



Policy coherence for sustainable development

From legal theory to best practices – case study
The sustainability hotspot of the use of chemicals in the life cycle of a pair of jeans

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SMART

The research team analyses the regulatory complexity within which European market actors operate. The focus is on international supply chains of products sold in Europe. The aim is to find out what prevents and what promotes a shift towards sustainable development.



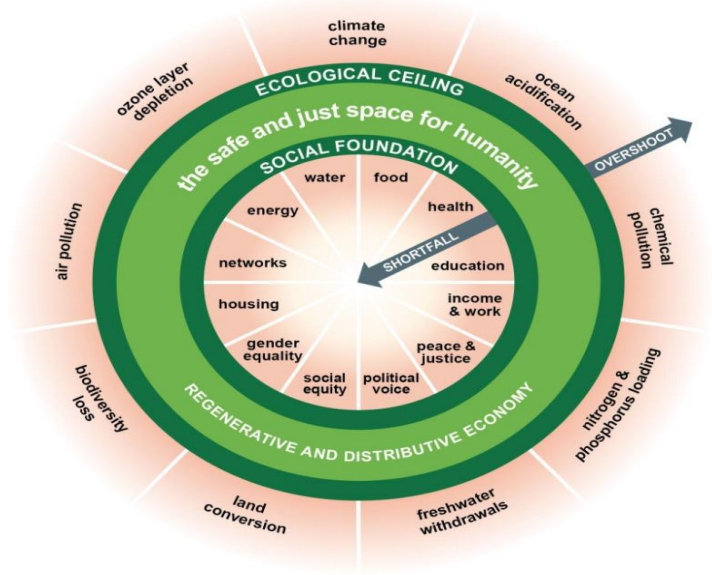
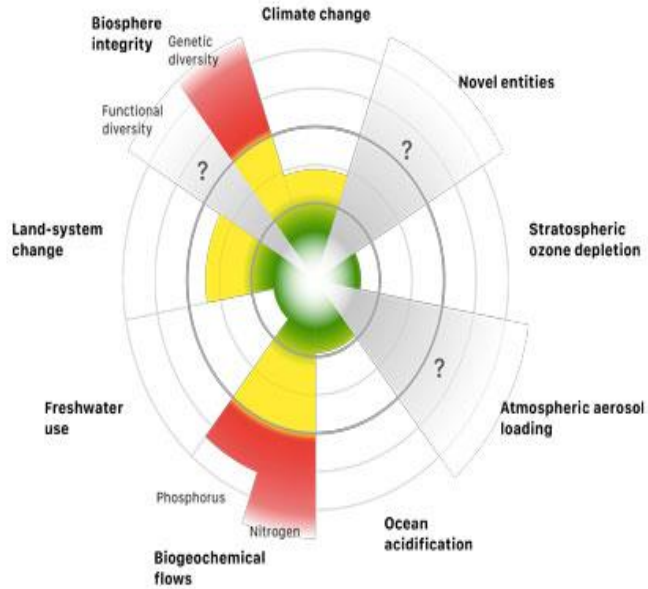
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Research question

What can be done by the denim and jeans sector to prevent the negative impacts on people and the environment caused by utilizing chemicals?



Importance



Method and data collection

Literature review: academic literature, reports and websites

- ➔ Negative environmental impacts on
 - soil, ground and underground natural water resources
 - human health (farmers, locals, workers, consumers)
- ➔ Practices: best available techniques and eco-innovation

Map of applicable rules per phase: international/national, hard/soft law

➔ Case study

- We followed 1 pair of jeans through all the phases
- Field visits, semi-structured interviews, stakeholders meetings
- Qualitative research.
- Consumer Product Sustainability Hot Spot Analysis
- Biengen (Rohn, UNEP/SETAC).



Gaps in the literature



THEORETICAL GAP: Analysis of international and national regulations and their implementation concerning the use of chemicals in the jeans production

