



TAKING
COOPERATION
FORWARD

 Symposium for the TCLF sector
Budapest , 9th May 2019

 **Challenges and strategy of the Czech TCLF sector
focusing on sustainability**

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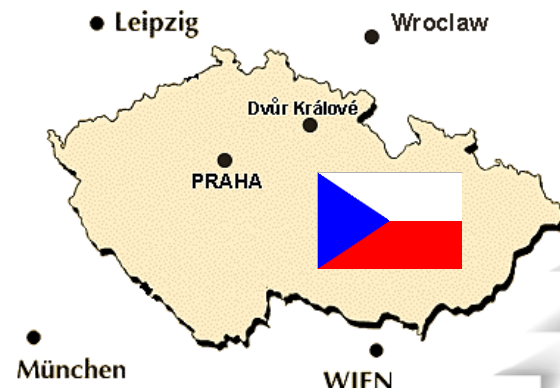
- Private small textile company - innovation, R&D, textiles and auxiliaries production, technologies development, optimization and transfer.
- SME: 47 employees

KEY STRATEGY:

*TO SUPPORT IMPLEMENTATION OF TAILORED R&D RESULTS
INTO THE PRACTICE OF TEXTILE COMPANIES
BY USE OF OWN PILOT PRODUCTION CAPACITIES*

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TAKING COOPERATION FORWARD



TEXTILE WET PROCESSING AND PRODUCT SALE

- Production and service - small scale production unit
- New products development and transfer to the SME's
- Development and introduction of new eco-friendly technologies
- Textile biotechnology



SMALL-SCALE finishing / coating capacity

- functional textiles, technical textiles,....



SPECIAL MACHINERY equipment and devices production



DYES, COLOURISTIC DEPARTMENT

- Complex colouristic service
- Colourmatching
- Customization of dyeing processes
- Supply of dyes and auxiliary agents of reputable producers



ACCREDITED TESTING LABORATORY (ISO EN 17025)

- testing of textiles (colour fastness, formaldehyde content, material resistance, flame resistance, MMT, dimensional changes,...)

CENTRE OF ECOLOGY

- consultancy and testing for ecolabelling (CZ Ecolabel), IPPC, eco-friendly techniques
- decolourisation and separation of heavy metal ions from textile waste water
- ADR (road transport of dangerous goods)



R& D / INNOVATIONS

Experience in the national and international team cooperation

■ International R&D programmes



■ Multidisciplinary clusters



*Cluster for
technical textiles*



*Biopharmaceutical
cluster*

■ Coordination *EU R&D Roadmap for Textile Biotechnology*



- Traditional Czech industrial sector
- In the first half of the 1990s - big losses on their capacities (technical and human)

Textile and clothing industry:

- Since 2005 - restructuralization of textile and clothing industry towards products with **higher added value**
- Support of **post-production activities**, to better understand and meet needs of the end customer
- Links to research and academia, to increase value of products

