Saturday (September 8)

2nd General Session: Textile & Apparel Industry in Africa

Textile Industry in Africa - A Contemporary Perspective
Navdeep Sodhi, Gherzi Sub-Sahara

Doing Business in East Africa
Frank Matsaert, TradeMark East Africa, Kenya

The Role of Africa in the Global Supply Chain
Sunny Huang, New Wide Group, Chinese Taipei

Prospects, Opportunities and Challenges of Investing in the Cotton, Textile & Garment Industry in Nigeria
Edet Sunday Akpan, Permanent Secretary Ministry, Nigeria

3rd General Session: Textile Value Chain

PVH in East Africa: Past, Present and Future
Cen Williams, PVH Far East Limited Africa Hub, Kenya

China’s T&A Supply Chain and its CSR in Times of Rapid Change
Ruizhe Sun, China National Textile & Apparel Council

Keynote Address
Manuel Moses, Country Manager East Africa
International Finance Corporation

The Global Textile (Machinery) Market Situation
Christian Schindler, ITMF

4th General Session: Technology & Digitalization in the T & A Industry

Digitalization - to Be or not to Be
Thomas Gries, ITA Aachen, Germany

Design for Automation- Bridging the Gap Between Production Requirements and Automation
Pete Santora, SoftWear Automation, USA

Digital Transformation of the Textile Value Chain
Mark Jarvis, WTiN, UK
Textile industry in Africa: A contemporary perspective
01 Key messages
02 African textile & apparel industry - Trends
03 Opportunities & challenges
04 Gherzi in Africa
05 Q&A
Key messages

Africa offers several opportunities however challenges must be overcome

- Africa is not a single market
- Africa’s textile industry is driven by FDI
- Preferential market access to EU/US is a key attraction
- …and large domestic market (ECOWAS: 350 million)
- Fragmented value chain
- Potential for improving the “enabling environment” and “doing business” to capitalize on the willingness of global players to invest across African textile value chain
Key messages

African textile & apparel industry - Trends

Opportunities & challenges

Gherzi in Africa

Q&A
African textile value chain is highly fragmented

Cotton-Textile-Apparel Value chain

1. Raw materials (Cotton)
   - West African Franc zone represents 2/3rd of Cotton pdn
   - Increasing production
   - Potential to improve productivity

2. Traditional textile industry
   - Established during 1960-90’s
   - Decline and stagnation since Y2K
   - Integrated mills
   - Traditional fabrics for local consumption
   - Uncompetitive
   - Potential for revival

3. Import trade
   - Growing penetration with 90% market share
   - Unorganised, Grey cross border trade
   - Second hand clothing
   - Emerging modern retail
   - Shift towards readymade garments

4. Apparel export sector
   - Driven by preferential market access to EU/US
   - FDI driven
   - CMT
   - Growing interest from international buyers
   - Global players enter
   - Potential for vertical integration

Salient features
5 cotton producing basins in Africa with 2/3rd of cotton originating in West Africa

Cotton producing basins in Africa

Cotton production & Consumption (‘000 MT)
(2017/18)

Top priority countries (11)
Potential other countries (5)

Source: OCDE, ICAC, Club du Sahel
Value chain

N. Africa cotton production, yield and consumption

<table>
<thead>
<tr>
<th>Year</th>
<th>Production</th>
<th>Consumption</th>
<th>Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012/13</td>
<td>665</td>
<td>190</td>
<td>125</td>
</tr>
<tr>
<td>2013/14</td>
<td>683</td>
<td>140</td>
<td>170</td>
</tr>
<tr>
<td>2014/15</td>
<td>689</td>
<td>157</td>
<td>174</td>
</tr>
<tr>
<td>2015/16</td>
<td>579</td>
<td>191</td>
<td>186</td>
</tr>
<tr>
<td>2016/17</td>
<td>620</td>
<td>174</td>
<td>186</td>
</tr>
<tr>
<td>2017/18</td>
<td>857</td>
<td>190</td>
<td>182</td>
</tr>
<tr>
<td>2018/19</td>
<td>740</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

F. Africa cotton production, yield and consumption

<table>
<thead>
<tr>
<th>Year</th>
<th>Production</th>
<th>Consumption</th>
<th>Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012/13</td>
<td>923</td>
<td>179</td>
<td>769</td>
</tr>
<tr>
<td>2013/14</td>
<td>960</td>
<td>387</td>
<td>159</td>
</tr>
<tr>
<td>2014/15</td>
<td>1022</td>
<td>388</td>
<td>164</td>
</tr>
<tr>
<td>2015/16</td>
<td>1045</td>
<td>395</td>
<td>171</td>
</tr>
<tr>
<td>2016/17</td>
<td>1103</td>
<td>333</td>
<td>171</td>
</tr>
<tr>
<td>2017/18</td>
<td>1245</td>
<td>413</td>
<td>191</td>
</tr>
<tr>
<td>2018/19</td>
<td>1326</td>
<td></td>
<td>204</td>
</tr>
</tbody>
</table>

Comments

- Cotton production and consumption remained within a narrow band in North Africa, but yield shows an improvement in 2017/18 season.
- F. Africa dominates the cotton production in the continent, with potential to increase yield.
- Potential for value addition in downstream industry.

Source: ICAC
African ring spinning capacity has faced decline and stagnation during 2010-2017

World installed ring spinning capacity [mn spindles]: 2017

Source: ITMF
Textile machinery investments

......with similar trend in rotor spinning capacity

World installed open end spinning capacity

<table>
<thead>
<tr>
<th>Region</th>
<th>Year 2012 (‘000’)</th>
<th>Year 2017 (‘000’)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>1409</td>
<td>539</td>
</tr>
<tr>
<td>North America</td>
<td>274</td>
<td>800</td>
</tr>
<tr>
<td>South America</td>
<td>600</td>
<td>151</td>
</tr>
<tr>
<td>Eastern Europe</td>
<td>169</td>
<td>139</td>
</tr>
<tr>
<td>Western Europe</td>
<td>471</td>
<td>277</td>
</tr>
<tr>
<td>Europe Others</td>
<td>515</td>
<td></td>
</tr>
<tr>
<td>Asia &amp; Oceania</td>
<td>4'486</td>
<td>5'115</td>
</tr>
<tr>
<td>Total</td>
<td>7'9mn</td>
<td>7'5mn</td>
</tr>
</tbody>
</table>

Source: ITMF
Africa’s shuttle-less weaving and circular knitting capacity has shown some recovery (1/2)

World installed shuttle-less weaving machines capacity [‘000 numbers]

Source: ITMF
Africa’s shuttle-less weaving and circular knitting capacity has shown some recovery (2/2)

World cumulative shipment (<10 year old) of circular knitting machines ['000 numbers]

Source: ITMF
Africa’s global textile & clothing trade at US$35 bn shows a growing deficit

Africa: Textile & Clothing trade deficit: US$ Bn

* All 54 countries in Africa Continent
HS Codes: 50 to 63

Source: Comtrade
Africa’s textile & clothing export trade witnessed a slowdown in 2016.

Africa* export of textile & clothing [Bn US$]

<table>
<thead>
<tr>
<th>Year</th>
<th>Textile</th>
<th>Clothing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>5.53</td>
<td>9.27</td>
</tr>
<tr>
<td>2011</td>
<td>6.57</td>
<td>10.79</td>
</tr>
<tr>
<td>2012</td>
<td>6.46</td>
<td>9.47</td>
</tr>
<tr>
<td>2013</td>
<td>6.09</td>
<td>9.69</td>
</tr>
<tr>
<td>2014</td>
<td>6.36</td>
<td>9.69</td>
</tr>
<tr>
<td>2015</td>
<td>5.50</td>
<td>8.79</td>
</tr>
<tr>
<td>2016</td>
<td>4.79</td>
<td>8.75</td>
</tr>
</tbody>
</table>

CAGR Textile = -2%
CAGR Clothing = -1%

* All 54 countries in African Continent
HS Codes: 50 to 63

Source: Comtrade
...whereas textile & clothing imports have been growing, especially readymade garments.

