

Sharing is caring – for the environment?

Results of life cycle assessments for peer-to-peer sharing

4. IWSE

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RESEARCH BACKGROUND AND RESEARCH QUESTIONS

- Peer-to-peer (p2p) sharing is perceived as environmentally sound
- Environmental benefits occur due to a reduction of demand for new products
 - an extension of product life times
 - an intensified use of products
- But there is little knowledge and empirical insight into the actual impacts of sharing practices on the natural environment

1. What are the environmental benefits of consumption behaviour **with p2p sharing** activities compared to an equivalent consumption behaviour **without active sharing**?
2. What are the environmental benefits associated with the **change in user behaviour** that is caused by the availability of p2p sharing platforms?



vs.



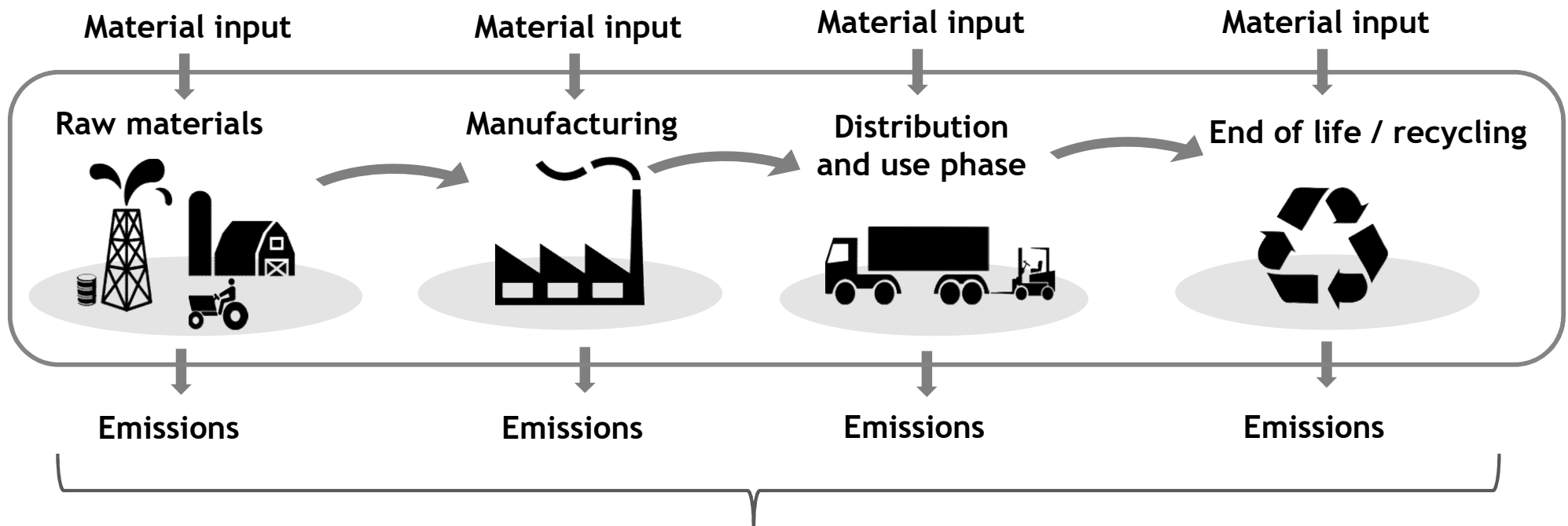
Kleider
Kreisel

METHODOLOGY

Life Cycle Assessment (LCA)

Method: Life Cycle Assessment is a compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle