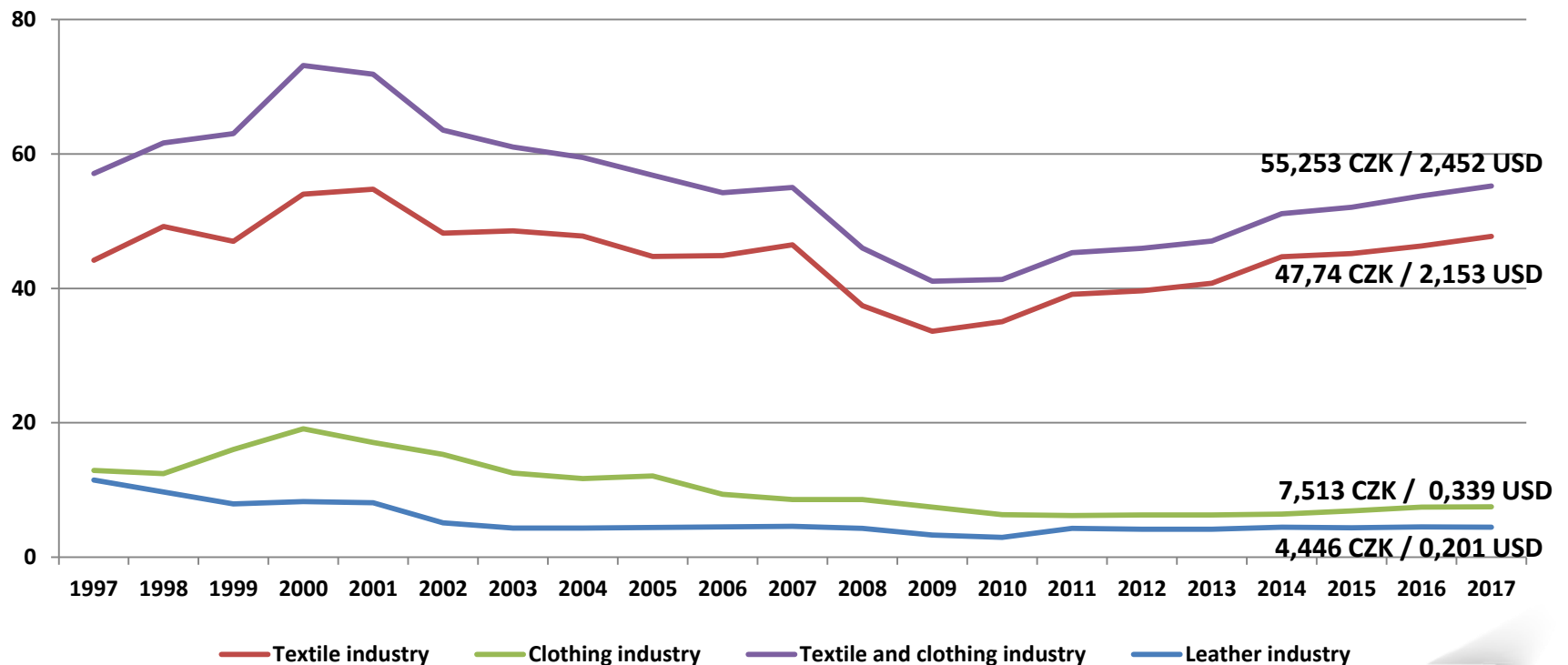


- The TCLI has 429 companies, which employ 20 or more employees
- Participation of the TCLI sales on manufacturing as a whole is approximately 1 %
- The TCLI industry companies employ approximately 39 000 of persons



SALES IN CZECH TCLI

Sales in Industry in 1997 - 2017
(Source: CZSO; companies over 20 employees,
current prices, billions of CZK)



Source: ATOK

Textile industry:

- production of „specialities“ linked to technical textiles
 - segment mostly based on R&D results, larger investments; not easy to be copied (easier intellectual property protection) = facing (not only) Asian competition, greatest potential for the future

Clothing industry:

- almost all major pre-revolutionary clothing capacities in CZ ceased to exist
- but new companies were created, still successful (Blažek, Pietro Filipi, Hannah, Alpine Pro, Sportisimo, Husky)



What are Czech Textile, Clothing and Leather Products?

- Czech companies are mostly focused on production of textile goods
- The most important products:
 - technical textile for industry, construction, medicine and protective clothing and leather products for automotive
 - interior textile and clothing
 - production on the basis of designers' creation
 - working and children's shoes, leather and fur coats and jackets, leather bags



Import:

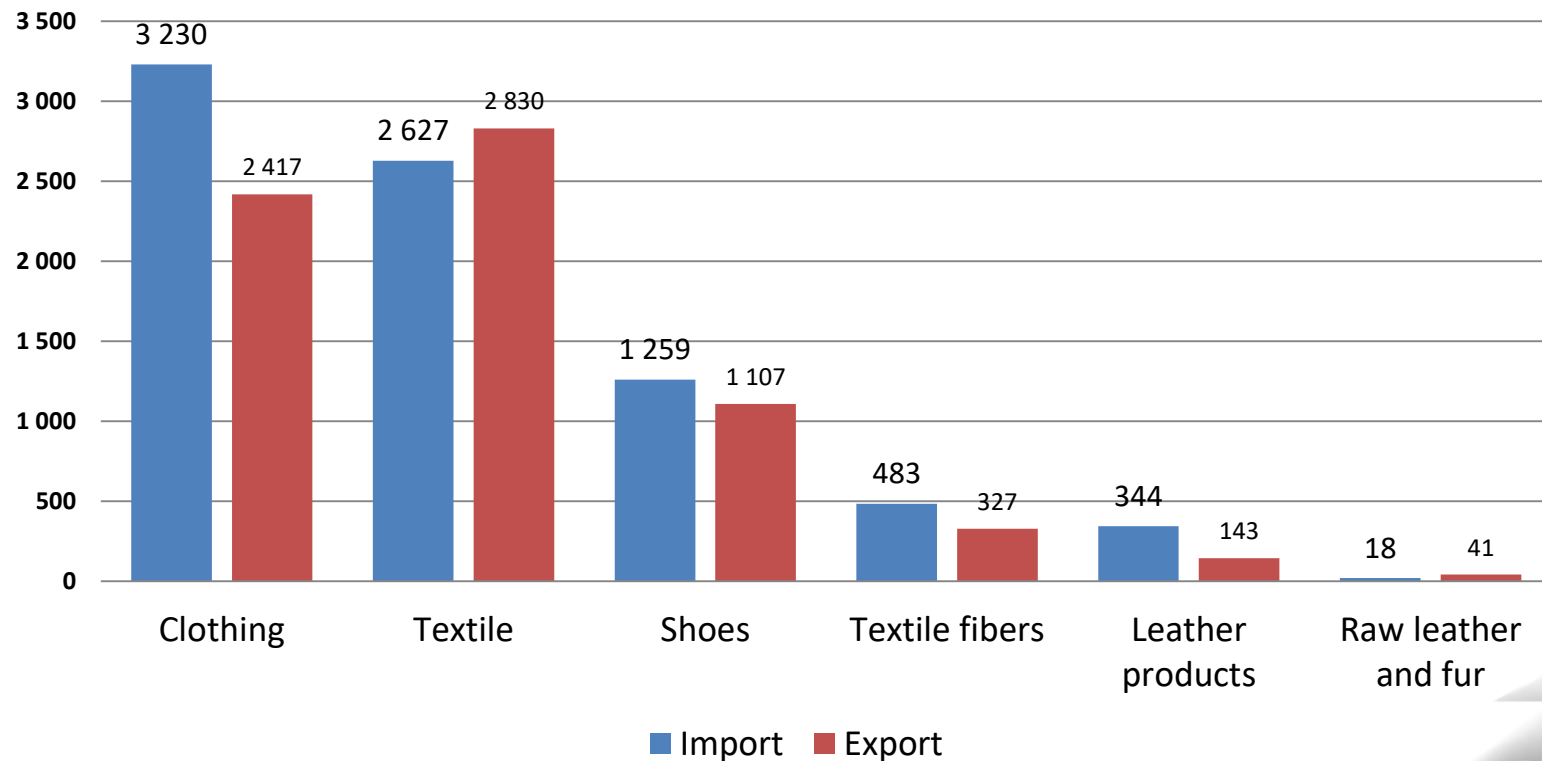
- majority - yarns, special textiles (nonwoven textiles)
- clothing parts (T-shirts, undershirts, pullovers), bedlinen
- textile - from *Germany, Italy, China and Belgium*
- clothing - from *China, Bangladesh, Turkey and Germany*
- leather products and shoes - from *Germany, Italy, Poland, Croatia and Hungary*

Export:

- more textile than clothing and leather products
- majority - yarns and special textiles (nonwoven textiles)
- clothing - clothes for mens and boys, clothing parts
- textile and clothing - to *Germany, Italy, Poland, Slovakia and Austria*
- leather products and shoes - to *Germany, Austria, Slovakia and Great Britain*



Imports and Exports of Textile, Clothing and Leather Products in 2017 (data in millions USD)