Africa* import of textile & clothing [Bn US$]

<table>
<thead>
<tr>
<th>Year</th>
<th>Textile</th>
<th>Clothing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>14,1</td>
<td>4</td>
</tr>
<tr>
<td>2011</td>
<td>15,1</td>
<td>4,1</td>
</tr>
<tr>
<td>2012</td>
<td>14,7</td>
<td>4</td>
</tr>
<tr>
<td>2013</td>
<td>15,8</td>
<td>4,2</td>
</tr>
<tr>
<td>2014</td>
<td>16,5</td>
<td>5,2</td>
</tr>
<tr>
<td>2015</td>
<td>15,43</td>
<td>7,22</td>
</tr>
<tr>
<td>2016</td>
<td>14,63</td>
<td>6,93</td>
</tr>
</tbody>
</table>

CAGR Textile = 1%  
Clothing = 10%

* All 54 countries in African Continent  
HS Codes: 50 to 63

Source: Comtrade
Africa’s T&C Trade

Top 5 countries represent 71% share of textile exports

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Egypt</td>
<td>1.6</td>
<td>1.7</td>
<td>1.7</td>
<td>1.4</td>
<td>0.7</td>
<td>0.8</td>
<td>0.7</td>
<td>29%</td>
</tr>
<tr>
<td>South Africa</td>
<td>0.7</td>
<td>0.8</td>
<td>0.8</td>
<td>0.7</td>
<td>0.4</td>
<td>0.4</td>
<td>0.5</td>
<td>15%</td>
</tr>
<tr>
<td>Morocco</td>
<td>0.4</td>
<td>0.4</td>
<td>0.3</td>
<td>0.5</td>
<td>0.2</td>
<td>0.4</td>
<td>0.5</td>
<td>10%</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>0.5</td>
<td>0.5</td>
<td>0.4</td>
<td>0.4</td>
<td>0.5</td>
<td>0.4</td>
<td>0.4</td>
<td>9%</td>
</tr>
<tr>
<td>Tunisia</td>
<td>0.5</td>
<td>0.5</td>
<td>0.4</td>
<td>0.4</td>
<td>0.5</td>
<td>0.4</td>
<td>0.4</td>
<td>8%</td>
</tr>
</tbody>
</table>

* All 54 countries in African Continent
HS Codes: 50 to 60 & 63

Source: Comtrade
3 North African countries account for 70% of total apparel exports from Africa

Major exporters of clothing from Africa* [Bn US$]

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Morocco</td>
<td>3,0</td>
<td>3,2</td>
<td>3,2</td>
<td>3,0</td>
<td>3,1</td>
<td>2,7</td>
<td>2,7</td>
<td>34%</td>
</tr>
<tr>
<td>Tunisia</td>
<td>1,3</td>
<td>1,3</td>
<td>1,3</td>
<td>1,3</td>
<td>1,1</td>
<td>0,8</td>
<td>0,8</td>
<td>24%</td>
</tr>
<tr>
<td>Egypt</td>
<td>0,6</td>
<td>0,8</td>
<td>0,8</td>
<td>0,7</td>
<td>0,4</td>
<td>0,5</td>
<td>0,6</td>
<td>13%</td>
</tr>
<tr>
<td>Mauritius</td>
<td>0,4</td>
<td>0,5</td>
<td>0,6</td>
<td>0,6</td>
<td></td>
<td></td>
<td></td>
<td>8%</td>
</tr>
<tr>
<td>Madagascar</td>
<td>0,4</td>
<td>0,5</td>
<td>0,6</td>
<td>0,6</td>
<td></td>
<td></td>
<td></td>
<td>5%</td>
</tr>
</tbody>
</table>

* All 54 countries in African Continent
HS Codes: 61 & 62

Source: Comtrade
**Africa’s T&C trade**

Nigeria is the No. 1 importer of textiles (US$ 2.4 bn), mainly for domestic consumption

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Morocco</td>
<td>2.2</td>
<td>2.2</td>
<td>2.9</td>
<td>2.4</td>
<td>2.3</td>
<td>2.3</td>
<td>2.3</td>
<td>19%</td>
</tr>
<tr>
<td>N+3</td>
<td>2.6</td>
<td>2.8</td>
<td>2.7</td>
<td>2.3</td>
<td>2.4</td>
<td>2.3</td>
<td>2.3</td>
<td>17%</td>
</tr>
<tr>
<td>Egypt</td>
<td>2.6</td>
<td>2.5</td>
<td>2.5</td>
<td>2.3</td>
<td>1.9</td>
<td>1.6</td>
<td>1.5</td>
<td>16%</td>
</tr>
<tr>
<td>Tunisia</td>
<td>2.0</td>
<td>1.9</td>
<td>2.0</td>
<td>2.0</td>
<td>1.5</td>
<td>1.5</td>
<td>1.3</td>
<td>11%</td>
</tr>
<tr>
<td>South Africa</td>
<td>2.0</td>
<td>1.9</td>
<td>2.0</td>
<td>1.6</td>
<td>1.3</td>
<td>1.5</td>
<td>1.3</td>
<td>9%</td>
</tr>
<tr>
<td>Algeria</td>
<td>0.4</td>
<td>0.5</td>
<td>0.7</td>
<td>0.7</td>
<td>0.3</td>
<td>0.4</td>
<td>0.5</td>
<td>4%</td>
</tr>
<tr>
<td>Madagascar</td>
<td>0.3</td>
<td>0.4</td>
<td>0.5</td>
<td>0.5</td>
<td>0.3</td>
<td>0.4</td>
<td>0.5</td>
<td>3%</td>
</tr>
</tbody>
</table>

*All 54 countries in African Continent. N+3 = 60% imports of Benin, Togo and Niger are re-exported to Nigeria*

Source: Comtrade

HS Code: 50 to 60 & 63
Whereas South Africa is the major importer of clothing in Africa

* All 54 countries in African Continent. N+3 = 60% imports of Benin, Togo and Niger are re-exported to Nigeria

Source: Comtrade
Africa’s market share in the US imports has been stagnant around 2.5% with further potential to grow to leverage preferential market access.

**Source:** Comtrade

*All 54 countries in African Continent
HS Codes: 61 & 62
EU imports of clothing from Africa have been stagnant around 7% with further potential to grow.

EU import of clothing from World and Africa’s* Share [Bn US$]

World | Africa's Share
---|---
2010 | 84.7 | 8.4%
2011 | 97.2 | 8.1%
2012 | 86.9 | 7.8%
2013 | 89.2 | 7.7%
2014 | 97.4 | 7.3%
2015 | 90.2 | 6.6%
2016 | 90.0 | 6.8%

* All 54 countries in African Continent
HS Codes: 61 & 62

Source: EUROSTAT
African countries have competitive wages however many countries face cost disadvantage, especially power

<table>
<thead>
<tr>
<th>Cost parameters</th>
<th>China</th>
<th>India</th>
<th>Vn</th>
<th>B’desh</th>
<th>IDN</th>
<th>Kenya</th>
<th>ET</th>
<th>Mada</th>
<th>Nig</th>
<th>EGY</th>
<th>UG</th>
<th>BF</th>
<th>CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly wages USD</td>
<td>600</td>
<td>175</td>
<td>275</td>
<td>130</td>
<td>300</td>
<td>150</td>
<td>75</td>
<td>100</td>
<td>150</td>
<td>125</td>
<td>150</td>
<td>75</td>
<td>125</td>
</tr>
<tr>
<td>Electricity tariff (US$ per kWh)</td>
<td>13</td>
<td>10</td>
<td>7.5</td>
<td>10</td>
<td>9</td>
<td>15</td>
<td>3.5</td>
<td>12.00</td>
<td>12</td>
<td>6.5</td>
<td>12</td>
<td>23</td>
<td>12</td>
</tr>
<tr>
<td>Finance cost</td>
<td>6</td>
<td>7*</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>12</td>
<td>10</td>
<td>10</td>
<td>7*</td>
<td>6</td>
<td>7*</td>
<td>11</td>
<td>10</td>
</tr>
</tbody>
</table>

* Concessional interest rate for textile industry under special programme

Source: Gherzi database
African Textile Industry > 4G

The Pioneers (First generation)

1930-60's

Source: Gherzi database
African Textile Industry > 4G

Integrated companies (2nd generation)

1970-90'S

GIZA
GIZA SPINNING & WEAVING CO.

