

Transformation towards paperless publishing and reading: Past dynamics and current challenges

Side event session by the Trafo 3.0 project at the IST Conference 2016

Introduction & facilitation:
Dirk A. Heyen, Oeko-Institut





Session context

- Session is part of a side-event of the Trafo 3.0 project...
- on three different transformation processes
- Overall 3 sessions today:
 - 10:30 – 12:00 Sustainable meat production & consumption
 - 12:45 – 14:15 Paperless book publishing & reading
 - 14:30 – 16:00 Light electric mobility (e-bikes)
- You are very welcome to participate also in the next session at 14:30!



Session program

- 12:45 Short introduction into the Trafo 3.0 project and its conceptual framework (Dirk A. Heyen, Oeko-Institut)
- 12:55 **„Past dynamics & current challenges in the transformation towards paperless book publishing and reading”**
(Inga Hilbert, Oeko-Institut)
followed by 5 min. Q&A
- 13:25 **“The transformation of the book market – platform economy and system-relevant infrastructures ”**
(Volker Oppmann, log.os)
followed by 5 min. Q&A
- 13:45 Discussion with audience and all presenters
- 14:15 The end

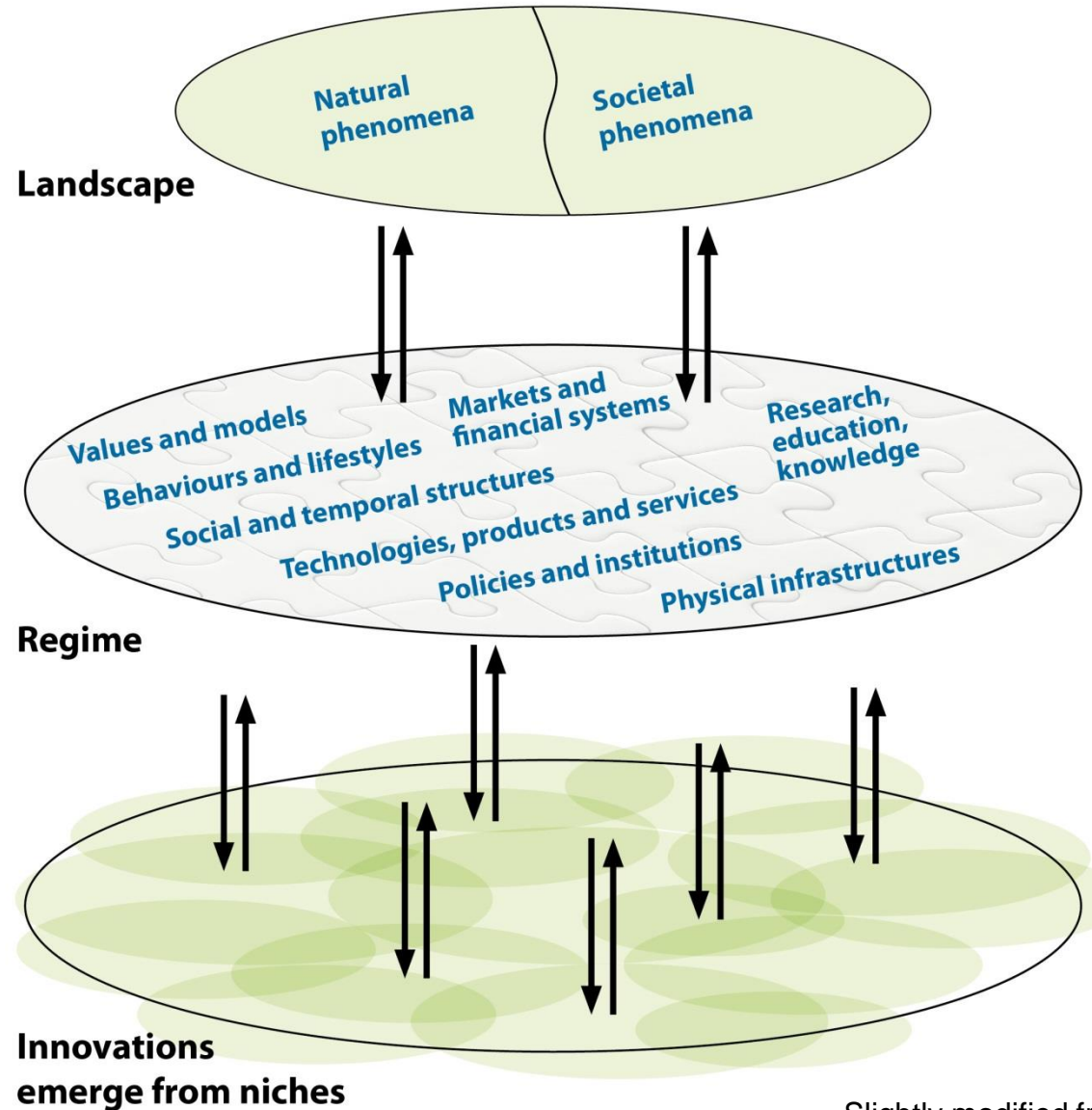


The Trafo 3.0 project

- Trafo 3.0 is a current research project
 - Conducted by Oeko-Institut & various stakeholders
 - Funded by German Ministry for Education and Research (BMBF)
 - April 2015 – March 2018
 - Website: www.trafo-3-0.de (German language only)
- Research question: (How) can societal transformation processes be initiated, supported and governed towards sustainability?
- Understanding of transformations:
 - Comprehensive (long-term) change of socio-technical (sub-) systems
 - Not only technological change but systemic, co-evolutionary change
 - Multi-level-perspective

