



**Governance and Sustainability.
From Government to Governance:
The case of Integrated Product Policy**

Environmental and Economic Challenges in the field of Textiles – an Overview

Michael Keil (IÖW)



Organised by:
Institute for Ecological Economy Research
(IOEW) Berlin
German Federal Ministry for the
Environment (BMU), Berlin
Akademie Frankenwarte, Würzburg

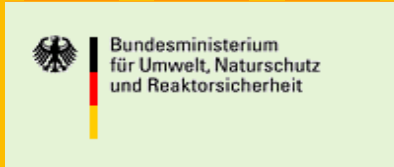
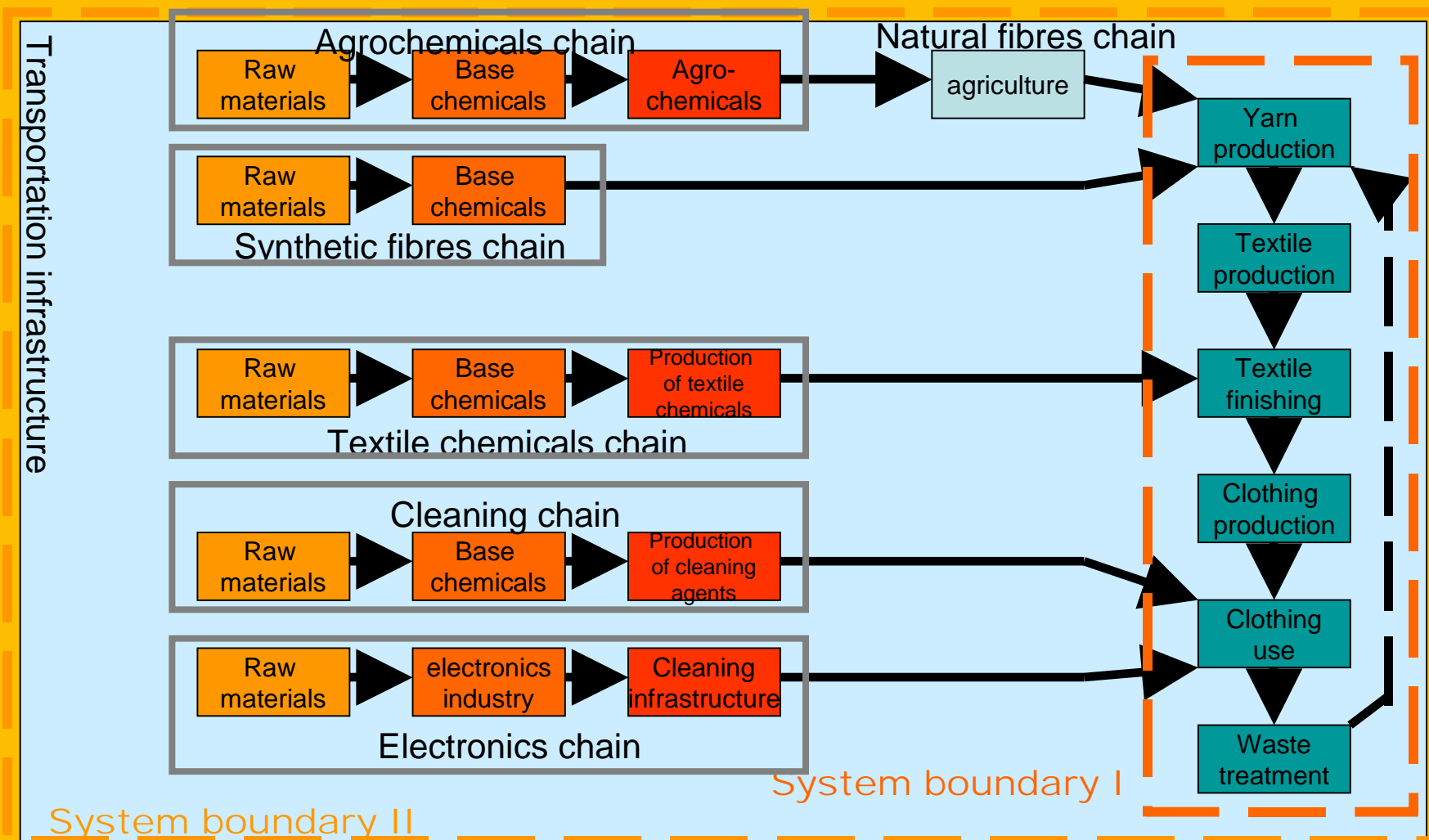
Presentation Structure

- The Textile Chain
- Environmental Hotspots of the Past and Present
- Economic Challenges
- Environmental Challenges