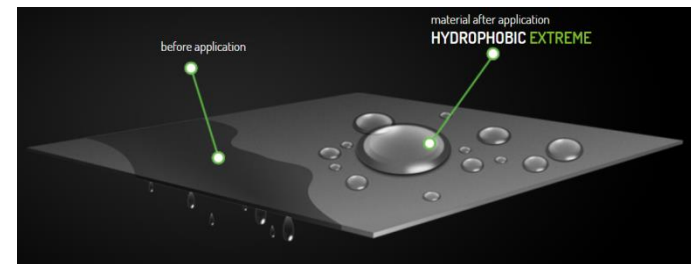
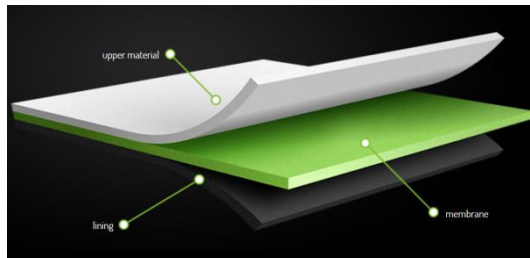
Source: ATOK

Examples of successful innovative Czech textile companies

- ❖ Nanomembrane - development and production of unique nanofiber membrane laminates with outstanding properties (extremely high vapor permeability, high water column resistance, 100% wind resistance)
 - owns unique technology and know-how in lamination
 - sport & outdoor, fashion, army, gloves, shoes, hydrophobic extreme



<http://www.nanomembrane.cz>



Examples of successful innovative Czech textile companies

- ❖ Nyklíček - weaving of textiles: technical fabrics, home textile, healthcare textile, shirting fabrics
 - participating in high-tech research projects focusing on
 - e.g. - textiles with special electrical characteristics
 - integrating electronics into the textiles

NANOTROTEX - Composite nanostructured electrode materials with textile matrix

U Health - Auto-ID technology and the Internet of Things to enhance the quality of health services

www.nyklicekaspol.cz



Nyklíček a spol. s.r.o.
textilní výroba - Nové Město nad Metují



Examples of successful research companies



- ❖ VÚB - special protective wear and textiles CleverTex®
 - applied research and development for textile industry and textile machinery
- SLIDETEX* - High performance plain bearings made of hybrid textile composite based on nonwoven and reinforcing woven fabrics
- HYBRIDTEX* - Advanced hybrid textile structures for the active protection of the health of specific population groups (elderly, children, the sick)
- METEXCOM* - Development of metal-textile composite hybrid structures
- and many others

<http://www.vubas.cz>



Examples of successful research companies

- ❖ VÚTS - research, development and manufacture of machinery and equipment for the processing industry, including textile
 - development of textile technology and textile machinery
 - multi-axis weaving with variable distance
 - unique technology of 3D distance weaving

www.vuts.cz



- ❖ INOTEX www.inotex.cz

inoTEX[®]



Examples of successful clothing producers

- ❖ Blažek Praha, Koutný - men's fashion

www.blazek.cz, www.koutny.cz

- ❖ Pietro Filipi - men's and women's fashion

www.pietro-filipi.com



- ❖ Hannah Czech, Alpine Pro, Sportisimo, Husky - sport & outdoor

www.hannah.cz, www.alpinepro.cz, www.sportisimo.cz,
www.huskycz.cz



- a main representative of the textile, clothing and leather industry, founded 1990

Activities

- **Legislation** - watches content and impacts of emerging laws
- **Industrial policy** - formulates its own industrial policy to help competitiveness; monitoring and correlation of activities of entities creating a sectoral policy (government, ministry of industry, partner organizations, etc.)
- **Social and collective bargaining** - a higher level collective agreement
- **Foreign relations** - cooperation especially with EU partners
- **Information service for members**
- **Data processing** - statistical description of the sector
- **Promotion of joint marketing products** - trade fairs and related activities

www.atok.cz



CLUTEX - Cluster Technical Textiles

- promoting economic growth,
- increasing competitiveness,
- promoting innovation



www.clutex.cz

ČTPT - Czech Technological Platform for Textile

- unification and streamlining research, development and innovation efforts in the textile and clothing industry
- definition of a common strategic vision for the Czech TCI
- improvement of the conditions for innovation by removing financial and legislative barriers and qualified human resources deficit

www.ctpt.cz



- In the past, Czech Republic was a shoemaking superpower
- Shoe industry was one of the largest manufacturers and exporters within CZ industry
- 1997-2003 - decline of production (liberalization of imports)
 - tough and unfair competition (import from Asia - large volumes, very low prices)
 - loss of competitiveness and extinction for large companies
 - consequently, decrease in production in tanneries and other supplying industries
- Footwear production has gradually become a matter for **smaller, often family businesses (SMEs)**
- Almost all **materials and semi-finished** products for footwear production must be **imported**



