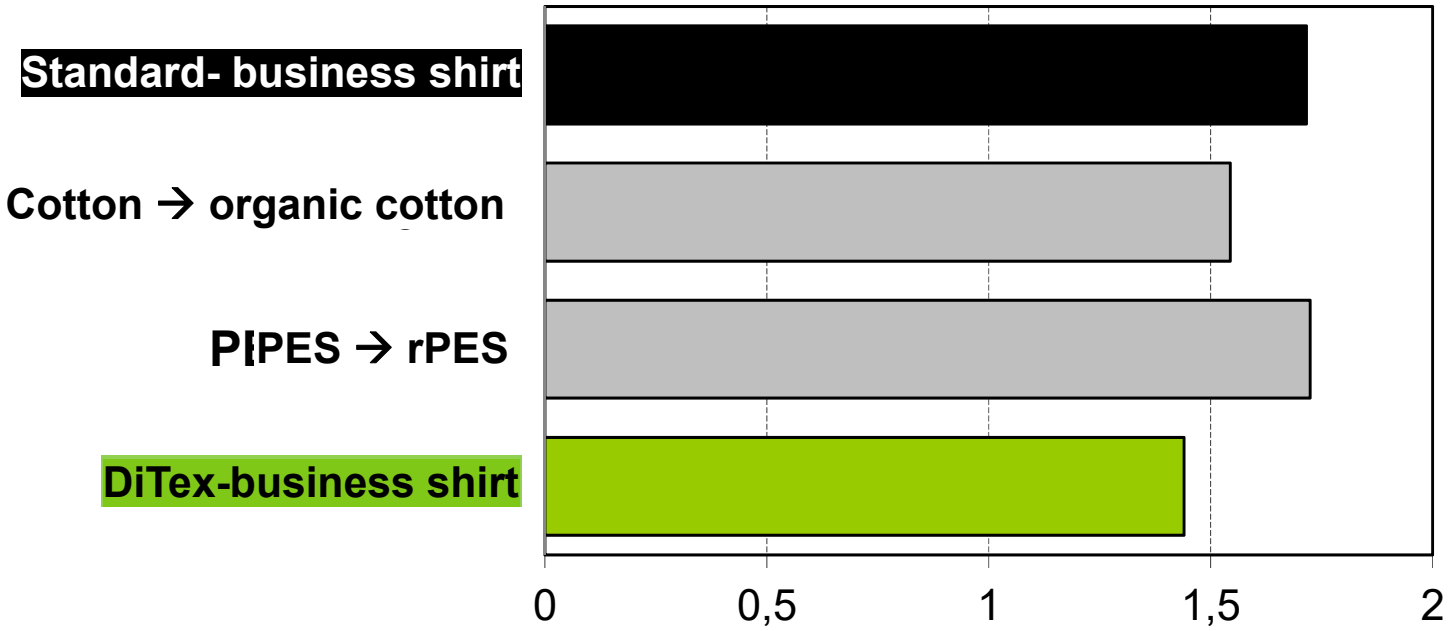
ReziProK
Ressourceneffiziente Kreislaufwirtschaft – Innovative Produktkreisläufe



Source: Gärtner et al. (2022)

Source: Gärtner et al. (2022)

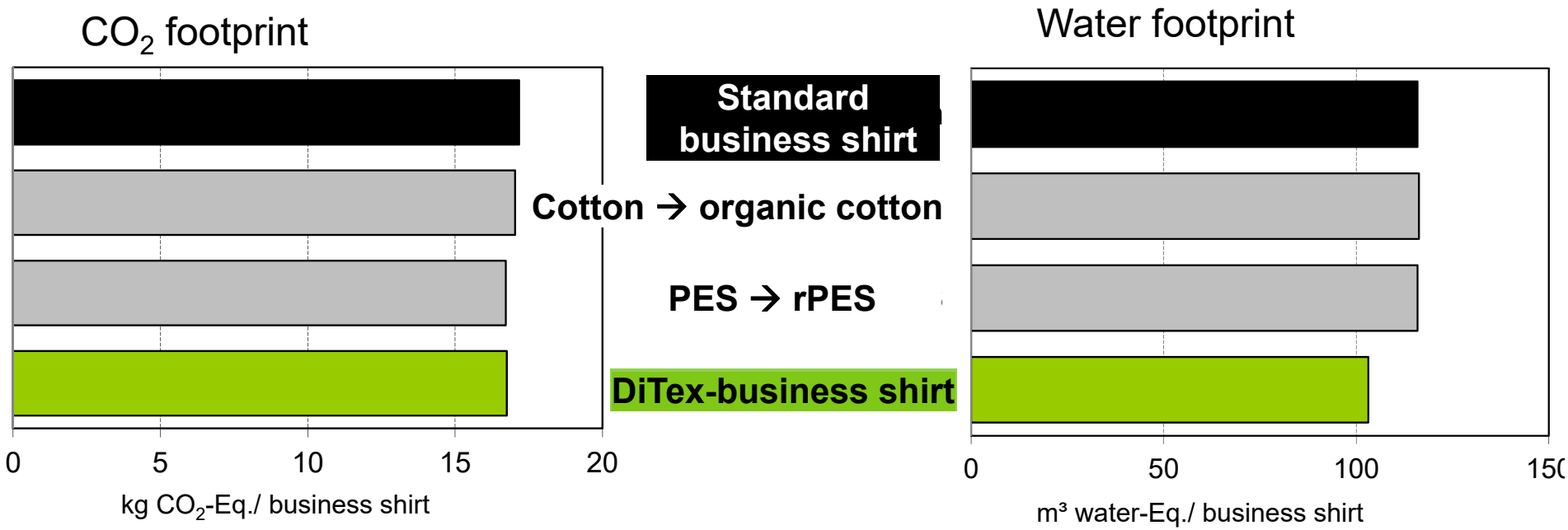
Results LCA business shirt: Land use footprint



m² artificial land eq. (aL-eq) × yr Distance-to-Nature Potential / business shirt