Organised by:
Institute for Ecological Economy Research
(IOEW) Berlin
German Federal Ministry for the
Environment (BMU), Berlin
Akademie Frankenwarte, Würzburg

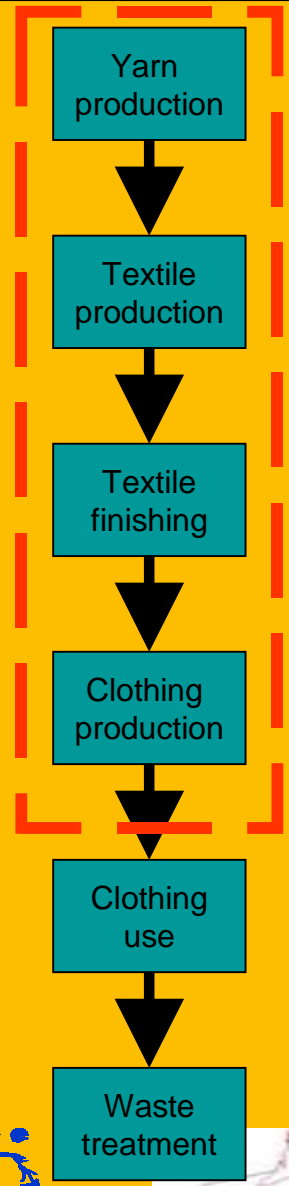
The Textile Chain (1) - ...with peripheral chains.



Organised by:
 Institute for Ecological Economy Research (IOEW) Berlin
 German Federal Ministry for the Environment (BMU), Berlin
 Akademie Frankenwarte, Wuerzburg