PRACTICAL GAP: Managerial approach of best practices

TREATY LAW	SOFT LAW & SELF REGULATORY GENERIC	SOFT LAW & SELF REGULATORY NORMS TEXTILES SPECIFIC	REGULATION SPECIFIC FOR PHASE 1& 2 IN TURKEY	REGULATION SPECIFIC FOR PHASE 3 IN VIETNAM	REGULATION SPECIFIC FOR PHASE 5&6 IN THE NETHERLANDS
Stockholm Convention on Persistent Organic Pollutants	No Declaration on Environment and Development + Agenda 21: (Globally Harmonized System of Classification & Labelling of Chemicals)	Dutch Agreement on Sustainable Garments and Textile	Agricultural Law No. 5488/18.4.2016	Law on Chemicals No. 06/2007/QC-H12 21.11.2007	Directive 75/442/EEC (8/07/1975) (Waste)
Rotterdam Convention on the Prior Informed Consent (PIC) for Certain Hazardous and Pesticides in International Trade	"The Future We Want" (UNGA Resolution 27.07.2012)	The Accord on Fire and Building Safety in Bangladesh (The Bangladesh Accord)	Environmental Law No. 9.8.1983	Law on Environmental Protection No. 69/2014/QH-13	Directive 2006/06/EEC (4/12/2006) (Extended producer responsibility)
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal + EU Regulation on Restriction of Chemicals (REACH) (UNICE Ashima Convention (prod Turkey and Vietnam))	2015 BDO & Johannesburg Plan of Action	Worldwide Responsible Accredited Production (WRAP)	Law on Cotton Breeding No. 27.1.1936	Law on Access to Information No. 104/2016/QH-13	Environmental Management Act 01/03/1993
	Bahia Declaration on Chemical Safety	The Social Accountability International (SAI)	Law on Organic Farming No. 195/01.12.2004	Decree on Chemical Safety No. 69/2008/ND-CP	
	Dubai Declaration on International Chemicals Management and SACM Global Plan of Action	Business Social Compliance Initiative (BSICI)	Law on Soil Protection and Land Use No. 54/03/03.07.2005	Decree Detailing and Guiding the Implementation of a number of articles of the Law on Chemicals No. 106/2008/ND-CP	
	The International Code of Conduct on Pesticide Management	Sustainable Apparel Coalition (SAC)	By-Law on the Registration, Evaluation, Authorization and Restriction of Chemicals (Turkey Reach)	Circular Specifying a number of articles of the Law on Chemicals and the Governments Decree no. 106/2008/ND-CP detailing and guiding a number of articles of the Law on Chemicals No. 28/2010/TT-BCT	
	2015 Guidelines on Pesticide Legislation	Zero Discharge of Hazardous Chemicals (ZDHC) & Restricted Substance List	By-Law on Environmental Inspection	Circular Stipulating hazardous waste management No. 12/2011/TT-BTNMT	
	2016 Guidelines on Highly Hazardous Pesticides	BlueSign	By-Law on State Support for Wastewater Treatment Facilities According to Article 20 of the Environmental Law No. 48/2002	Decree Amending and supplementing a subset of articles of the Governments Decree No. 106/2008 detailing and guiding a number of articles of the Law on Chemicals No. 28/2010/TT-BCT	
	UN Guiding Principles on Business and Human Rights	The Chemical Footprint Project	By-Law on the Business considered as Industrial, Commercial, Agricultural and Forest Business	Circular Providing the Registration of the use of chemicals for production of products and goods in the industrial sector No. 07/2013/TT-BCT	
	UN Global Compact	Eco labels: EU Flower, Gelo-Jee 100, Dekolore, 100 plus, Stad, The Recycled Claim Standard, Global Recycled Standard and organic certifications such as GOTS, OECS, OECS 100, BCI	By-Law on the Chemical Fertilizers Used in Agriculture	Decree On water drainage and wastewater treatment No. 80/2014/ND-CP	
	OECD Guidelines for Multinational Enterprises	OECD Due Diligence for responsible Supply Chains in the Garment and Footwear Sector	By-Law on the Market Monitoring and Control of Fertilizers	Circular Guiding a number of articles of the Governments Decree no. 80/2014/ND-CP of August 6, 2014 on water drainage and wastewater treatment No. 04/2015/TT-BXD	
			By-Law on the Fundamentals and Implementation of Organic Agriculture	Decree Prescribing environmental protection masterplan, strategic environmental impact assessment and environmental protection plan No. 18/2015/ND-CP	
			By-Law on the Control of Industrial Air Pollution	Decree Detailing a number of articles of the Law on Environmental Protection No. 18/2015/ND-CP	
			By-Law on the Chemical Substances Subject to Control	Circular On strategic environmental assessment, environmental impact assessment and environmental protection plans No. 27/2015/TT-BNMT	
			By-Law on the Control of the Packaging of Medicines	Circular Providing detailed and simplified environmental protection schemes No. 28/2015/TT-BTNMT	
				Circular On management of hazardous waste No. 36/2017/TT-BTNMT	
			By-Law on the Control of Pollution Caused by Hazardous Substances in and around Aquatic Environment	Decree On management of waste and discarded materials No. 38/2015/ND-CP	
			By-Law on the Control of Water Pollution	Circular Specifying and providing guidelines for implementation of certain articles of the Law on Chemicals No. 39/2017/TT-BCT	
			By-Law on Environmental Impact Assessments	Decision Ratifying the strategy for management of solid waste in Vietnamese cities and industrial parks till the year 2020 No. 152/1999/QĐ-TTg	
			By-Law on the Genetically Modified Organisms and their Production	Decision Promulgating the environmental protection regulation applicable to discarded materials imported for use as production raw materials No. 13/2004/QĐ-BTNMT	
			By-Law on Good Agricultural Practices	Decision Promulgating the Governments action program for implementation of the parliament's resolution No. 41-NQ/TW of November 15, 2004 on environmental protection in the period of accelerated national industrialization and modernization No. 34/2005/QĐ-TTg	
			By-Law on Organic and Mineral and Microbial Fertilizers Used in Agriculture	Decision Approval of the National Green growth Strategy No. 136/2013/QĐ-TTg	
			By-Law on the Protection of Drinking Water Basins	Resolution On a number of issues in environmental protection No. 35/NQ-CP	
			By-Law on the Protection of Underground Waters against Pollution and Deterioration		
			By-Law on the Protection of Waters against Agricultural Nitrate Pollution		
			By-Law on Waste Management		
			Circular on the Supervision of Fertilizers Supplied in the Market		
			Communicate on the Classification of Dangerousness of Workplaces related to Work Health and Safety		
			Communicate on the Integrated Pollution Prevention and Control in the Textiles Industry		
			Communicate on the Amendment on the Integrated Pollution Prevention and Control in the Textiles Industry		
			Communicate on the Inspection of Import of the Chemical under Control for Protecting the Environment (Product Safety and Control 2018/6)		