Tool: Mass flow modelling software

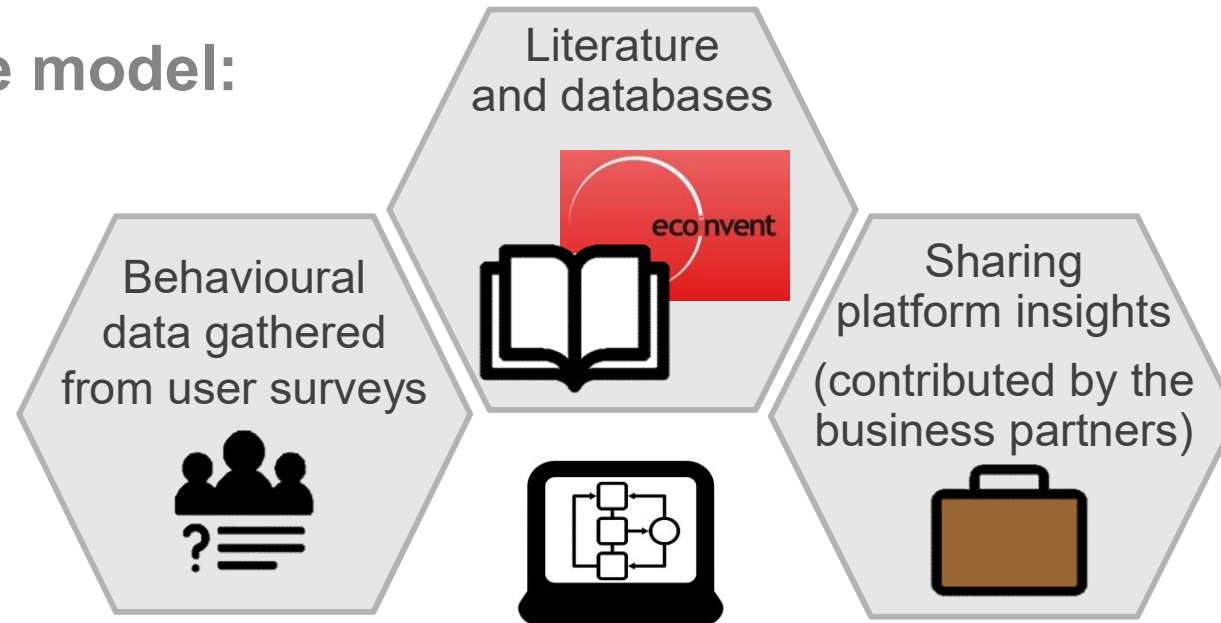


Environmental impact categories, examples:

- Climate Change / Global Warming Potential (CO₂ equivalents)
- Terrestrial / Aquatic Eutrophication (PO₄ equivalents)
- ...

Life Cycle Assessment (LCA)

Input data for the model:



Results refer to:

- the consumption impacts of
- one representative German consumer
 - during one calendar year



LCA for Kleiderkreisel (KK)