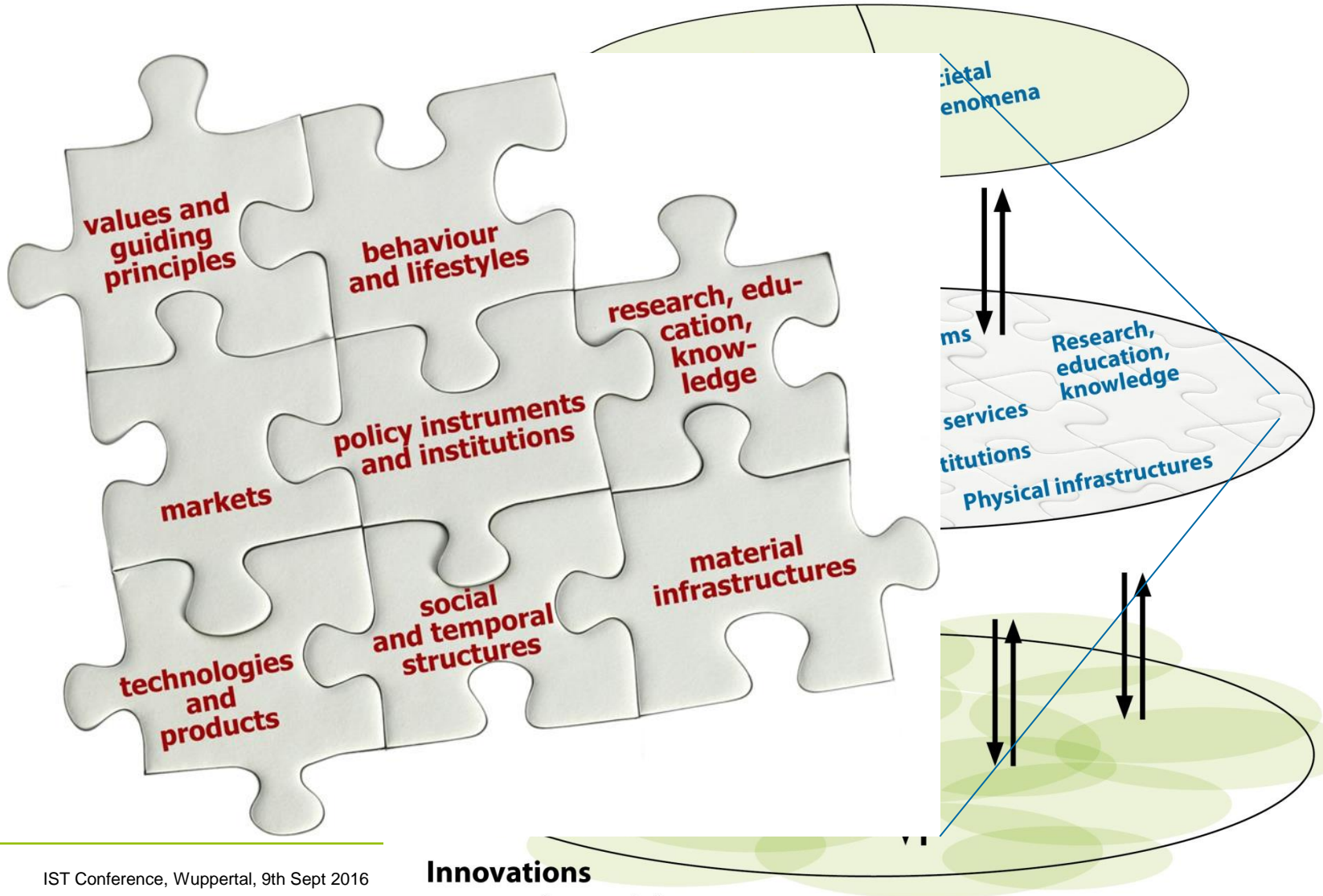


Systemic and multi-level perspective





Systemic and multi-level perspective





The Trafo 3.0 project

- Conceptual framework on analysis & governance of transformations
 - based on literature, earlier projects + 2 case studies of past niche-to-mainstream developments of renewable energy and organic farming/food in Germany
- Analytical & action-oriented research in 3 areas, based on framework
 - Status quo analysis of system elements, their interlinkages and effects
 - Analysis of sustainability effects / potentials of a transformation
 - Working with real-world initiatives and dialogue with further stakeholders
 - Recommendations for supporting and governing the transformation
- Lessons learnt across case studies and “historical cases”
- Overall objective: further development and field-testing of a heuristic and the drafting of a manual to support politicians and practitioners for analyzing and identifying governance options for transformations

Past dynamics and current challenges in the transformation towards paperless book publishing & reading

Insights from the Trafo 3.0 Project

Inga Hilbert
IST Conference
Wuppertal, 09.09.2016





Agenda

- 1. Environmental impacts of the transformation so far**
- 2. Expert opinions on the opportunities and risks of a digital book market**
- 3. Approaches for a sustainable design of the transformation**