Environmental and Economic Challenges in the field of Textiles – an Overview

The Textile Chain (2) ...the core chain

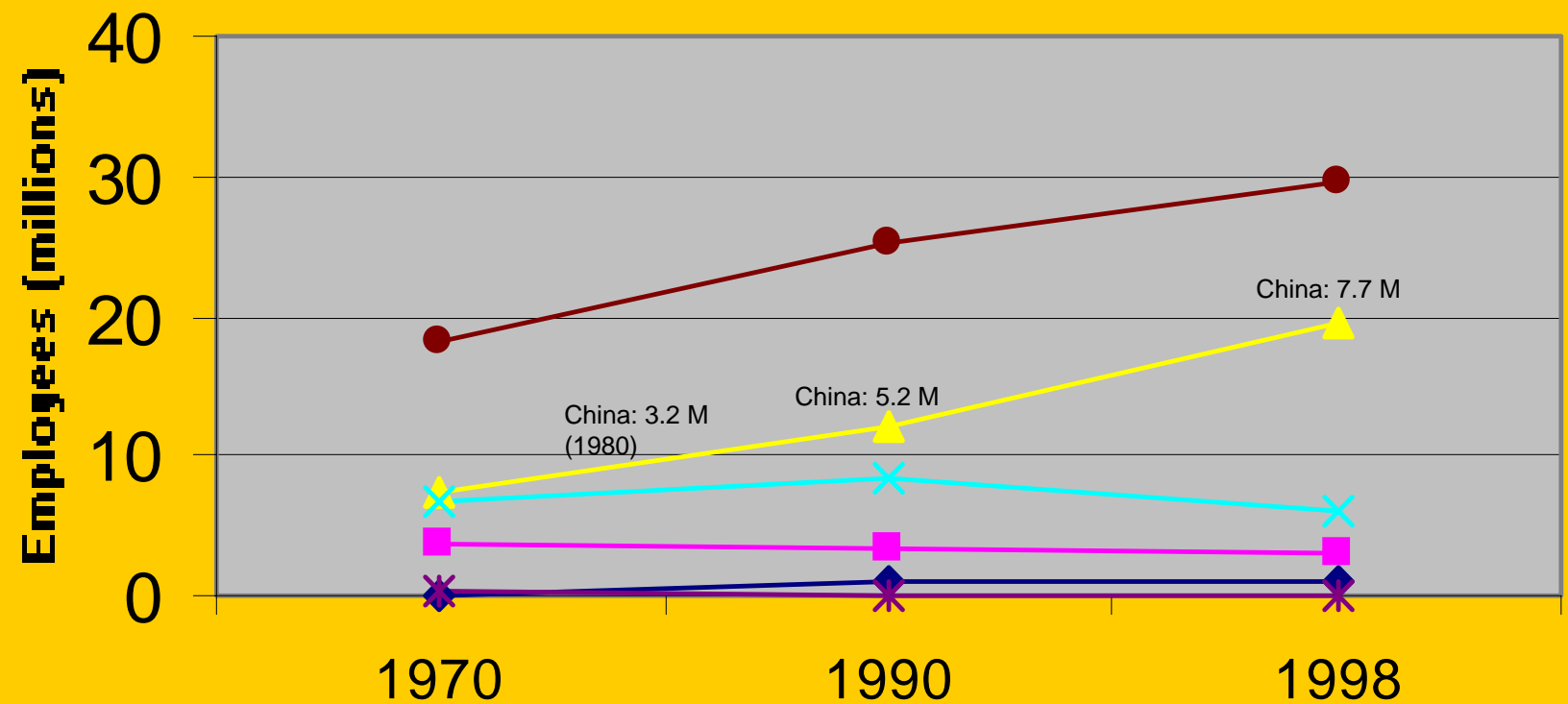


Organised by:
Institute for Ecological Economy Research (IÖW) Berlin
German Federal Ministry for the Environment (BMU), Berlin
Akademie Frankenwarte, Würzburg

The Textile Chain (3)

Data: ILO 1996, 2000

Textiles, clothing, (shoes): world employment



◆ Africa
 ■ Americas
 ▲ Asia
 × Europe
 ✱ Oceania
 ● Total



Organised by:
 Institute for Ecological Economy Research (IÖW) Berlin
 German Federal Ministry for the Environment (BMU), Berlin
 Akademie Frankenwarte, Wuerzburg

The Textile Chain (4)

Global Picture:

- „In general, the less developed countries were the gainers in textile employment throughout the period under consideration [1980-95], and the more developed countries the losers.“ (ILO 2000)
- With regard to economic success, the industry's development has been much more mixed, e.g. Germany:
 - employment –80% since early 1970s (US: -60%; Italy: stable; China:+140% since 1980), but:
 - stable industry turnover (i.e. slight decline if inflation is accounted for),
 - increased exports (13%=>75%),
 - survival of highly specialised companies,
 - shift in production towards technical textiles (currently ~40%; US:>25%).(Data: Federal Ministry of Economics and Labour 2003)



Organised by:
Institute for Ecological Economy Research
(IOEW) Berlin
German Federal Ministry for the
Environment (BMU), Berlin
Akademie Frankenwarte, Würzburg

The Textile Chain (5)

Global Picture (2):

- Extremely globalised value chain
 - Strong international competition
 - Substantial (external) costs of transportation (e.g. CO2-emissions)
 - Difficult verification of processual requirements
- Further trade liberalisations ahead (implementation ATC-agreement)
 - Further market pressure on suppliers in industrialised countries expected
- Question of international agreements on environmental and social standards
 - New trade barrier vs. necessary boundaries to global economic activity
 - Can they be enforced?
 - Ability and willingness of governments
 - Manageability in the business sphere



Organised by:

Institute for Ecological Economy Research
(IOEW) Berlin

German Federal Ministry for the
Environment (BMU), Berlin

Akademie Frankenwarte, Würzburg

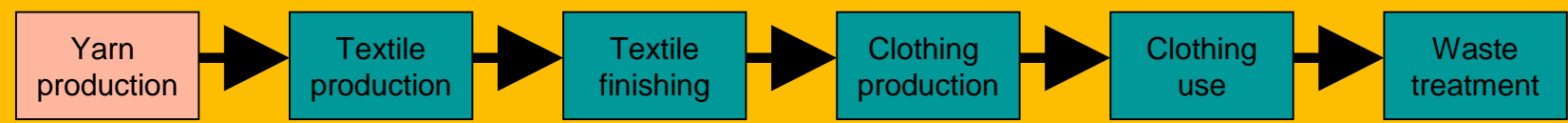
Presentation Structure

- The Textile Chain
- Environmental Hotspots of the Past and Present
- Economic Challenges
- Environmental Challenges



Organised by:
Institute for Ecological Economy Research
(IOEW) Berlin
German Federal Ministry for the
Environment (BMU), Berlin
Akademie Frankenwarte, Würzburg

Hotspots of the Past and Present (1)

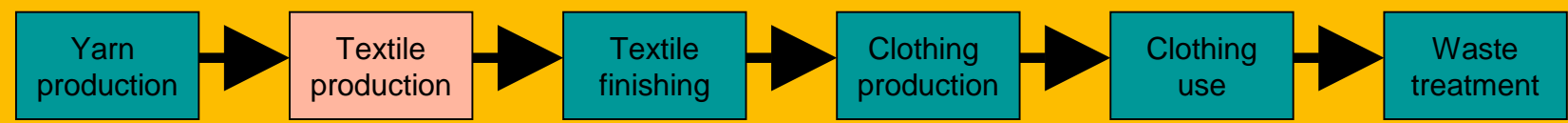


- Sound and vibration emissions
- Dust emissions
- Dying agents
- Auxiliary chemicals