COMPAGNIE MAURICIENNE DE TEXTILE L'TEE

Bedi FABRICS
GARMENTS
Bedi Investments Limited

Ciel
Beyond Horizons

ALTEX
Almeda Textile plc.

Modern companies (3rd generation)

extrupet
recycling your world (Pty) Ltd

TALAK

AYKA ADDIS
Textile & Investment Group

Kanoria Africa Textiles PLC

PRILLA

MAA GARMENT AND TEXTILES

Source: Gherzi database
A. New Wave Co’s(Apparels)

2000-2018

Source: Gherzi database
01 Key messages

02 African textile & apparel industry

03 Opportunities & challenges

04 Gherzi in Africa

05 Q&A
Africa with a per capita textile consumption of 2.6 kg has huge growth potential.
Regulatory environment

6 key regulations govern trade & investment in African countries (1/2)

1. Regional market
   - Free movement of goods within the common market:
     - EAC (6 countries)
     - ECOWAS (15 countries)
     - SACU (5 countries)

2. CET
   - A uniform, Common External Tariff applicable to all imports into the common market
   - 4 tariff slabs for customs duty
     - Essential items (Machinery) 0%
     - Raw materials (Fiber) 5%
     - Intermediates (Yarn, Griege) 10%
     - Finished fabrics & apparels 25%

3. Incentives
   - Export incentives: Export grant/Duty draw back
   - Fiscal/Investment incentives: Tax holiday (5-7 years)/ VAT exemption
   - Sectoral incentives: Concessional funding/Special energy tariff
   - Others: Negotiable
6 key regulations govern trade & investment in African countries (2/2)

**Forex Controls**
- Generally, foreign exchange can be freely exchanged via banks
- Dual exchange rate mechanism prevalent in some countries
- A few countries require 100% forex proceeds repatriated against exports to be converted into local currency within stipulated period

**Ownership**
- 100% FDI is allowed in most countries

**Preferential Market Access**
- 5 regimes to gain duty free market access to developed/developing countries
  - a) GSP (EBA provision for LDC’s allows duty free access to EU)
  - b) AGOA (Applicable to eligible sub Saharan African countries) for exports to USA; Rules of origin allow use of third country fabric)
  - c) QIZ Initiative allows exports of apparels from Egypt & Jordan subject to 35% value addition in the region
  - d) EPA (EU & individual sub Saharan African) countries allows duty free access
  - e) Euromed- EU/Tunisia FTA
Opportunities & risks

Opportunities in Africa are apparent however challenges must be understood

**Trend**
- Preferential market access to US/EU
- Interest of international buyers to diversify sourcing
- Large regional/domestic market
- Abundant manpower and land
- Raw material supply (Cotton) availability
- Incentives
- Upcoming industrial zones

**-**
- Enabling environment
- Cost of doing business
- Infrastructure
- Logistics
- Skills & Productivity
- Socio-cultural issues
Key messages

African textile & apparel industry

Opportunities & challenges

Gherzi in Africa

Trends

Q&A
Gherzi has accumulated a very strong experience in Africa with over 100 successful projects with presence through 2 offices.

**Morocco**
- Gromatex
- COTEF
- BAW
- ICOZ SA
- Texnord
- AMITH
- Lamatem

**Senegal**
- ONUDI
- CDE / OPICT
- SOTIBA

**Cameroon**
- CICAM
- Ministère de l'industrie

**Sudan**
- Sharat
- Ministère de l'Industrie
- Banque Mondiale
- SUR

**South Africa**
- Atraco
- Gulf Denim
- SACU Secretariat
- Standerton Mills

**Algeria**
- SONITEX

**Tunisia**
- Textiles en Biais
- CETTEX
- Ministère de l'Industrie
- Filtiss

**Ivory Coast**
- Banque Mondiale
- IPS West Africa

**Burkina Faso**
- Filsah
- Alok Textiles

**Ethiopia**
- KWA
- Ministry of Industry
- UNIDO
- Raymond
- Kanoria Group
- Sutlej Group

**Bostwana**
- CNUCED
- BEDIA

**Kenya**
- EADB
- BAW
- DEG
- Bedi Textiles
- EPZA

**Nigeria**
- Banque Mondiale
- Chanrai Group
- Bhojsons
- Sunflag
- CHA Group
- UNIDO
- VLISCO
- NNDC
- Bua Group

**Zimbabwe**
- BAW

**Madagascar**
- Banque Mondiale
- IFC
- EDBM

**Egypt**
- Bank Misr
- Spaltenstein Holding
- Banque Mondiale
- Agico
- BAW
- IFC
- Gulf Denim
- STIA
- Santamora
- SOFI
- IMC
- Shamsi Group
- Nile Holdings

**Zambia**
- Smith & Nephew
- BMD
- Tolaram
- UNIDO

**Uganda**
- IFC
- Ministère de l'industrie
- Fine Spinners

**Mauritius**
- Vossen
- Arvind Mills
- UNIDO
Gherzi in Africa

Egypt Textile City Master Plan

IMC EGYPT

Legend

<table>
<thead>
<tr>
<th>Building Name</th>
<th>Main Length (m)</th>
<th>Width (m)</th>
<th>Area (m²)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building A</td>
<td>340</td>
<td>240</td>
<td>70,560</td>
<td>2.2%</td>
</tr>
<tr>
<td>Building B</td>
<td>290</td>
<td>190</td>
<td>42,350</td>
<td>1.4%</td>
</tr>
<tr>
<td>Building C</td>
<td>250</td>
<td>150</td>
<td>37,500</td>
<td>1.2%</td>
</tr>
<tr>
<td>Building D</td>
<td>210</td>
<td>120</td>
<td>24,600</td>
<td>0.8%</td>
</tr>
<tr>
<td>Building E</td>
<td>170</td>
<td>100</td>
<td>13,300</td>
<td>0.4%</td>
</tr>
</tbody>
</table>

Source: Gherzi projects database
Gherzi in Africa

Capacity Building
Morocco site under construction

Source: Gherzi projects database
### Key messages

### African textile & apparel industry

### Trends

### Opportunities & challenges

### Gherzi in Africa

### Q&A
Consultants to the Industry since 1929

n.sodhi@gherzi.com

www.gherzi.com
ITMF Annual Conference 2018

Presentation by
Frank Matsaert
Chief Executive Officer,
TradeMark East Africa
EAST AFRICA

- Fastest growing economic bloc in Africa and second in the world. - Your gateway to Africa
- GDP Growth: 5.3% (Above-average GDP growth)
- World’s fastest-reforming region
- The largest single market in Africa with a population of 150+ m.
- Diversified economy/business and investment opportunities in the textile and apparel Sector
- Growing middle class (Ready Market)
- Preferential market access to the U.S, E.U amongst others.
- Harmonized tariffs within the EAC – Customs Union and Single Customs Territory
- Improved political environments

<table>
<thead>
<tr>
<th>Population</th>
<th>150+ Million</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>$146 billion</td>
</tr>
<tr>
<td>GDP Growth</td>
<td>5.3% (Above-average GDP)</td>
</tr>
<tr>
<td>Inflation</td>
<td>6.2%</td>
</tr>
</tbody>
</table>
EAC PARTNER STATE’S CONTEXT

- Partner States have individually taken positive steps towards creating an enabling environment for trade and investment.
- EAC Countries implemented the highest number of reforms in Sub-Saharan Africa in 2017. Kenya (6) & Rwanda (5).
- Political goodwill high to address the cost of doing business in EAC Partner States
- Improving the trade and investment climate at the National Level is an essential ingredient for successful regional integration
Cotton and Textile is a key priority sector for the EAC Partner States (Strong political goodwill)

Cotton production in Uganda, Tanzania and Kenya is growing rapidly, and Governments are investing heavily in cotton farming and reviving the value chain. Pilot projects on cotton production using BT technology are underway in Kenya.