- A major problem for CZ footwear manufacturers in the last decade is **defending its position on the domestic market**:
 - economic situation has forced the people to save more
 - specially cheaper types of shoes (plastic, textile, etc.) are purchased
 - still a strong overpressure of footwear supply on the CZ market, although its quality is often debatable
- Actually, a number of **smaller and family-type businesses** is successfully working
- Focus on **specialized products and perfect customer service**
- Especially the segment of **quality children's certified footwear** (growing demand on CZ market)



Exports:

- majority - rubber + plastic footwear, textile footwear, leather footwear
- mainly to *Slovak Republic, Germany, Austria, Hungary, UK*

Imports:

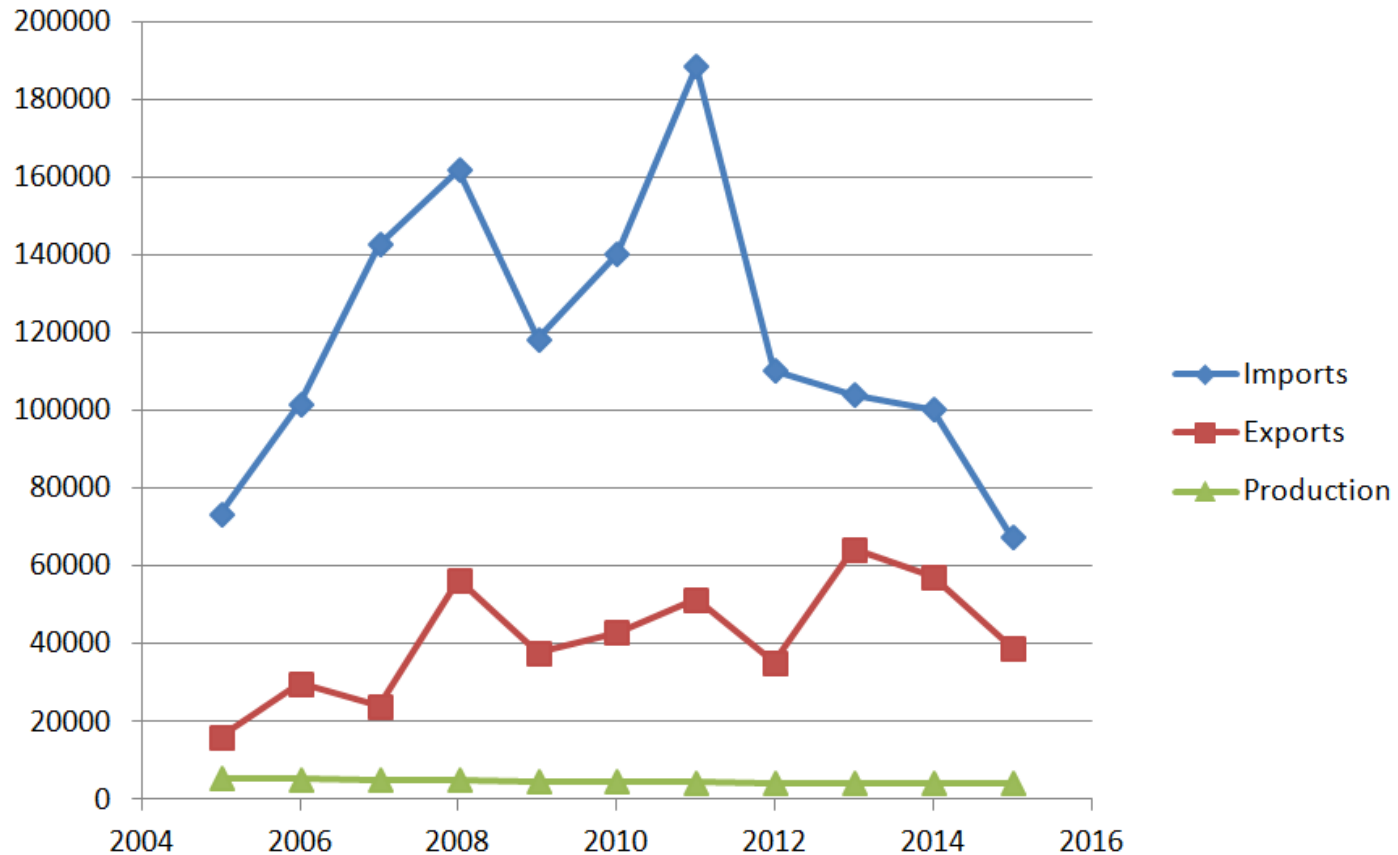
- majority - rubber + plastic footwear, textile footwear, leather footwear
- mainly from *China*,
followed by *Vietnam, Poland, Germany, Italy*