Organised by:
Institute for Ecological Economy Research (IOEW) Berlin
German Federal Ministry for the Environment (BMU), Berlin
Akademie Frankenwarte, Würzburg

Hotspots of the Past and Present (2)

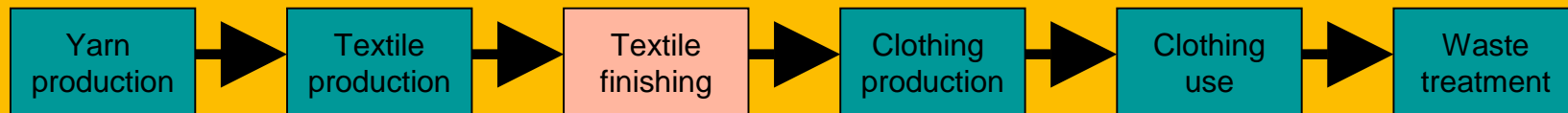


- Sound and vibration emissions
- Dust emissions
- Auxiliary chemicals



Organised by:
Institute for Ecological Economy Research (IÖW) Berlin
German Federal Ministry for the Environment (BMU), Berlin
Akademie Frankenwarte, Würzburg

Textile finishing (1)

Hotspots of the Past
and Present (3)

- **Polluted water**

- Approx. 20% of colouring agents
- Approx. 75% of auxiliary chemicals
- Partial secondary contamination of other environmental media, especially sewage sludge

- **Diversity of substances**

- 6500 brand products
- 200-400 groups of active components
- Unknown number of product combinations in use