All EAC States are expanding Export processing and Special Economic Zones (Textile cities) – Tanzania, Rwanda and Kenya Leading

Ports of Dar and Mombasa being upgraded to enhance turnaround time

www.trademarkea.com
DOING BUSINESS IN EAST AFRICA - THE OPPORTUNITIES

- All Partner States are **expanding Energy production and have tax incentives for Green Energy production** - The focus is to bring down the cost of Energy
- All Partner States have **One Stop Shops to support Investors**
- **AGOA status** for the EAC States and local demand driving demand for Textiles and apparel
- **Numerous tax incentives** for investors – Corporate tax relief
- **Relatively cheap, skilled and productive labour**
BOTTLENECKS & RISKS OF DOING BUSINESS IN EAST AFRICA ("WORK IN PROGRESS"):  

- Poor Transport infrastructure and intermodal connectivity: regional rail and road network connectivity relatively poor  
- Ports and inter-agency inefficiency  
- Cost and supply of energy, particularly in Uganda and Tanzania. Uganda, manufacturers pay $0.10 per kWh, Tanzania $0.14 per kWh, Rwanda $0.12 per kWh and Kenya $0.15 per kWh  
- Inefficiency in the local transport and logistics sector (road transport services).  
- Tax administration is “perceived” as burdensome  
- Harmonization of standards and enforcement of regulation around standards, transit and counterfeit goods.  
- Incentives: sufficient but could be improved  
- The EAC Customs Union and Common Market not fully implemented  
- Corruption
HOW THESE CHALLENGES ARE BEING ADDRESSED

- **Poor infrastructure** - Mega infrastructure & energy projects: Mega-Regional roads, Ports and Power projects ongoing
- Development of **Logistics Hubs, EPZs & SEZs**
- Public-Private Sector Dialogue frequent
- **Trade Facilitation** improvements - Shortening lead-times, - green channel, Port upgrading, digital corridors, RECTs, IBM, E-Government
- **Port productivity** enhancements

**TMEA has supported:**
- Single Customs Territory clearance that provides for customs clearances to be made for Northern Corridor countries at Mombasa port
- Regional Electronic Cargo Tracking & Customs Management System in Uganda - 75% reduction in transit & clearance times
- Various initiatives in East Africa to address NTBs, resulting in reduction in NTBs in the region

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HOW THESE CHALLENGES ARE BEING ADDRESSED

- **Tax incentives** - Import and Export duties in the Cotton and Textile Sector conducive and annually review to catalyse growth

- **Ongoing policy reforms** as evidence in the improved ranking of EAC Partner States on Ease of Doing Business, Global Competitiveness and Logistics Performance Index reports

- **Skills gap** - Revival of Technical Institutes and Youth Training Programmes to enhance skills and increase availability.

- **Corruption**: Heads of States addressing corruption - unprecedented arrests have been made in the last few months
SOME OF THE RESULTS ATTRIBUTABLE TO TMEA WORK

IMPROVED PHYSICAL ACCESS TO MARKETS

CONTAINER TRANSPORT TO A LANDLOCKED COUNTRY

Mombasa → Rwanda

AS AT JUNE 2017

Reduced average time taken to transport a container from Mombasa or Dar es Salaam ports to a landlocked Country by 16.5% as at June 2017.

AVERAGE TRANSPORT COST

Mombasa → Kampala

2010:

US$ 4.06/km

2017:

US$ 2.10/km

2010 VS 2017

Reduced average transport costs from Mombasa to Kampala by 48% from US$4.06/Km in 2010 to US$2.10/Km in 2017.

AVERAGE TRANSPORT COST

Dar es Salaam → Bujumbura

2010:

US$ 3.37/km

2016:

US$ 3.00/km

2010 VS 2017

Reduced average cost of transporting a container from Dar es Salaam Port to Burundi by 11% from US$3.37/km in 2010 to US$3.00/km in 2016.
SOME OF THE RESULTS ATTRIBUTABLE TO TMEA WORK

ENHANCED TRADE ENVIRONMENT & IMPROVED BUSINESS COMPETITIVENESS

OPERATIONALISED ONE STOP BORDER POSTS
REDUCE BORDER CROSSING TIME

$62.8 million
70%

AS AT JUNE 2017
Reduced average time a truck takes to cross the borders by over 70% leading to annual savings of USD 62.8 million.

REMOVAL OF KEY NON-TARIFF TRADE BARRIERS

2010 VS 2015
Elimination of key trade barriers, building export capability and improving competitiveness contributed to a 42% increase in the total value of exports from the EAC region to the world from a 2010 baseline of $9.03 billion to $12.4 billion in Dec 2015.

CONTRIBUTE TO INCREASING INTRA-REGIONAL EXPORTS

2010 $2.1 billion
2015 $3.1 billion
44%

DECEMBER 2015
Increase in intra-regional exports from a 2010 baseline of $2.1 billion to $3.1 billion by Dec 2015.
TMEA PLANS AND OPPORTUNITIES UNDER TRADE LOGISTIC CLUSTERS

• Several regions in EAC identified & TMEA plans to **catalyse growth** in these pilot regions through partnership with government and private sector.
• Textiles and Apparel, Agro-processing (cotton) – Mombasa, Dar and Rwanda
• We are looking to Partner with potential investors in the Textile and Apparel Sector to enhance trade and Investments in EAC. Connect with us

[www.trademarkea.com](http://www.trademarkea.com)
The Role of Africa in the Global Supply Chain

Sunny Huang
Fabric Production

Quick Response Area

Customer Service Center
Why Africa?

More and more brands have sourcing offices or manufacturing bases in Africa

• Competitive labor cost
  - Ethiopia: USD 43/m, Lesotho: USD 102/m, Kenya: USD 170/m
  - Bangladesh: USD 70/m, Cambodia: USD 170/m, Vietnam: USD 250/m

• Free trade agreements
  - AGOA extension to 2025 (18%~30% cost difference)
New Wide Africa Setting

Lesotho
Ever Unison Garments
Lesotho
(2 factories)
Since 2002

Ethiopia
New Wide Garment
Ethiopia
Since 2015

Kenya
New Wide Garment
Kenya
(5 factories)
Since 2010
Challenges For Production Conditions

• Longer lead time
  • Long shipping days for fabrics
    • Shipping from Asia: 30 days
    • No direct ships. High risk of delay
  • Cumbersome custom process
    • 7-10 days for custom clearance

• Mainly supplying high-volume bulk basics for US/Canada buyers
Challenges For Production Conditions

• Inadequate infrastructure
  • Lagging transport system
  • Spotty power/ internet supply
  • Lack of water supply

• Concerns of political/ social status

• Lack of local experienced labors
Challenges For Production Conditions

• Fast increasing labor cost
  • Kenya: 18% increase in 2017
  • Lesotho: 37% increase in 2018

• Uncertain global trading/ political relations
The Opportunities in Africa

• Huge labor pool
  • Sub-Saharan Africa will have the highest growth in working-age population anywhere over the next 20 years, more than 900 million people

• Strong purchasing power for domestic markets
  • Fastest growing middle class in the world. African consumer spending will hit US1.4 trillion by 2020.

• More trade agreements
  • AfCFTA (Africa continent free trade areas)
  • SADCFTA (Southern Africa Development Community)

• Massive lands for the sources of raw materials
To Move Forward…

Governments
• Regional vertical supply chain integration
• Provide market-oriented educations
• Improve infrastructure
• Diversified free-trade agreements

Manufacturers
• Performance improvements and management training
• Diverse markets
• Automation/ intelligence manufacturing
New Wide CSR White Paper, in Chinese and English, complied with both GRI G4 and CSR-GATEs standards.
CSR - Water Resource Management

**New Wide Changzhou, China**
Wastewater recycle system

**New Wide Kenya**
Boiler in place to provide steam for ironing machines
Tanks for harvesting rain water

**New Wide Lesotho**
Recycling water process
Green lands
CSR - Employees Management and Factories Communities

Donation campaign for a worker’s medical treatments in Kenya

Blankets donations to the poor in winter

Annual rewards for the outstanding employees

Global managers at 2018 New Wide Group Kick-off Meeting

Financial support to worker’s house in Lesotho

Before

After
CSR - Employees Management and Factories Communities

Executive conference in Africa

Global managers at 2018 New Wide Group Kick-off Meeting

Donation campaign for a worker's medical treatments in Kenya

Blankets donations to the poor in winter

Annual rewards for the outstanding employees

Financial support to worker's house in Lesotho

Annual rewards for the outstanding employees

We accommodate diverse cultures and embrace global talents.
CSR - Employees Management and Factories Communities

- Donation campaign for a worker's medical treatments in Kenya
- Annual rewards for the outstanding employees
- Employees actively involved in charity events
- Blankets donations to the poor in winter

Global managers at 2018 New Wide Group Kick-off Meeting

Executive meeting in Africa

Financial support to worker's house in Lesotho

Donation campaign for a worker's medical treatments in Kenya

Blankets donations to the poor in winter
CSR - Employees Management and Factories Communities

We care about employees’ safety and security needs

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- Before
- After

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Financial support to worker's house in Lesotho

Annual rewards for the outstanding employees

Guess their prize??!!