- Consumption mode: trading of second-hand clothing

- Clothing type modelled: cotton T-shirts (200 g) from global average production



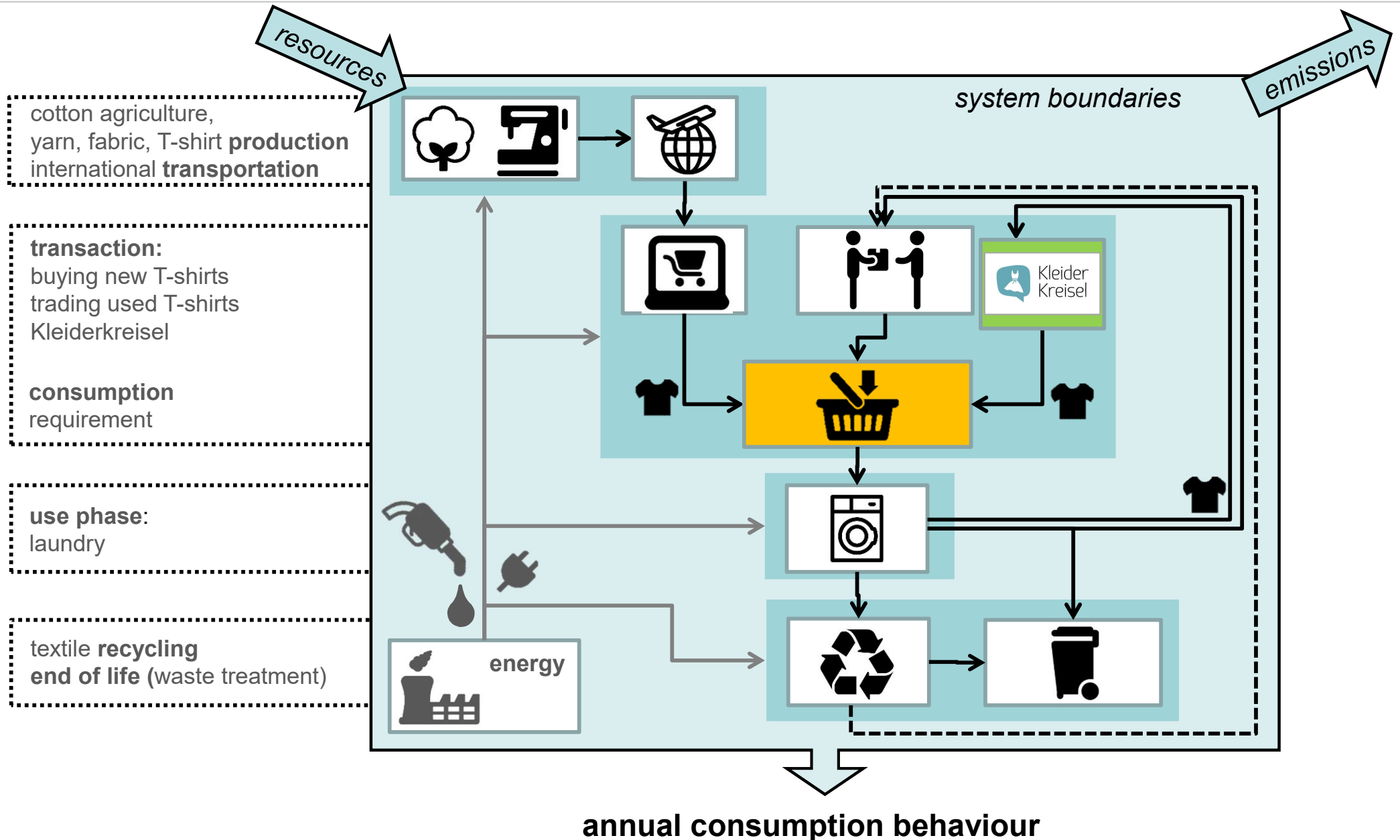
- The average KK user consumes a total of 2.3 kg or 11.5 T-shirts per year



- Results: Comparison of environmental impacts caused by different consumption patterns