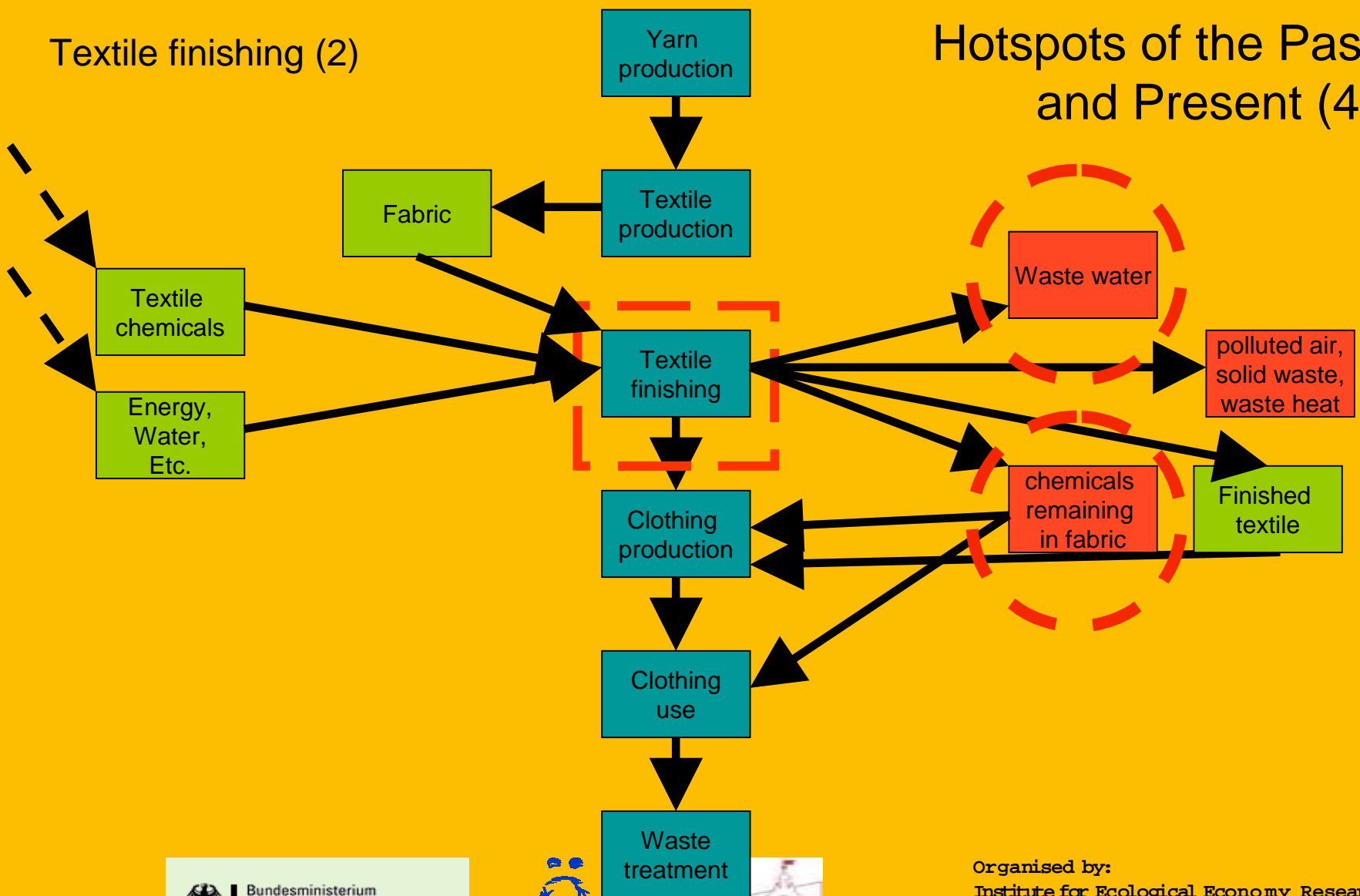


Organised by:
 Institute for Ecological Economy Research
 (IOEW) Berlin
 German Federal Ministry for the
 Environment (BMU), Berlin
 Akademie Frankenwarte, Würzburg

Environmental and Economic Challenges in the field of Textiles – an Overview

Textile finishing (2)

Hotspots of the Past and Present (4)



Organised by:
 Institute for Ecological Economy Research (IOEW) Berlin
 German Federal Ministry for the Environment (BMU), Berlin
 Akademie Frankenwarte, Würzburg

Environmental and Economic Challenges in the field of Textiles – an Overview

Textile finishing (3)

Hotspots of the Past and Present (5)

Hotspots concerning textile chemicals

Bleaching

Chlorine

persistent, toxic

Colour intensifiers

bioaccumulation, slight toxicity

Dying / Printing

Azo-colours

carcinogenic

Dispersion colours

carcinogenic, allergenic

Heavy metals in colours

toxic, bioaccumulation

Halogens in colours

persistent, toxic

Dying catalysts

carcinogenic, toxic

Finishing

chlorophenols (PCP etc.)

toxic, carcinogenic, mutagenic

tributyltin (TBT)

presumed endocrine effect



Organised by:
 Institute for Ecological Economy Research (IOEW) Berlin
 German Federal Ministry for the Environment (BMU), Berlin
 Akademie Frankenwarte, Wuerzburg

Textile finishing (4)

Hotspots of the Past
and Present (6)

- Issue of substances existing before 1993
 - Risk knowledge
 - Risk assessment of existing chemicals
 - Completeness and relative importance
 - Criteria-based relevance assessment
 - System change with regard to new substances
 - Risk perception



Organised by:
Institute for Ecological Economy Research
(IOEW) Berlin
German Federal Ministry for the
Environment (BMU), Berlin
Akademie Frankenwarte, Würzburg

Textile finishing (5)

Hotspots of the Past
and Present (7)

Finishers and Chemicals

- 81.4% report environmental performance to be an issue with customers. They:
- see themselves as being more active than their customers think they are
- believe to have a great influence on the environmental quality of textiles
- see the threat of textiles to health only gradually less severe than the clothing manufacturers.
- On a general basis, 69.3% of the finishers (partially) agree that the health of consumers is not always considered appropriately when decisions about ingredients are made.
- Yet 66.7% insist on using substances that are not forbidden whereas 58,3% of the clothing manufacturers disagree (legitimacy vs. legality).



Organised by:
Institute for Ecological Economy Research
(IOEW) Berlin
German Federal Ministry for the
Environment (BMU), Berlin
Akademie Frankenwarte, Würzburg

Textile finishing (6)

Hotspots of the Past
and Present (8)

- **Substitution** of substances relatively more harmful with less harmful substances
 - E.g. TEGEWA-list (technology pull)
 - Continuous development of technical solutions (technology-push)
- Avoiding proliferation of **substance risks**
 - EcoTex Standard 100
 - Technical requirements