Recognize and reward employees' efforts

Annual rewards for the outstanding employees

CSR - Employees Management and Factories Communities

Recognize and reward employees' efforts

Annual rewards for the outstanding employees

Guess their prize??!!

Financial support to worker's house in Lesotho

Before

After
CSR - Employees Management and Factories Communities

- Recognition and reward employees' efforts
- Donation campaign for a worker's medical treatments in Kenya
- Executive meeting in Africa
- Annual rewards for the outstanding employees
- Financial support to worker's house in Lesotho
Thank You
PAPER BY MR. EDET SUNDAY AKPAN, PERMANENT SECRETARY AND HEAD OF THE NIGERIAN DELEGATION TO AFRICAN COTTON & TEXTILE INDUSTRIES FEDERATION SCHEDULED FOR THE 9TH – 11TH SEPTEMBER, 2018 AT THE VISA OSHWAL CENTRE, WESTLANDS, NAIROBI, KENYA

PAPER TITLE: PROSPECTS, OPPORTUNITIES AND CHALLENGES OF INVESTING IN THE COTTON, TEXTILE AND GARMENT (CTG) INDUSTRY IN NIGERIA

1. I am delighted to lead the Nigerian delegation to the Origin Africa 2018 where two important conferences are taking place in sequence. It is great to note the contributions of Origin Africa in the development of the cotton, textile and garment industry in Africa, which has afforded Nigeria the opportunity to showcase its potentials in the sector. We want to thank Ms. Belinda Edmonds and her team for the great work of organising this yearly event and for always inviting Nigeria to participate.

2. It is important for us in Nigeria that we attend conferences like this where we can showcase the status of the Cotton, Textile and Garment industry in Nigeria in a bid to woo investors. Therefore, I am excited to inform this gathering that delegates attending this conference from Nigeria include members of the Nigerian Textile Manufacturers, fashion designers, garment makers, government officials and other stakeholders in the sector. The idea is to present to investors the prospects and opportunities available in investing in the cotton, textile and garment (CTG) industry in Nigeria.
3. Your Excellencies, Distinguished Ladies and Gentlemen, I want to present synopsis of the development of the CTG in Nigeria, which started since 1957 with the establishment of the first textile company in Northern Nigeria, where most of the cotton in the country is grown. By 1980s Nigeria had no less than 175 thriving textile companies with specialised fabrics being exported to mostly the West and Central African regions and outside of Africa. Nigerian designs became the hallmarks of African Prints. At its peak in the late 1980s, the textile industry, in particular, became the highest employer of labour after government employing over 700,000 direct workers.

4. The textile industry witnessed a decline in the 1990s, which affected the entire value chain of the CTG. Cotton production dropped to less than 100,000 tons per annum and this equally affected the textile mills operating far less than optimal installed capacities. Employment also dropped to less than 50,000. This resulted in massive imports of textile materials to meet the need of our people.

5. In 2014 the Nigerian of Government in collaboration with all stakeholders developed a National Cotton, Textile and Garment Policy to address identified challenges and to attract investments into the industry. This provided the much needed platform for already existing textile mills to retool and modernize their facilities. However, the prolonged huge imports of textile material coupled with high cost of manufacturing due to
inadequate infrastructural facilities, posed renewed challenges to some of the revitalized textile mills.

6. In this regard, the Government of Nigeria in partnership with the private sector is reviewing the National Cotton, Textile and Garment Policy to address all impediments to industrial development in the CTG sector. Furthermore, the reviewed policy is expected to address cotton seeds sourcing, production as well as ginning. In same vein, Government has recognised the CTG sector as strategic industry, which implies that investors in the industry will be provided with gas at concessionary rate.

7. It is important to emphasise that Nigeria is blessed with vast arable land for cotton cultivation and production of staples (short, medium and long) cotton fibres. Therefore, there is an intervention fund set aside for the growth and development of the industry.

8. In order to ensure continued production along the value chain, Government has issued an Executive Order, which has tilted Government procurement towards locally produced textile materials.

9. Ladies and Gentlemen, I want to use this forum to inform you that the Government of Nigeria has approved and is building six special economic zones to enhance the prospects of industrial development in Nigeria. Two of the zones are dedicated to the CTG sector. In this regard, I wish to invite investors to come
to Nigeria and invest in these zones. We are available to provide any assistance needed by any investor. I must state that Nigeria has very huge and cheap labour available for use.

8. Your Excellencies, Distinguished Ladies and Gentlemen, I want to once again thank the organisers for the opportunity to participate in this conference. We look forward to collaborating with African Cotton and Textile Industries Federation to plan and host Origin Africa in Nigeria in the very near future.

9. Thank you and enjoy the deliberations.
PVH in East Africa: Past, Present and the Future

Cen Williams, Hub Leader. Africa and Middle East.
Outline

- **The Past:** who is PVH and what brought us to East Africa.
- **The Present:** how far we have come.
- **The Future:** what’s next and how can we work together,
The past
Who is PVH?

- Established in 1881, we are one of the world’s largest clothing companies with a turnover of $9bn.
- Nearly 1m workers in our supply chain.
- Source from over 40 countries.
- Globally recognised brands.
- Industry leader on corporate responsibility.
MAKE POSITIVE IMPACTS

Corporate Responsibility (“CR”) is central to how we conduct business, as we recognize both the opportunity and the responsibility for business to take a lead role in addressing pressing global issues. We believe CR helps strengthen our organization by managing risk, maximizing efficiencies and driving value in a rapidly changing world. Through our collective efforts, we seek to create value for both society and our business.

PEOPLE
DEVELOP & EMPOWER
Our people are our most valuable asset. We aim to protect the human rights of every worker.

ENVIRONMENT
NURTURE & PRESERVE
We are committed to reducing our impact on the environment & sustainably managing resources.

COMMUNITIES
INVEST & ENGAGE
We are engaged in the communities where we work & live with a focus on women & children.
Industry Leadership in Transparency & Accountability:

Our 2015 Materiality Assessment partners:
Why Ethiopia? Why Hawassa?

- Corporate ambition to shift 20% of global supply to East Africa.
- In 2014 Ethiopia chosen to spearhead drive into the continent.
- Decision driven by three factors:
  - Cost advantages
  - Scope to fully integrate the supply chain.
  - Ability to lock in global lessons on social and environmental issues.
Why Ethiopia: Cost

- Rising cost base in existing supply locations, e.g. Asia
- Trade deals already in place (AGOA and Everything But Arms)
- Young and increasingly well educated workforce.
- Cheapest energy in the world – on track to be 100% renewable.
Why Ethiopia: Going Vertical

• Ability to go from farm to fashion in one location:
  • Cost savings
  • Speed to market
  • Reduced carbon footprint and energy use
• Maximising local value added and ensuring the long term sustainability of the sector
Why Ethiopia 3: Doing it Right

• Learning lessons from elsewhere, e.g. social and environmental issues.
• Zero Liquid Discharge (ZLD) facility to protect environment
• World class social safeguards for workplaces, park, community
• Working with government to take best practice country wide
The present
Hawassa: Basic Facts

• 52 factory sheds, 20 investors from over 15 countries
• Integrated fabric and garment manufacturing, multiple product lines (shirts, underwear, suits)
• One Stop Shop (OSS), clinic, fire station, banks, etc
• Discounted bakery & supermarket
• Zero Liquid Discharge technology operational from day one
Employment and Output

- Current employment approx. 17,000
  - 85% women
- $100m in exports for 2018: doubling Ethiopia’s garment forex earnings
- In Feb 2018 a consignment of shirts with 82% Ethiopian content
- Best in class technology driving towards global productivity levels
Social Investments