Source: Gärtner et al. (2022)

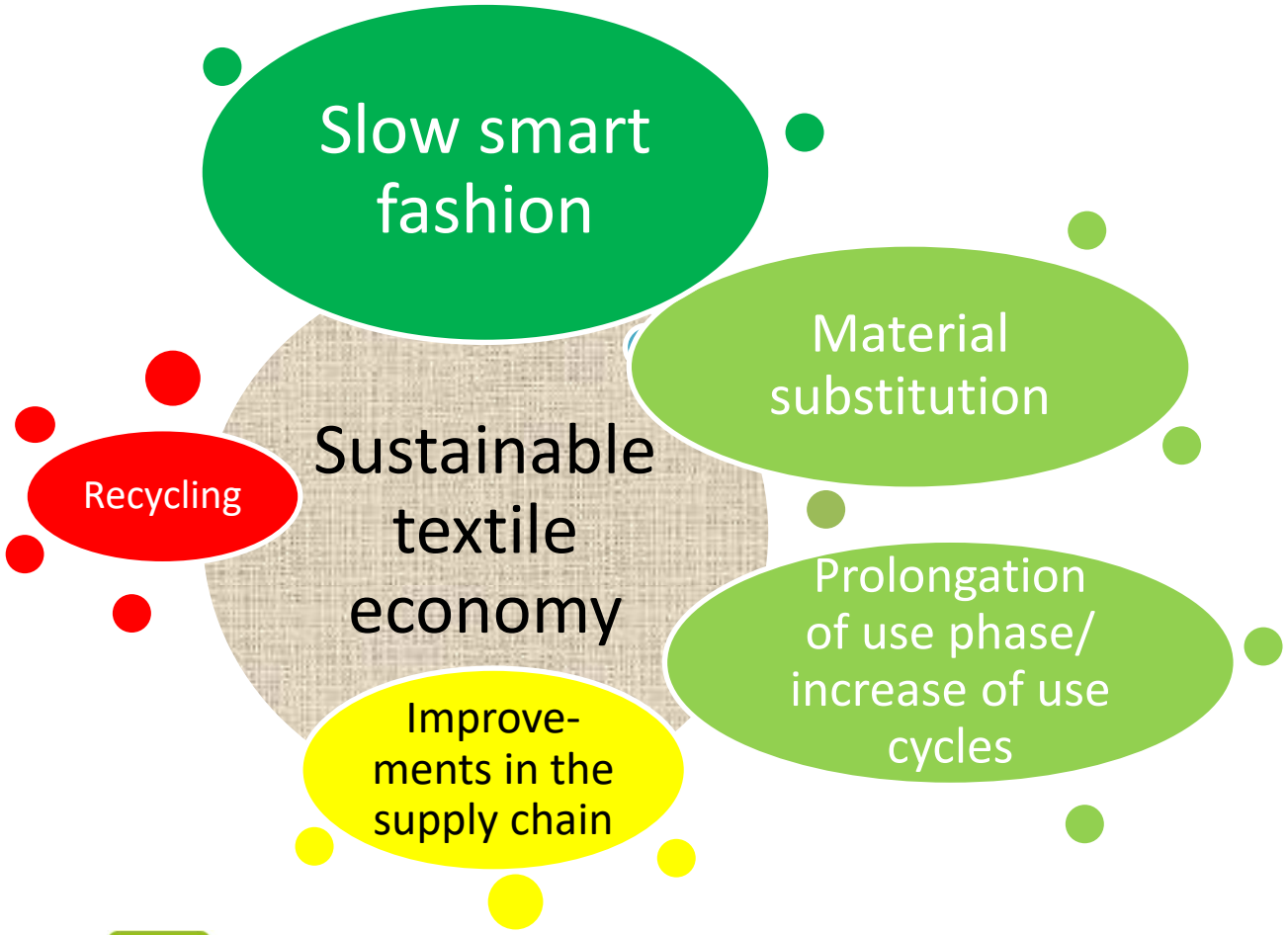
Results LCA business shirt: CO_2 and water footprints



Source: Gärtner et al. (2022)

Source: Gärtner et al. (2022)

Crucial key factors – deduced from LCAs



Recommendations

- **Internalisation** of external costs (especially CO_2) !
- **Focus** on **collection systems** especially towards cutting losses and preferably mono-material textiles !
- **Networking** of actors along textile supply chains to build circular structures !
- Textile service – **offers** (incl. closed-loop) of circular textiles with emphasis on convenience and sustainability !
- **Use of aggregated demand power** of public & commercial clients!
- **Research programme** "Slow smart fashion" !

ReziProK
Ressourceneffiziente Kreislaufwirtschaft – Innovative Produktkreisläufe

Thank you for your attention!

Dr. Frieder Rubik

frieder.rubik@ioew.de

Wageningen / NL 8 July 2023

You will find all materials and publications here:
https://www.ditex-kreislaufwirtschaft.de

Literature

Gärtner, S., Reinhardt, G., Senn, J. (2022): Ökobilanz von nachhaltiger, kreislauffähiger Bettwäsche. https://www.ifeu.de/publikation/ditex-oekobilanz-bettwäsche/

Gärtner, S., Haertlé, S., Reinhardt, G., Senn, J. (2022): Ökobilanz von nachhaltigen, kreislauffähigen Businesshemden. https://www.ifeu.de/publikation/ditex-oekobilanz-hemd/