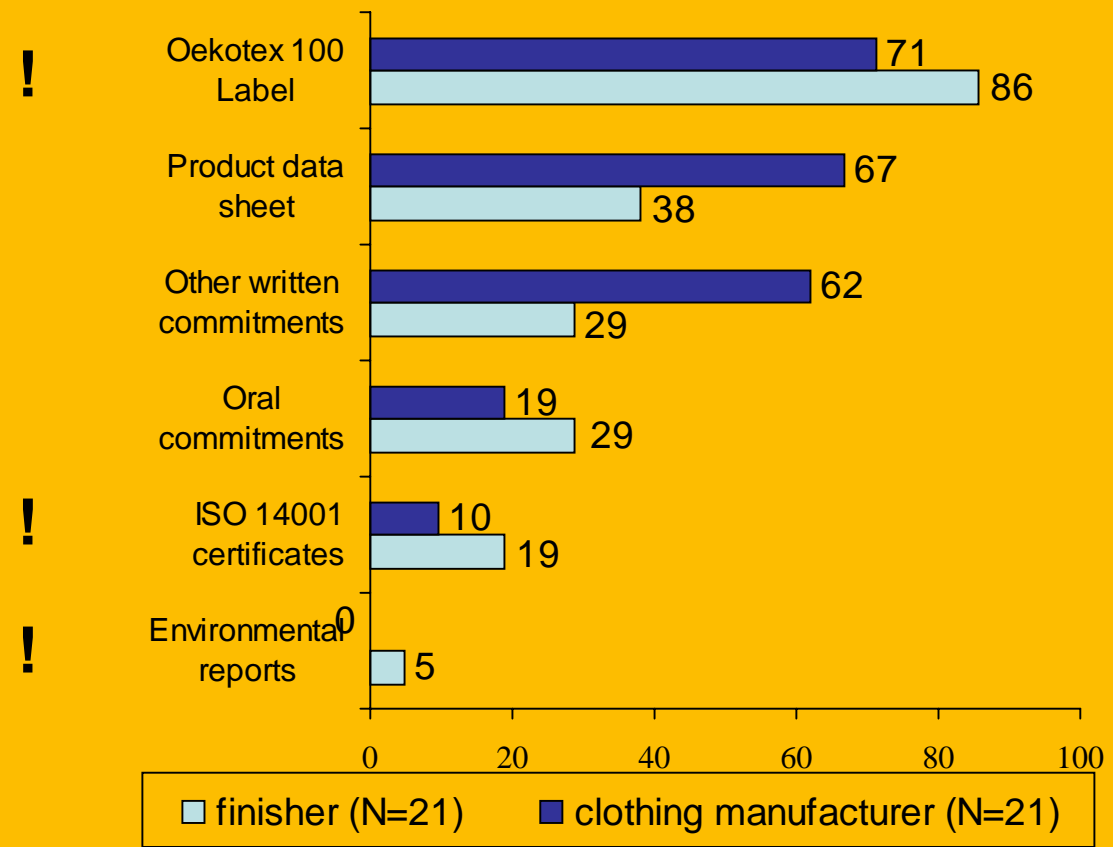


Organised by:
Institute for Ecological Economy Research
(IOEW) Berlin
German Federal Ministry for the
Environment (BMU), Berlin
Akademie Frankenwarte, Würzburg

Textile finishing (7)

Hotspots of the Past and Present (9)