- Women’s empowerment and health training (BSR/HER)
- Worker management committees in partnership with ILO/Better Work
- Tailored skills training for all staff, working with universities & TVET
- $1m youth empowerment partnership with Save the Children
- Worker counselling and support services
- Independent audits of all factories
Environmental Safeguards

• Set of global commitments on water, energy & chemical use
• Significant investment in Zero Liquid Discharge facility
• ‘Protecting Lake Hawassa’ projects:
  o Solid waste management and trash traps
  o Afforestation and erosion control
  o Public awareness creation and education
• Partnerships on plastics and paper recycling, rainwater harvesting, etc.
The future
## What the Future Holds:

### 1. Going to Scale
1. Grow workforce to 60,000 – doubling number of jobs in Hawassa city

### 2. Deepening the Value Chain

### 3. Expanding Partnerships

2. Exports to reach $500m (almost as much as coffee!)

3. Where next?
Thank you!

Cen Williams.
China’s Textile Supply Chain and Social Responsibility in a Fast-changing Era

快速变化时代下的中国纺织供应链及其社会责任

Sun Ruizhe
孙瑞哲
China National Textile & Apparel Council
中国纺织工业联合会
2018-9-8
Development of China’s Textile Industry after 40 Years of Reform and Opening-up

改革开放40年，中国纺织工业的发展
China’s textile industry is one of the key players in the world

Man-made fiber output (10,000 tons)

73.5% of the world total

73.5% 世界占比

Textiles & apparel exports (billion US dollars)

36.8% of the world total

36.8% 世界占比

Spun-yarn & filament output in 2016 (10,000 tons)

66.62%* of the world total

66.62%* 世界占比

Mill fiber consumption (10,000 tons)

More than 50% of the world total

More than 50% 世界占比

Note: The data with * is the proportion of China’s yarn production in the world’s major countries. 注：带*数据为中国纱产量占世界主要国家比重

Source: Industrial Economics Research Institute of CNTA, fiber year
China’s textile industry is an important pillar industry and livelihood industry in China. This industry plays a crucial role in the country’s economy, providing employment and contributing significantly to the national economy. The text further details various economic indicators, such as main business income, export value, net earnings in hard currency, share in total profits of all industries, and share in total investment of total social investment. These figures compare the years 1978 and 2017, showing remarkable growth in the textile industry.

- **Main business income** in 2017 was 145.67 times that of 1978.
- **Export value** rose 127.4 times.
- **Net earnings in hard currency** increased 234.85 times.

The data highlights the significant contributions of the textile industry to China’s economy, illustrating its growth and importance over the years.
Thanks to market competition, textile industry has realized more efficient resource allocation and gained stronger vitality.

- In 2017, the exports of Chinese private textile enterprises amounted to US$ 185.95 billion, accounting for 67.7% of the textile industry's total.

- By 2017, the number of major textile industrial clusters in China had reached 209, and they are distributed in 21 provinces/autonomous regions across the country.

In 2016, private enterprises are main players on textile market.

- 98.65% of the textile sector
- 98.21% of the garment sector
- 96.70% of the chemical fiber sector

Source: Industrial Economics Research Institute of CNTA
Thanks to opening-up, textile industry can take full advantage of domestic and international markets and resources.对外开放，充分利用国际国内两个市场两种资源

- In 2017, China’s exports of textiles & apparel totaled US$ 274.51 billion, accounting for 12.13% of China’s total exports. 2017年，中国纺织品服装出口额2745.05亿美元，占中国对外出口总额比重为12.13%。
- In 2017, the outbound investment of China’s textile industry amounted to US$ 1.18 billion, accounting for 7.61% of the total outbound investment of China’s manufacturing industries. 2017年，中国纺织产业对外投资总额为11.8亿美元，占中国制造业对外投资比重为7.61%。
- By the end of 2017, there were 322 chemical fiber, textile, apparel as well as hat & shoe-making enterprises listed on global major stock markets. 截至2017年底，在全球主要证券市场上市的中国化纤、纺织、服装鞋帽类企业共322家。

### China’s exports of textiles and apparel, 1978-2017 (Billion US dollars)

1978-2017年，中国纺织品服装出口额（十亿美元）

<table>
<thead>
<tr>
<th>Year</th>
<th>Export Value (Billion US dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1978</td>
<td>2.43</td>
</tr>
<tr>
<td>1990</td>
<td>53.04</td>
</tr>
<tr>
<td>2000</td>
<td>12.5</td>
</tr>
<tr>
<td>2005</td>
<td>117.54</td>
</tr>
<tr>
<td>2010</td>
<td>212.00</td>
</tr>
<tr>
<td>2015</td>
<td>283.85</td>
</tr>
<tr>
<td>2016</td>
<td>271.02</td>
</tr>
<tr>
<td>2017</td>
<td>274.51</td>
</tr>
</tbody>
</table>

### Outbound investment of China’s textile industry

<table>
<thead>
<tr>
<th>Year</th>
<th>Textile Sector (100 million US dollars)</th>
<th>Share in manufacturing industries (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>5.18</td>
<td>7.26</td>
</tr>
<tr>
<td>2014</td>
<td>9.5</td>
<td>9.76</td>
</tr>
<tr>
<td>2015</td>
<td>14.05</td>
<td>7.03</td>
</tr>
<tr>
<td>2016</td>
<td>26.6</td>
<td>8.97</td>
</tr>
<tr>
<td>2017</td>
<td>11.8</td>
<td>7.61</td>
</tr>
</tbody>
</table>

Source: Industrial Economics Research Institute of CNTA

资料来源：中国纺织工业联合会产业经济研究院
Thanks to innovation-driven development, textile industry has achieved remarkable results in technological innovation and transformation of sci-tech achievements.创新发展，科技创新与成果转化成效显著。

- Labor productivity of producing 32s pure cotton yarn (tons/person-year) 2000: 5.6, 2015: 27
- Labor per 10,000 cotton spindles (workers/10,000 spindles) 2000: 250, 2015: 60
- Share of shuttleless looms in cotton textile sector 2000: About 7.69%, 2015: 68.64%
- High-performance fibers: The most versatile fiber producer in the world, accounting for 1/3 of the world production for carbon fiber, aramid fiber and UHMWPE.
Thanks to systematic development, textile industry has established a more perfect industrial ecosystem and more competitive industrial scale.

Main business income in 2017, Unit: CNY billion

<table>
<thead>
<tr>
<th>Year</th>
<th>Chemical fiber sector</th>
<th>Apparel sector</th>
<th>Home-textiles sector</th>
<th>Technical textiles sector</th>
<th>Textile machinery sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>790.58</td>
<td>2190.39</td>
<td>262.60</td>
<td>289.75</td>
<td>114.93</td>
</tr>
</tbody>
</table>

China’s Mill Fiber Consumption (excluding fiberglass, ten thousand tons)

<table>
<thead>
<tr>
<th>Year</th>
<th>Consumption (ten thousand tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1978</td>
<td>276</td>
</tr>
<tr>
<td>2000</td>
<td>1360</td>
</tr>
<tr>
<td>2001</td>
<td>1500</td>
</tr>
<tr>
<td>2005</td>
<td>2690</td>
</tr>
<tr>
<td>2010</td>
<td>4130</td>
</tr>
<tr>
<td>2015</td>
<td>5300</td>
</tr>
<tr>
<td>2016</td>
<td>5420</td>
</tr>
<tr>
<td>2017</td>
<td>5430</td>
</tr>
</tbody>
</table>

% of the global

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1978</td>
<td>&lt;10%</td>
</tr>
<tr>
<td>2000</td>
<td>23.70%</td>
</tr>
<tr>
<td>2001</td>
<td>25.64%</td>
</tr>
<tr>
<td>2005</td>
<td>37.53%</td>
</tr>
<tr>
<td>2010</td>
<td>49.96%</td>
</tr>
<tr>
<td>2015</td>
<td>53.01%</td>
</tr>
<tr>
<td>2016</td>
<td>53.47%</td>
</tr>
<tr>
<td>2017</td>
<td>&gt;50%</td>
</tr>
</tbody>
</table>
Textile Industry is in a Fast-changing Era
纺织行业正处在一个快速变化的时代

Fast-changing trade pattern: new economies are emerging, trade relations become more complicated
贸易格局的快速变化：新兴经济体崛起，贸易关系更加复杂