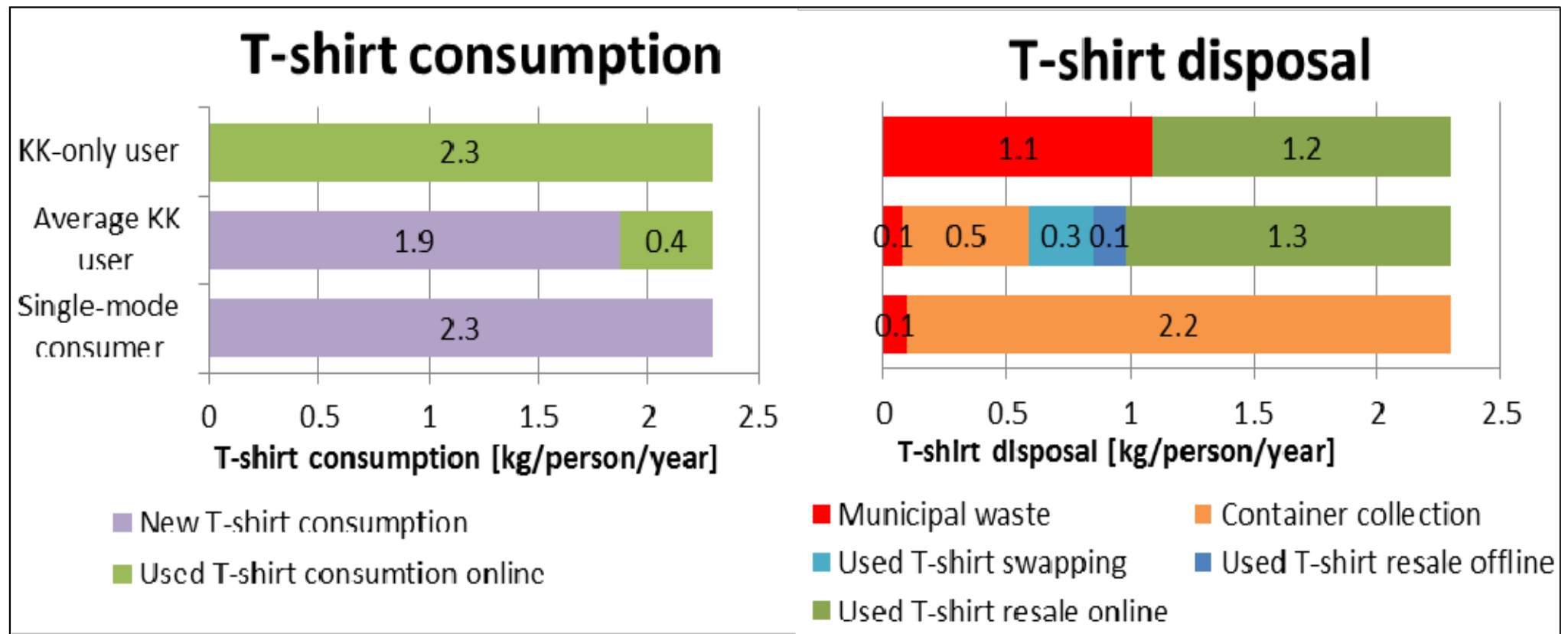


LCA model overview for KK



- **RQ 1: What are the environmental benefits of consumption behaviour with p2p sharing activities compared to an equivalent consumption behaviour without active sharing?**
- **Three consumption/disposal patterns are compared:**
 1. The **KK only user** buys all T-shirts via KK and resells as much as possible via KK, avoiding container collection
 2. The **average KK user** behaves according to the user survey, with 18.5 % of T-Shirt consumption via KK
 3. The **single-mode consumer** buys only new T-shirts and leaves all used T-shirts to container collection.