Use of communication instruments



Source: own, 2000

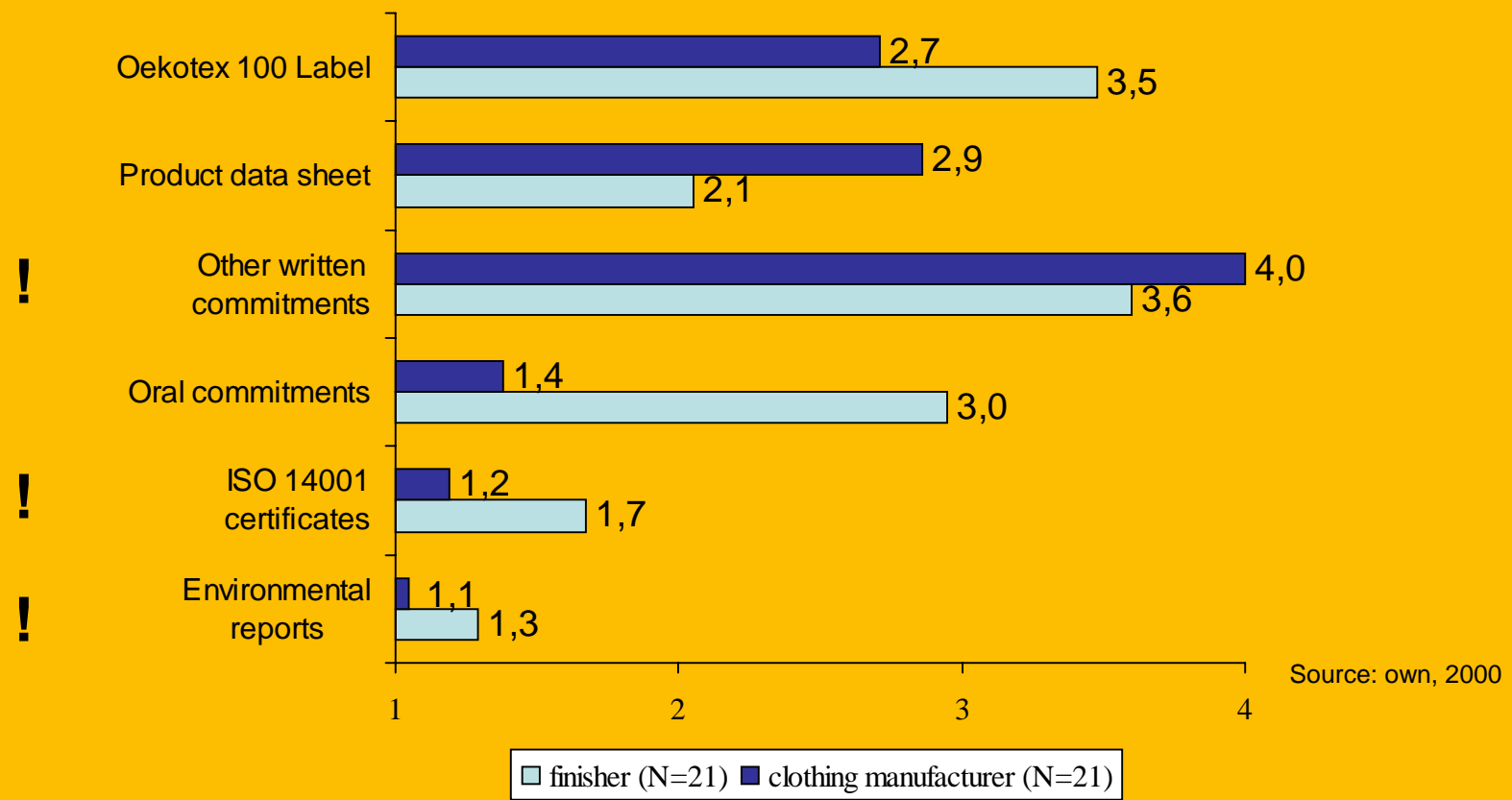


Organised by:
 Institute for Ecological Economy Research (IOEW) Berlin
 German Federal Ministry for the Environment (BMU), Berlin
 Akademie Frankenwarte, Wuerzburg

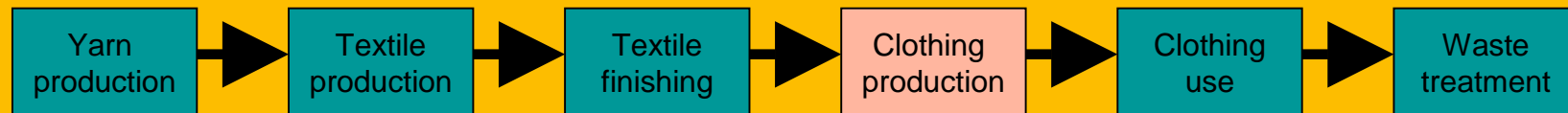
Textile finishing (8)

Hotspots of the Past and Present (10)

Importance placed on communication instruments



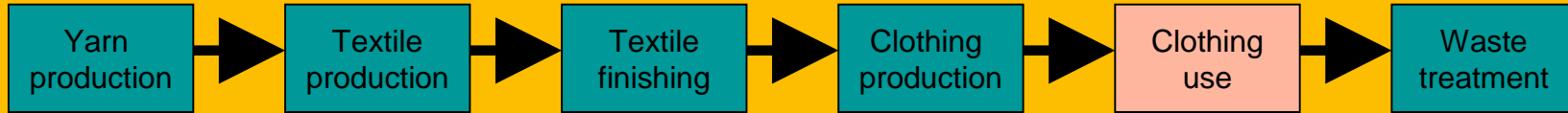
Organised by:
 Institute for Ecological Economy Research (IOEW) Berlin
 German Federal Ministry for the Environment (BMU), Berlin
 Akademie Frankenwarte, Wuerzburg

Hotspots of the Past
and Present (11)

- Limited direct influence on resource use (<20%)
- Indirect influence?
 - Transportation distances
 - Technical requirements
 - Competition



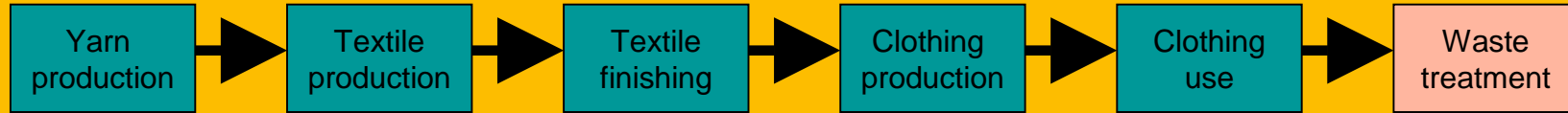
Organised by:
Institute for Ecological Economy Research
(IÖW) Berlin
German Federal Ministry for the
Environment (BMU), Berlin
Akademie Frankenwarte, Würzburg