Fast-changing consumer needs: lack of patience and brief attention constitute a consumption trend
消费需求的快速变化：缺少耐心与短暂关注正形成一种消费趋势

Fast-changing industrial ecosystem: cross-boundary, cross-disciplinary and cross-regional cooperation has become the norm
产业生态的快速变化：跨界、跨领域、跨区域合作成为常态
Fast-changing Trade Pattern  贸易格局的快速变化

- Structural changes have taken place in the global value-added chain: The centers of production capacity and consumer markets are transferring to emerging economies
  全球价值链发生结构性变化：生产能力和消费市场重心正在向新兴国家转移

- Trade relations become more complicated: Trade frictions are increasingly frequent, trade complexity further intensified, and trade disputes become more strategic
  贸易关系更加复杂：贸易摩擦渐趋频繁、贸易复杂程度不断加深、贸易争端更具战略高度


<table>
<thead>
<tr>
<th>Textiles</th>
<th>Export (billion US dollars)</th>
<th>Share in global total (%)</th>
<th>Apparel</th>
<th>Export (billion US dollars)</th>
<th>Share in global total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>China 中国</td>
<td>110</td>
<td>37.1 ↓</td>
<td>China 中国</td>
<td>158</td>
<td>34.9 ↓</td>
</tr>
<tr>
<td>EU 欧盟</td>
<td>69</td>
<td>23.4 ↑</td>
<td>EU 欧盟</td>
<td>130</td>
<td>28.6 ↑</td>
</tr>
<tr>
<td>India 印度</td>
<td>17</td>
<td>5.8 ↑</td>
<td>Bangladesh 孟加拉</td>
<td>29</td>
<td>6.5 ↑</td>
</tr>
<tr>
<td>USA 美国</td>
<td>14</td>
<td>4.6 —</td>
<td>Vietnam 越南</td>
<td>27</td>
<td>5.9 ↑</td>
</tr>
<tr>
<td>Turkey 土耳其</td>
<td>11</td>
<td>3.9 ↑</td>
<td>India 印度</td>
<td>18</td>
<td>4.1 ↑</td>
</tr>
<tr>
<td>ROK 韩国</td>
<td>10</td>
<td>3.3 ↓</td>
<td>Turkey 土耳其</td>
<td>15</td>
<td>3.3 ↓</td>
</tr>
<tr>
<td>Taiwan,China 中国台湾</td>
<td>9</td>
<td>3.1 —</td>
<td>Hong Kong,China 中国香港</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Pakistan 巴基斯坦</td>
<td>8</td>
<td>2.7 ↓</td>
<td>Indonesia 印尼</td>
<td>8</td>
<td>1.8 ↑</td>
</tr>
<tr>
<td>Hong Kong,China 中国香港</td>
<td>8</td>
<td>2.5 ↑</td>
<td>Cambodia 柬埔寨</td>
<td>7</td>
<td>1.6 ↑</td>
</tr>
<tr>
<td>Vietnam 越南</td>
<td>7</td>
<td></td>
<td>USA 美国</td>
<td>6</td>
<td>1.2 ↓</td>
</tr>
</tbody>
</table>

△ In 2018, over half of the global apparel and footwear sales will take place outside Europe and North America
  到2018年，将有超过一半的服装和鞋类销售将来自欧洲和北美以外地区

Global Sales Forecast for Apparel and Footwear, 2011-2025 2011-2025全球服装和鞋类销售预测

- Western market 西方市场
- Other markets 其他市场

Source: WTO

Source: McKinsey
Fast-changing Consumer Needs 消费需求的快速变化

- Lack of patience and brief attention constitute a consumption trend, quick changes and uncertainties have become core features of current market.
  缺少耐心与短暂关注正形成一种消费趋势，快速变化与不稳定成为当前市场的核心特征

- Community has brought up more independent, more powerful and fast-growing consumer groups
  社群使消费群体变得更有主见、更有力量、更快成长

- Fragmented emotions can be accumulated rapidly via Internet and turned into commercial value. Content platforms such as Douyin are becoming new traffic inlet.
  碎片化的情绪可以通过网络快速积聚进而转化为商业价值。抖音等内容平台正成为流量新入口

- Niche products can directly meet individual need. Products with good sense of design and tailor-made products have become consumers’ favorsates.
  利基产品能与个性需求直接对接。有设计感的产品、定制化产品开始成为消费偏好

- Enterprises that can quickly meet consumer needs are gaining competitive advantages.
  能更快满足消费需求的企业正获得竞争优势

Average time to shelf (in weeks) 平均上架时间（周数）

- ASOS’s sales grew 23.3% in 2017
  2017年ASOS的销售额增长23.3%

- Zara’s sales grew 9% in 2017
  2017年Zara的销售额增长9%

- Boohoo’s sales rose 107% in 2017
  2017年Boohoo的销售额增长107%
Global online sales reached US$ 2.30 trillion, up 24.8% year-on-year; and 60% of the online sales made on mobile. Different technologies integrate together, new products and new applications are emerging. For instance, Stitch Fix: Based on AI technology and part-time stylist, select pieces of clothing for subscribers and deliver them to their doors periodically. Le Tote: Using technical intelligence, recommend clothing and accessories for different scenarios.

Amazon: launched over 60 independent brands in 2017, most are clothing brands. Myntra: launched several independent clothing brands including HRX, Moda Rapido, All About You.
New Countermeasures of China’s Textile Supply Chain

中国纺织供应链的新应对
Supply Chain Flexibility  供应链柔性

Information technology have penetrated into every stage of the textile supply chain including design, R&D, production, marketing and service. They have brought profound changes to the organizational mode, production mode and management mode of the textile industry and significantly improved the ability of textile supply chain to respond to the changing needs of consumers.

信息技术已经渗透到设计、研发、生产、营销、服务等纺织供应链的各个环节，深刻改变了行业的组织模式、生产模式、管理模式，极大增强了纺织供应链应对需求端变化的响应能力。
The practice of enterprises shows: the implementation of social responsibility can create added value. 实践证明：履行社会责任能将责任转化为价值

Green and environmental protection are being constantly incorporated into each stage of textile supply chain and profound adjustment is taking place in the development pattern of supply chain. 绿色与环保要素不断纳入纺织供应链各环节，供应链发展模式正在发生深刻调整

Enterprises that implement green development strategy are gaining competitive advantages. 布局绿色发展的企业正获得竞争优势

- For example, Hangmin Stock Co., Ltd., a flagship enterprise in the printing and dyeing sector, takes the lead in implementing green development strategy. In the first half of 2018, the company realized main business income of more than CNY 1.65 billion, up 22.44% year-on-year. 以印染龙头企业航民股份为例，提前布局绿色发展，2018年H1，企业印染主业实现收入16.54亿元，同比增长22.44%

- The “Opinions on Accelerating the Development of Renewable Resources Industry” jointly released by the Ministry of Industry and Information Technology, the Ministry of Commerce and the Ministry of Science and Technology proposes that the comprehensive use of waste textiles will reach 9 million tons by the year of 2020. 工信部、商务部、科技部发布《关于加快推进再生资源产业发展的指导意见》提出，到2020年，废旧纺织品综合利用总量达到900万吨

Reduced Wastewater Discharge, COD and TAN Emissions of Textile Industry, 2006-2015

2006-2015年，纺织业废水排放总量、化学需氧量及氨氮排放总量降低

Source: China Environmental Statistical Yearbook 资料来源：中国环境统计年报
In order to quickly capture the changes on market and satisfy consumer needs, the integration of online and offline channels, different platforms and different models is accelerating.