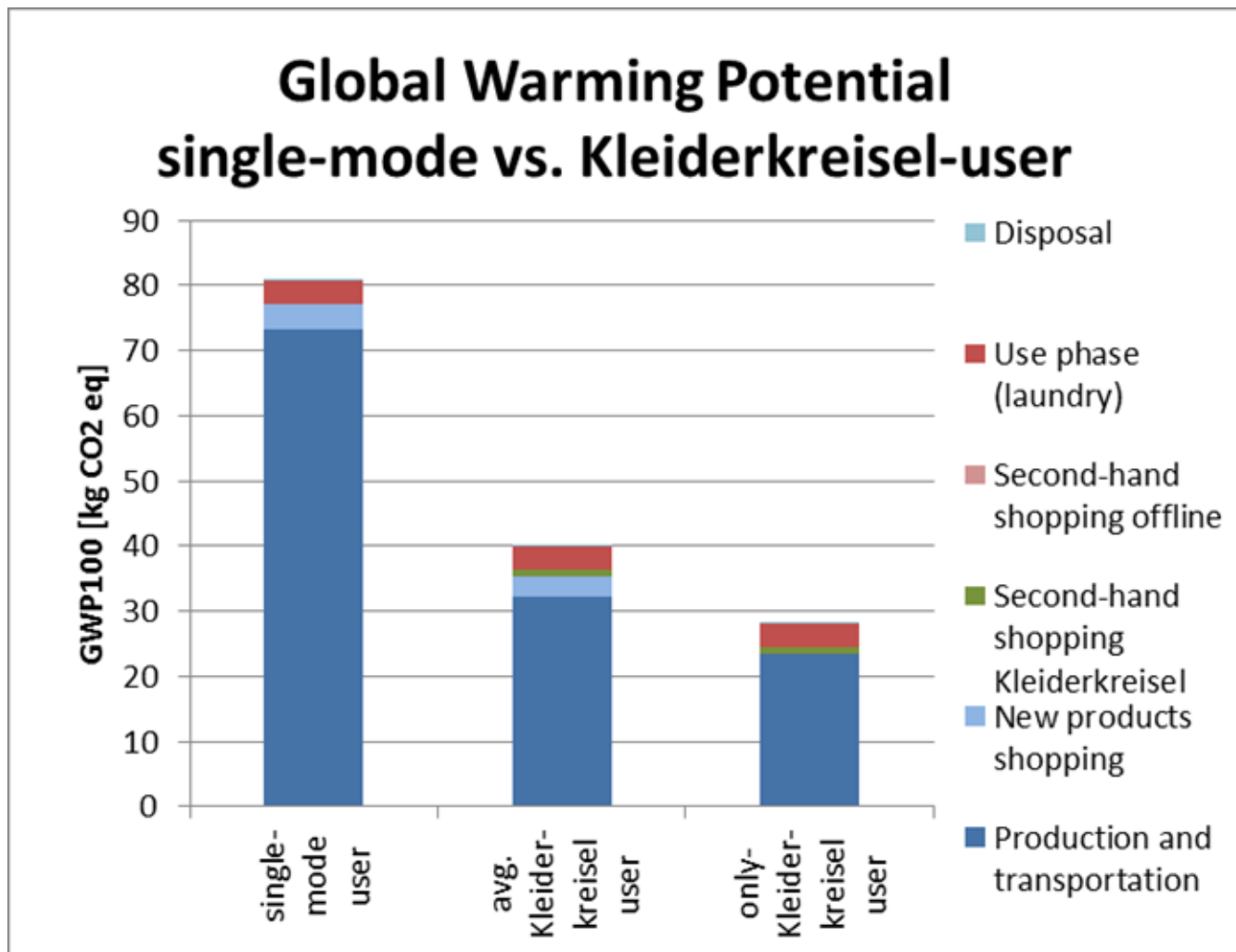
- consumption/disposal patterns:



RESULTS

P2P sharing can reduce GWP impacts

- Global Warming Potential (GWP) in kg CO₂ equivalents
- Emissions originate from e.g. electricity and energy carrier use