Applicable rules

Applicable rules: treaties / soft law

- Stockholm Convention on Persistent Organic Pollutants (POP)
- Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal + The Ban Amendment (the Protocol is not in force yet)
- EU regulation Registration Evaluation Authorisation and Restriction of Chemicals (REACH)
- UNECE Aarhus Convention (not Turkey and Vietnam)

Declaration on Environment and Development + Agenda 21 (→ Globally Harmonized System of Classification & Labelling of Chemicals)-----Rio

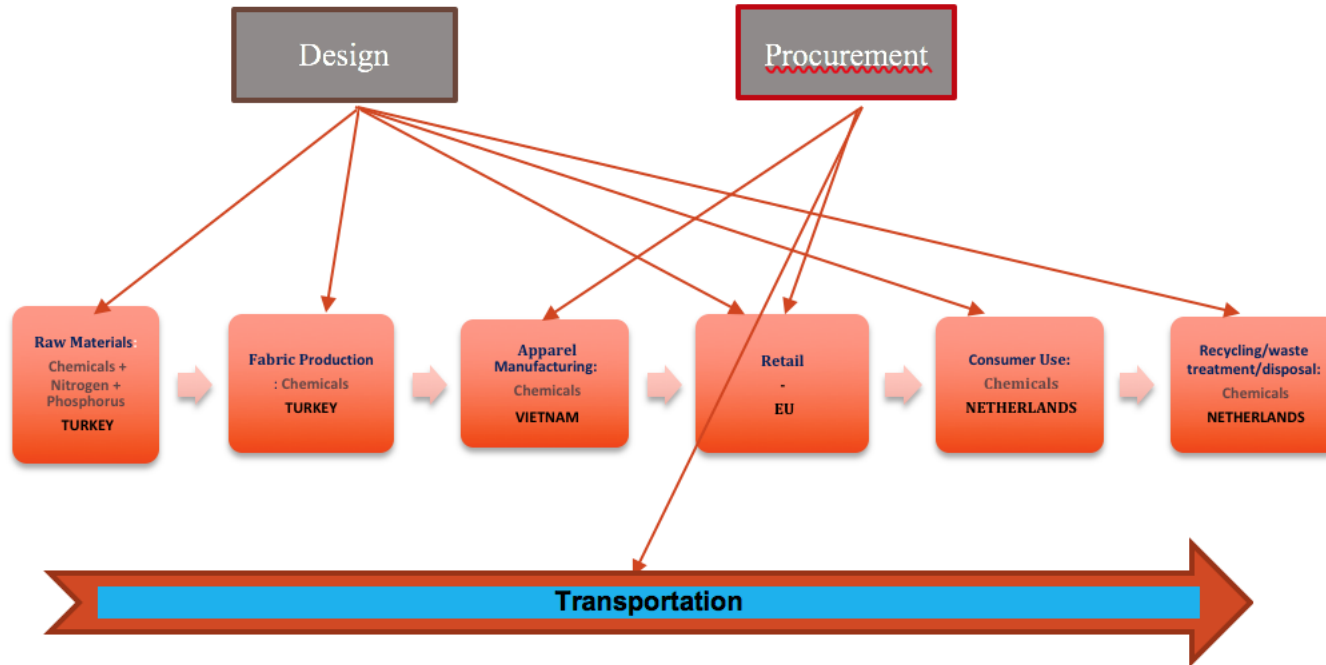
- 2000 MDG
- “The Future We Want” (UNGA Res., 27.07.2012)
- 2015 SDG & Johannesburg Plan of Action
- Bahia Declaration on Chemical Safety
- Dubai Declaration on Int’l Chemicals Management and SAICM Global Plan of Action
- The International Code of Conduct on Pesticide Management
- 2015 Guidelines on Pesticide Legislation
- 2016 Guidelines on Highly Hazardous Pesticides
- UN Guiding Principles on Business and Human Rights
- UN Global Compact
- OECD Guidelines for Multinational Enterprises