a fundamental reason for the problematic market promotion of quality Czech and imported shoes on CZ market = long-term increased imports of footwear from Asia at low prices (distorsion of the domestic market environment)



CZECH FOOTWEAR INDUSTRY

**Production, imports and exports
in CZ footwear industry (2005 - 2016)**
thousands of pairs



Source: Czech Footwear and Leather Association



Examples of successful footwear companies

- ❖ D.P.K., Boty Beda, Konsorcium T+M - certified footwear for children

<https://dpk.cz>; <http://www.beda-boty.cz>;
<http://www.obuv-konsorcium.cz>



- ❖ Prabos - one of the largest producers of working shoes for extreme conditions

<https://prabos.cz>



ČOKA - CZECH FOOTWEAR AND LEATHER ASSOCIATION

- Acts as a main guarantor of the footwear and leather industry of the Czech Republic in negotiations with central authorities



Activities

- together with the Czech Confederation of Commerce and Tourism and the textile association ATOK, it seeks to prevent illegal practices in the import of footwear and textiles into country, especially from Asian countries
- coordinates the activities of its members at presentation fairs
- participates in the organizing of a professional program and lectures during CZ trade fair KABO
- organizes competition for students and young designers
- information service for members



Examples of footwear research institutes

❖ Footwear Research Center

- opened on 30th April 2019 by Tomas Bata University in Zlín, incorporated into the University Institute
- to link footwear research with practice
- to support young promising designers and established footwear companies
- incorporates also the newly accredited Shoe testing laboratory

<http://cps.utb.cz>



■ Population aging

- home care products for an aging population
- new market segments (incontinence pads)
 - new textile structures, multifunctional textile surfaces, functional and intelligent textile products
- specialized "SMART" products
 - multifunctional textile surfaces and related technologies
 - intelligent e-textiles (constructions, wearing systems,...)
 - products for institutional and home care

■ Purchasing power of the younger population / customization

- specialized (functional) products
 - production of small series
 - e-shopping



■ Industry 4.0

- **increasing demand for skilled and less skilled employees**
 - digitalization, increasing flexibility of production processes
 - integration of smart elements into textile substrates
 - personalization of PPE, medical textiles and products for aging population
- **high financial demands for infrastructure acquisition**
 - standardization and digitization of textiles for e-shop sales
 - robotization, automation of the entire production chain



■ Specialized custom manufacturing

- high demands on know-how
 - composite structures and laminates for textiles
 - renewable, recyclable and bio-degradable (compostable) materials, bio-composites
 - digitalization and flexibility of production processes
 - virtual modeling and design (fibers, textile materials, products)
- high demands on pre-production and follow-up services
 - dematerialisation, re-use (circular economy)



- Increasing production of textile products for other application sectors (electrical engineering, healthcare, construction, automotive, agriculture, environment, aviation)
 - textiles for resource protection (water, agriculture, energy storage)
 - textiles for safe and energy efficient buildings and smart and functional interiors
 - e-textiles for smart wearable systems
 - textiles for light, clean and safe transport systems, smart roads
 - textiles for insulating and filtering materials
etc.