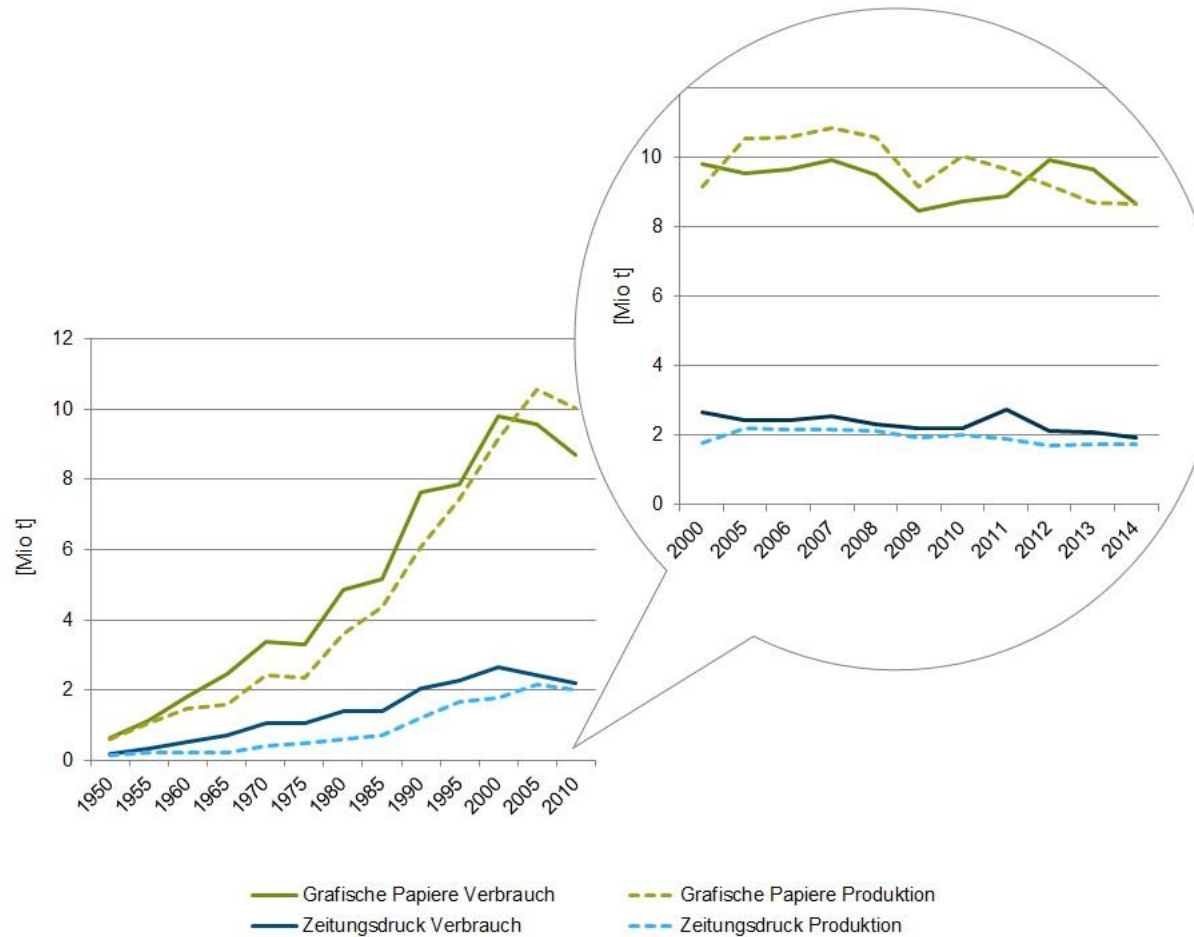
Paperless publishing and reading

- The market is divided into numerous **sub-sectors**
 - news-paper vs. book market
 - reference works vs. fiction vs. textbooks
 - The transformation varies with regard to
 - status quo
 - process dynamics
 - stakeholders
 - business concepts
 - ...
- > differentiation necessary**