Hotspots of the Past
and Present (12)

- The use phase has a strong influence on the total environmental performance of textiles
 - Duration of use
 - Cleaning behaviour
 - Cleaning frequency and temperature, use of drier
 - Quality of washing machine and washing agent
 - Wearing conditions
 - [...]
- Self-cleaning textiles are probably a matter of the future



Organised by:
 Institute for Ecological Economy Research
 (IOEW) Berlin
 German Federal Ministry for the
 Environment (BMU), Berlin
 Akademie Frankenwarte, Würzburg

Hotspots of the Past
and Present (13)

- Tremendous loss of fibre quality in the case of recycling
- Collection of used upper garments for resale in developing countries has adverse economic and social effects in the importing countries
- Revenue from resale often finances the unprofitable recycling/disposal of other textile wastes



Organised by:

Institute for Ecological Economy Research
(IOEW) Berlin

German Federal Ministry for the
Environment (BMU), Berlin

Akademie Frankenwarte, Würzburg

Presentation Structure

- The Textile Chain
- Environmental Hotspots of the Past and Present
- Economic Challenges
- Environmental Challenges



Organised by:
Institute for Ecological Economy Research
(IÖW) Berlin
German Federal Ministry for the
Environment (BMU), Berlin
Akademie Frankenwarte, Würzburg

Economic challenges

- Further trade liberalisations
- Specialisation, international division of labour
 - Mass production vs. profitable niches
 - High tech, low tech (capital goods, products)
 - Capital or labour intensive?
 - Garments, technical textiles, smart textiles?
 - High qualifications and/or low wages?
 - Production tourism (The geese on flight)
- International agreements on social and labour standards
- Improving the marketability of improved processual environmental performance



Organised by:
Institute for Ecological Economy Research
(IOEW) Berlin
German Federal Ministry for the
Environment (BMU), Berlin
Akademie Frankenwarte, Würzburg

Economic challenges (2)

- Co-operation
 - Don't dig in my potatoes vs. network innovation
 - Beggar my neighbour vs. redistribution of economic advantages where efforts and gains do not fall to the same actor
 - Strategic co-operations and alliances with other industries to develop entirely new products (e.g. with electronics, health services)



Organised by:
Institute for Ecological Economy Research
(IOEW) Berlin
German Federal Ministry for the
Environment (BMU), Berlin
Akademie Frankenwarte, Würzburg

Presentation Structure

- The Textile Chain
- Environmental Hotspots of the Past and Present
- Economic Challenges
- Environmental Challenges



Organised by:

Institute for Ecological Economy Research
(IÖW) Berlin

German Federal Ministry for the
Environment (BMU), Berlin

Akademie Frankenwarte, Würzburg

Environmental challenges

- Co-operation
 - Upstream perspective
 - Access to supplier information
 - E.g.: What substances are really needed to achieve colour x with finish y?
 - Implementing product design procedures that are not blind to environmental issues
 - Relationship designer-environmental manager
 - (Training and) decision support systems for designers (which probably rely on EDI)
- Assessment of existing substances



Organised by:
Institute for Ecological Economy Research
(IOEW) Berlin
German Federal Ministry for the
Environment (BMU), Berlin
Akademie Frankenwarte, Würzburg

Environmental challenges (2)

- Implementation of the precautionary principle with regard to innovations
 - e.g. smart clothes, nanotechnology
- Product system perspective
 - Washing machine, washing agent, textiles
- Upgrading of product-oriented environmental standards with processual criteria (e.g. ÖTS 100)
- Diffusion of processual environmental standards (e.g. ÖTS 1000)



Organised by:

Institute for Ecological Economy Research
(IOEW) Berlin

German Federal Ministry for the
Environment (BMU), Berlin

Akademie Frankenwarte, Würzburg

Environmental challenges (3)

- Sustainable management of textile wastes
 - Improvement of recycling processes
 - No export of used clothing to developing countries
- Reduction and substitution of existing textile chemicals
 - Development of an inherently safe textile chemistry?
- Can public procurement be used as a catalyst?



Organised by:

Institute for Ecological Economy Research
(IOEW) Berlin

German Federal Ministry for the
Environment (BMU), Berlin

Akademie Frankenwarte, Würzburg

The End



Organised by:
Institute for Ecological Economy Research
(IOEW) Berlin
German Federal Ministry for the
Environment (BMU), Berlin
Akademie Frankenwarte, Würzburg