■ Recyclable materials, circular economy

- technologies for minimizing production batches and consumption of resources (digital printing, jet dyeing, coating and functional treatments; machine technology, chemical processes)
- sustainable substitutes for hazardous textile production
- hi-tech textile recycling
- use of recyclable materials in textile industry
- new technological processes for reuse of water, energy and chemicals



TEXTILE WASTE

CIRCULAR ECONOMY „To make the waste a source “



Source: www.fler.cz



Source: Rubicon Global



ENTeR

EXPERT NETWORK ON TEXTILE RECYCLING

Aims:

- ❖ reduction of waste from textile production
- ❖ promoting a common offer of innovation services of main local research centers and business associations
- ❖ show benefits of cooperation based on a on-line tool and share of knowledge in eco-design of waste
- ❖ focus on management and optimization of waste streams from the perspectives of eco-design and life cycle design

www.interreg-central.eu/enter



- ❑ Mapping of the current state and management of textile waste and their recycling

- ❑ Obtaining data on:
 - legislative, social and technical aspects
 - main actors
 - available sources
 - best practices
 - SWOT analysis



- ❑ **By questionnaire / personally contacted 75 subjects**
 - manufacturers of textiles/technical textiles, clothing sector, waste processors, leasing laundries

- ❑ **Answers from 22 subjects**
 - 8 technical textiles
 - 8 other textiles (clothing/furniture, yarns,...)
 - 1 working clothes production
 - 1 sorted collection of used clothing (containers)
 - 2 processing / use of textile waste
 - 1 use of recycled PET for fibers production
 - 1 laundry



- ❑ About 80-90 000 tons/year (under the waste regime)
- ❑ Due to the missing definition of the „secondary raw material“ in CZ legislation- companies prefer handle the reusable/recyclable material **outside** the waste regime (and waste statistics)
- ❑ Companies are active in searching opportunities for recycling and use of textile waste/residuals
 - in-house (raw material for own production)
 - if not possible - searching for external partners
 - sale of residuals as by-product (outside the waste regime)
 - leasing services (hotel/hospital laundry) - sale of end-of-life textile as cleaning rags (cleaning services, metalworking workshops, public)

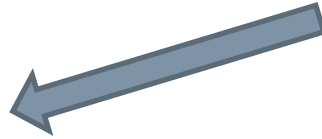


- ❑ **As part of mixed municipal waste**
 - in **bins** - not sorted, disposed together with municipal waste
 - larger volumes or large items - **collecting yards** operated by municipalities - not sorted and used, disposed

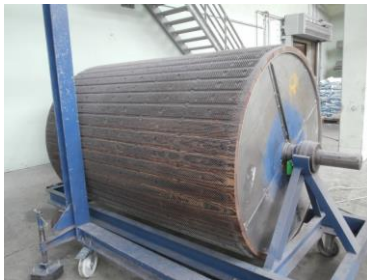
- ❑ **Outside the municipal waste system**
 - sorted collection organized by private companies or charities
 - containers owned by operator (charities, waste and recycling companies) or municipalities choosing the operator
 - sorting according to quality: further use (charities), second hand shops, export to third countries, recycling (cleaning rags, insulations,...), **disposal**



- ❑ Waste from end-of-life clothing and textiles - sorted collection from public:
 - estimation ~ 20 kg/inhab.(200.000 t/year)
 - from this volume: ~ 97 % landfilling
 - only 3 % sorted collection (containers)
 - from this 3 %:
 - ~ 30-45 % clothing for wearing - charities
 - 30 % recycling as raw materials (cleaning rags)
 - 5 % disposal
 - 20-25 % export for further recycling to Asia (India, China in the past - now new legislation)



- ❑ On private commercial basis
- ❑ Technologies for processing and recycling of „simple conventional“ textile waste
 - well available - mostly mechanical technologies (tearing, cutting)
 - resulting material - manufacturing of non-woven textiles, cleaning rags, fillings, insulations, parts for automotive industry etc.



- ❑ Waste from **technical** textiles
 - processing and recycling often **difficult** due to the technical character of textile (coatings, laminating, composites, new materials and constructions)
 - companies are interested in new solutions
 - Due to the significant position of technical textiles production CZ - an **innovative opportunity** for waste processors



No.	Title of the Pilot Case	Partner
1	From residues to raw material - New recycling approach to handle textile waste from a finishg company	STFI
2	Generation of waste from manufacturing of technical textiles	INOTEX
3	Reduction of the waste generation through prolongation of the service life of textile products	INOTEX
4	Recollection, recycling and waste management of stock post-industrial and used post-consumer workwear finished garment	Centrocot, UNIVA
5	System of segregation and preparation of postproduction waste	IW
6	“Wool Waste” raw material development	INNOVATEXT
7	Development of the waste management related in-house logistic system	PBN





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**THANK YOU
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