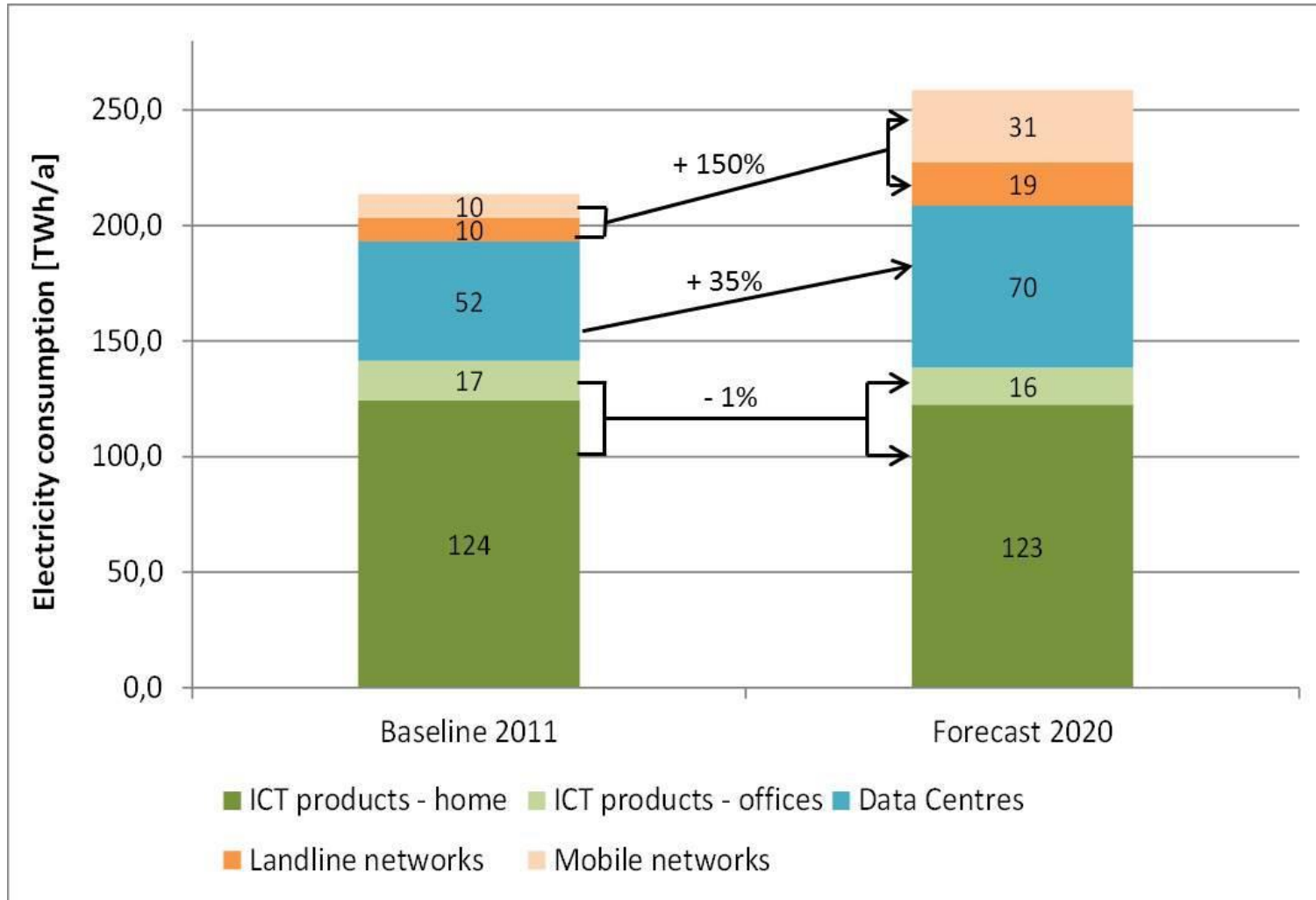
In order to analyse the environmental impact of current processes, it is possible to either use a **top-down** approach...

Recent dynamics in Germany: Development of production & consumption of graphic paper





Development of the energy consumption of ICT in EU-27





... or to analyse the situation **from bottom-up.**

The results of existing life-cycle assessments (LCA)



- The existing studies are based on different assumptions concerning:
 - Reading device (E-Book-Reader, smartphone, tablet, ...)