Applicable rules

SOFT LAW, SELF-REGULATORY NORMS ON TEXTILE, PROJECTS

- OECD Due Diligence Guidelines for Responsible Supply Chains in the Garment and Footwear Sector, 17 May 2017)
- Dutch Agreement Sustainable Garment and Textiles
- Bangladesh Accord
- Worldwide Responsible Accredited Production (WRAP)
- The Social Accountability International (SAI)
- Business Social Compliance Initiative (BSCI)
- Sustainable Apparel Coalition (SAC)
- Zero Discharge Hazardous Chemicals Programme (aim 2020)
- Restricted Substance List
- Bluesign
- The Chemical Footprint Project
- Use of Eco-labels → EU Flower, Oeko-Tex 100, Oeko-Tex 100 plus, STeP, the Recycled Claim Standard, Global Recycled Standard and organic certifications such as GOTS, OCS, OCS 100
- Guidelines for Good Practices (UN Special Rapporteur on the implications for human rights of the environmentally sound management & disposal of hazardous substances & waste, September 2017)

Life cycle of a pair of jeans



Phase 1: cotton cultivation

General chemical impacts:

- Chemical fertilizers are widely used (Cd, F, Pb, Hg)
- Widespread use of pesticides, most extremely hazardous pesticides are banned
- Lack of infrastructure for wastewater treatment
- Eco-friendly technology is expensive

Regulation:

- Turkey: Party to international treaties on chemicals + EU acquis → similar to EU regulation re use and discharge of chemicals (esp. on environmental protection, consumer and health protection, and agriculture)
- Loose enforcement of laws due to economic, social, and structural constraints

Case study best practices:

- Organic Cotton Cultivation and GOTS Certification (*Recycling and GRS)
- Technique: Integrated Production and Pest Management (e.g. BetterCotton)



Phase 2: fabric production

General chemical impacts:

- Wet fabric processing procedures, e.g. pre-treatment, bleaching, dyeing, washing, softening, finishing, and after-treatment
- Challenges: technical difficulties; high costs involved with advanced technology



Regulation:

- EU Dir.: Communiqué on the Integrated Pollution Prevention and Control in Textiles Industry: yarn and fabric producers are required to implement the best available techniques and/or Clean Production Plans (CPP) to prevent air, water and soil pollution

Case study best practices:

- The Mill has GOTS, OCS, Oeko-Tex 100 and ISO 14001:2004 certificates.
- Recovery and reuse of dyeing water, treatment of wastewater on-site, then the treated water is discharged into the environment
- Follow Restricted Substances List (under ZDHC)
- Substitution of hazardous chemicals (PVA glue, indigo powder paint) by less harmful
- Use of automatic dye, caustic, and acid dosage systems; automatic shut-off valves

Phase 3: manufacturing

General chemical impacts:

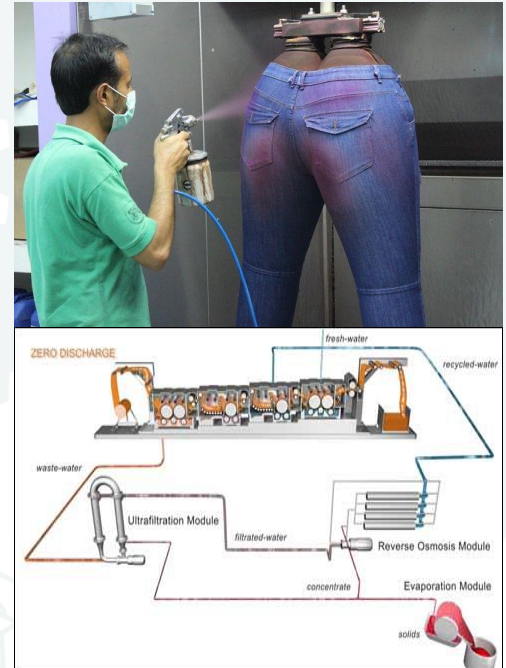
- Finishing/Bleaching/Fixing/Softening: e.g. Potassium Permanganate, Sodium hypo-chloride – hydroxide and meta-bisulphate, detergents + softeners, formaldehyde
- Chemicals washed out of the jeans can end up in the environment through wastewater and sludge discharge.

Regulation:

- Law on Environmental Protection: 1-1-2015,
- Laws on use of chemicals resemble REACH and Aarhus

Case study best practices:

- Use and research of least invasive chemicals: Bluesign and ZDHC
- Laser and ozone boosters instead of chemicals
- Water is fully recycled: no discharge of polluted water
- Sludge: to make bricks for housing and industrial use



Phase 5: consumer use

General chemical impacts:

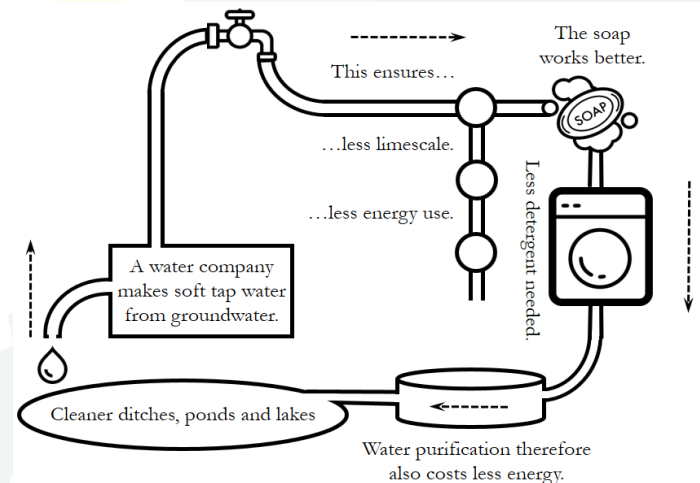
- Washing: laundry detergents

Regulation:

- Detergent Regulation 648/2004/EC : Re testing detergents by producers
National governments can ban detergents if risk to human and animal health or environment

Case study best practices:

- Softened tap water → less detergents
- Recommendation WRAP: less washing
- Trend of non-washing



Phase 6: re-use + recycling

General chemical impacts:

- Use of chemicals in recycling process
- Innovation/development of recycling techniques
- Consumer aspects underlying textile separation
- What happens after the RMG is sent to low-income countries?
- Water contamination due to RMG in landfill (not in NL)



Regulation:

- African countries are planning ban on import of second-hand RMG

Case study best practices:

- G-Star Raw has launched 'Raw for the Oceans'/'Most Sustainable Jeans'/recollection of own products/repair service
- MUD Jeans has launched concept of 'Lease A Jeans'

Filling in the gaps



As learned from best practices:

- Integrating eco-innovative policies into the business strategies →
 - **Reduction** of the chemicals used (e.g. recycling leads to avoiding chemicals and fertilizers in phase 1)
 - **Substitution** of chemicals with more environment-friendly chemicals
 - Establishing effective internal/external **waste-water treatment** facilities
 - Adhere to **certification standards**

Observations:

- Transparency: sharing information throughout the supply chain is key → internal re implementing these strategies and external by engaging with NGOs, governments, within industry (COP), and other institutions
- Design is where the journey of sustainability begins
- Aim to implement the five-R model for sustainable RMG:
RECYCLE, RE-USE, REDUCE, RE-DESIGN, RE-IMAGINE and: REPAIR

Suggestions and observations

- Business cannot do it alone!
- Encourage prevention of unsustainable production methods (in design phase) and reuse in the EU & encourage innovative business models (e.g. lease a jeans)
- Stimulate innovative technologies for recycling of RMG to produce new raw materials
- Policy for RMG waste chain (scheduled to be effective 2025)
- Influence consumer behavior in washing and discarding RMG
- Use positive tax measures for best practices



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