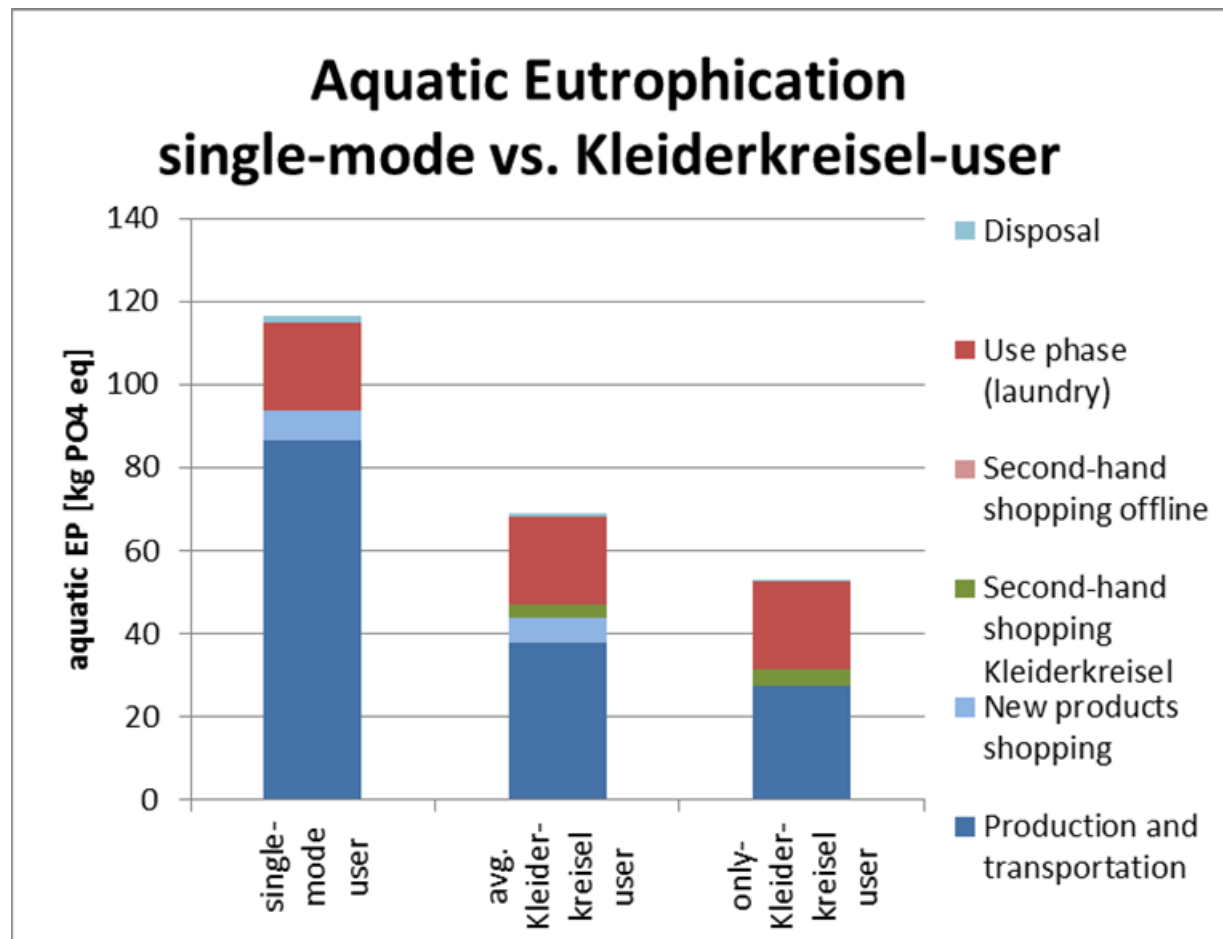


→ The comparison shows that the average KK user exhibits only about half (49 %) of the single-mode consumer impacts.

→ GWP reductions are mainly due to reduced new production

P2P sharing can reduce aquatic (EP) impacts

- Aquatic Eutrophication Potential (EP) in kg PO₂ equivalents
- Emissions originate from e.g. fertiliser use in agriculture, detergents (laundry)



→ The average KK user shows only 60 % of the single-mode consumer impacts

→ Aquatic EP reductions are mainly due to reduced new production

Behaviour changes / rebound caused by KK

- RQ 2: What are the environmental benefits associated with the change in user behaviour that is caused by the availability of p2p sharing platforms?

Changes in behaviour caused by the availability of KK:

- **0.2 kg additional consumption**
- **0.1 kg less demand of new T-shirts**

→ Overall effect still positive!

→ The KK user has reduced GWP impacts by 11 % and aquatic EP impacts by 6 % compared to a situation without KK.

CONCLUSION

- **KK use shows overall positive effects in the calculated scenario comparisons, even if:**
 - no change in the amount of consumed T-shirts is assumed, and
 - rebound effects according to user survey data are considered.
- **Overall: p2p sharing has positive effects due to lower demand for new clothes and less textile waste (longer lifetime of textiles)**
- **„shared clothes result in shared environmental burdens“**



PeerSharing

Thank you very much!

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