Reading device	GWP of the production [kg CO2e / device]
E-Book-Reader without 3G	20
E-Book-Reader with 3G	30
Smartphone	13
iPad 2	86
Laptop	~250

The results of existing life-cycle assessments



- The existing studies are based on different assumptions concerning:
 - The processes taken into account along the life-cycle of the different systems
 - Number of downloaded and read e-books over the lifetime of the reading device
 - > Rule of thumb: from an environmental perspective e-books present the better option, if an e-book reader is used to read 30 to 50 e-books over its life time

The results of existing life-cycle assessments



- Existing studies
 - Are based on data and assumptions representing the situation in 2010
 - Do not consider the production of eInk-Displays (!), no background lighting or wireless connectivity
 - Assume a (one time) download of the content, no subscription models and do not take into account the energy consumed by cloud services



Environmental impacts – Preliminary conclusion

- Top-Down:
 - Consumption of graphical paper constant / slightly declining
 - Increasing energy demand of digital infrastructure
 - > no minimization of negative environmental impacts expected; instead: parallel use of both infrastructures presumed
- Bottom-up:
 - Existing studies are based on different assumptions
 - > results not comparable with each other
 - Studies represent the situation 5-6 years ago, not the current reality



Insights from the transforming market

- Expert interviews in order to deepen the understanding of the current transformation process
- Focus on book market, more specifically fiction books
- Interview partners:
 - Small publishers, digital niche developments, self publishing
 - Amazon
 - Traditional Publishers
 - Tolino-Cooperation

Opportunities and risks of a digital book market – expert interviews



- **heterogenous assessment** of the current situation by the interview partners
- Fixed book prices & an exemption from value added tax in Germany have „protected“ the print market thus far, but are counteracted by flat-rate models
- All experts agree that the business model of publishers in general is not threatened and that books will keep playing an important role

Opportunities and risks of a digital book market – expert interviews



- Traditional market participants don't see themselves as drivers of the transformation
 - reaction instead of active engagement
 - No coherent concept how to handle the ongoing transformation
- Transformation is driven by newcomers (e.g. Amazon), who redefine existing practices and establish new business models
- Authors no longer depend on the work of publishers; new options via self-publishing on platforms as Books on Demand (BoD), Amazon Kindle Direct Publishing (Amazon KDP) or tofino books

The ongoing processes from a systemic perspective



	Opportunities & Chances	Obstacles & Risks
Values and guiding principles	Enhancing culture of reading	Loss of cultural diversity and literary quality. Access to e-books controlled by a few providers
Material infrastructures		Loss of traditional bookstores ; Two parallel (e-book reader) systems which are not compatible with each other
Markets and finance systems	Fixed book pricing „protects“ printed book market and variety of actors (so far); Small publishers develop and offer niche products and services; Market access for self-publishers	
Technologies, products and services	Multioptional reading devices could reduce environmental impact	Flatrate-business model increases the energy-consumption and needed cloud capacity through permanent mobile connectivity
Behaviour and lifestyles	Adduction of digital natives to reading	customers no longer buy books but right of use: can't be passed on
Social and temporal structures	Easy access to e-books anytime and anywhere (e.g. rural regions) ; easy access to e-books from the backlist	
Research, education and knowledge	Substitution of (printed) educational books could save paper consumption significantly	
Policy instruments and institutions		New (digital) business models bypass existing legislation; the (quality management) services of middle / big sized / publishers might disappear



Conclusion

- From an environmental perspective the current transformation does not develop optimally
- From an cultural point of view there are numerous opportunities and risks

Approaches for a sustainable design of the transformation



- Up-date and supplementation of life-cycle assessments
- Long lifetime of e-book reader
(addressing also background lighting, wireless connectivity and battery replacement)
- Cloud optimisation by energy efficient data centres
(certified data centres instead of FSC paper)
- Conflict-Management:
 - Securing cultural diversity
 - Data sovereignty / right for self-determination
 - Communication platform



Thank you for your attention!

Do you have any questions?

(c.gensch@oeko.de)





Discussion

- What are the main challenges for the transformation?
- What brings about (and brought in the past) (sustainability) changes in the sector?
- What role do different actors play for the transformation?
- How can state actors at different levels support & govern the transformation (towards sustainability)?
- What are experiences from other countries?
- ...