为更快捕捉市场变化，满足消费需求，线上与线下渠道、不同平台、不同模式之间正加速融合。

- Hongdou’s “unbounded retail” stores: using technology to provide consumers with offline recommendations of apparel collection and consumers can try on the apparel virtually

红豆无界零售店：利用技术为用户提供线下服装搭配指导并展示虚拟效果

- HLN enters Meituan online food ordering platform

海澜之家入驻美团外卖

- Taobao’s global buyers can be found in more than 70 countries and regions cross the five continents; Alibaba’s Aliexpress is spread over 230 countries and regions all over the world

淘宝全球购买手遍布五大洲，覆盖超过70个国家和地区；阿里全球速卖通已覆盖全球230个国家

- Some competent enterprises are improving their offline channels, as a result, the efficiency of supply chain has been substantially improved

一些优质企业完善线下渠道，供应链效率显著提升

### China

<table>
<thead>
<tr>
<th>2017</th>
<th>Share of franchise stores in total sales</th>
<th>Area per store (m²)</th>
<th>Average monthly sales (CNY 10,000/store)</th>
<th>Sales per square meter (CNY /m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>25.9%</td>
<td>141.4</td>
<td>109.3</td>
<td>0.8</td>
</tr>
</tbody>
</table>
China’s Opportunities in a Fast-changing Era

快速变化时代下的中国机遇
China’s Opportunities in a Fast-changing Era
快速变化时代下的中国机遇

◆ The Opening-up Development Pattern 开放的发展格局

With a more positive attitude, China is building an open-oriented economy, and both the coverage and depth of “bringing in” and “going global” are expanding.
中国正在以更加积极的姿态构建开放型经济，“引进来”和“走出去”的广度和深度在不断扩大。

There are 16 FTAs signed between China and other countries, 11 bilateral and 2 multi-lateral FTAs are under negotiation; China has set up 11 pilot free trade zones, 2 free trade ports (including Hong Kong); and there are 219 China’s State-level Economic and Technological Development Zones and 19 China’s Border (Cross-border) Economic Cooperation Zones.
中国与世界其他国家已签订协议的自贸区共16个，正在谈判的双边自贸区11个、多边自贸区2个；中国自由贸易试验区共11个，自由贸易港2个（含香港）；中国国家级经济技术开发区219个，中国边（跨）境经济合作区19个。

Recent policies on deepening opening-up in China
近期中国深化对外开放的主要政策

<table>
<thead>
<tr>
<th>Date</th>
<th>Policy Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018/8/7</td>
<td>State Council’s “Approval of Setting up Cross-border E-commerce Comprehensive Pilot Zone in 22 Cities Incl. Beijing” 关于同意在北京等22个城市设立跨境电子商务综合试验区的批复</td>
</tr>
<tr>
<td>2018/6/23</td>
<td>Opinion Concerning the Establishment of the Belt And Road International Commercial Dispute Resolution Mechanism and Institutions 《关于建立“一带一路”国际商事争端解决机制和机构的意见》</td>
</tr>
<tr>
<td>2018/3/5</td>
<td>Circular: “Measures for Improving the Convenience of Cross-border Trade（Trial）” 关于印发《提升跨境贸易便利化水平的措施（试行）》的通知</td>
</tr>
<tr>
<td>2018/2/28</td>
<td>The “single-window and single-form” system for the business record and registration of foreign-funded enterprises 关于实行外商投资企业商务备案与工商登记“单一窗口、单表格”受理有关工作的通知</td>
</tr>
</tbody>
</table>
China’s Opportunities in a Fast-changing Era
快速变化时代下的中国机遇

◆ Great market potential  巨大的市场空间

The rising consumption capacity and increasingly diversified consumer needs will greatly extend the market space.  不断提升的消费能力和更多层次的消费需求将极大地扩展市场空间。

- The middle-income group is emerging quickly in China, forming a growing force on consumer market  中国中等收入群体正快速崛起，不断壮大消费生力军

- The sustained progress of coordinated regional development has accelerated the consumption upgrading of the third- and fourth-tier cities  区域协调发展持续推进，带动三四线城市消费加快升级

- With the advancement of new urbanization and targeted poverty alleviation, the urban-rural income gap is getting narrowed and rural consumption sees robust growth  新型城镇化和精准脱贫攻坚战深入开展，缩小城乡收入差距，农村消费增长势头强劲

- Urban-rural gap of clothing consumption is getting narrowed, and rural market has great potential  城乡衣着消费差距持续收窄，市场潜力巨大

Source: National Bureau of Statistics  资料来源：中国国家统计局
China’s Opportunities in a Fast-changing Era
快速变化时代下的中国机遇

◆ Complete industrial system and supporting systems
完善的产业配套

- **A complete supply chain:** China has established a complete and independent textile chain with a complete range of production. 完整的产业链：中国纺织工业已形成门类齐全、独立完整的产业链
- **Logistics infrastructure:** In World Bank’s Global Rankings 2018 of Logistics Performance Index, China ranked the 26th place. China has advantages in the time efficiency of logistics service and the quality of logistics infrastructure. 物流基础设施：世界银行集团2018物流绩效指数显示，中国位列第26位。其中，物流服务的时效性和物流基础设施质量是核心优势
- **IT infrastructure:** China’s Internet penetration rate reached 55.8% in 2017, and it reached 35.4% in rural area. 信息技术设施：2017年中国互联网普及率达55.8%。其中农村地区互联网普及率达到35.4%

**Construction of Logistics Infrastructure in China, 2013-2017**
2013-2017年中国物流基础设施建设情况

**China’s Internet Penetration Rate, 2013-2017**
2013-2017年中国互联网普及状况

Source: Ministry of Transport
数据来源：中国交通运输部

Source: China Internet Network Information Center
数据来源：中国互联网络信息中心
Follow the New Vision of Development, Promote Responsible Development of China’s Textile Supply Chain

践行新发展理念，推进中国纺织供应链责任发展
Open development  开放发展
Pay equal attention to “bringing in” and “going global”, shift the foreign trade pattern to “quality imports and quality outputs”, so as to form a new pattern of opening up to the outside world.
“引进来”与“走出去”协调推进，优进优出，形成对外开放新格局。

Balanced development  平衡发展
Rebalance the structure of supply and demand, regional development and industry revenue.
促进供需结构、区域发展、产业收益再平衡。

Multi-dimensional development  多维发展
Extend the boundary of textile industry, promote industry-finance integration, industrialization-information technology integration, civil-military integration and technology-art integration.
拓宽行业边界，推进产融合作、两化融合、军民融合、技艺融合。

Safe development  安全发展
Focus on the ability of developing core innovative technologies, ensure the safety of resources, quality and trade of textile industry.
聚焦关键核心技术创新能力，保障行业资源、质量和贸易安全。
Promote Responsible Development of China’s Textile Supply Chain
推进中国纺织供应链责任发展

□ Science and technology is the core 科技是核心

Based on the supply chain, improve the industry’s independent innovation ability and develop crucial technology.围绕行业供应链，提升产业自主创新能力，提升核心关键技术。

Strengthen the basic research of textile science and technology 加强纺织科学基础研究

• Research of key basic materials, advanced basic processes, etc 关键基础材料、先进基础工艺等研究
• Theoretical research of cross-discipline intelligent, green and functional cutting-edge technologies 智能化、绿色化、功能性为方向，进行学科交叉融合前沿技术理论研究

Speed up the R&D of key generic textile technologies 加快行业重大关键共性技术研发

• Key production and equipment technology 生产与装备关键技术
• Green manufacturing technology 绿色制造技术
• Manufacturing technology for high-performance technical textiles 高性能产业用纺织品加工技术

Improve innovation system 完善创新体系

• Speed up the construction of main players of independent innovation and public service systems including state-level engineering research center and enterprises’ in-house technical center 加快国家级工程研究中心、企业技术中心等创新主体以及公共服务体系建设
• Integrate various resources, promote the construction of knowledge innovation alliance, technological innovation alliance and product innovation alliance 整合多方资源，推动知识创新联盟、技术创新联盟和产品创新联盟建设

Intensify the integration of modern information technology and textile technology 强化现代信息技术与纺织技术相融合

• Carry out the research on Internet-based manufacturing mode centered around textile chain collaboration, the research on the application of modern information technology such as Internet of things, artificial intelligence and big data in the textile industry 开展以产业链协同为核心的网络制造模式研究，研究物联网、人工智能、大数据等现代信息技术在纺织行业的创新应用

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推进中国纺织供应链责任发展

- Green throughout the supply chain 绿色是底色

- Upgrade green design. Develop green technology and green products, set up green design pilot enterprises and green design platforms 提升绿色设计。绿色技术研发、绿色产品、绿色设计示范企业、绿色设计平台

- Improve green production. Set up green pilot factories, green industrial parks and green supply chain management pilot enterprises 完善绿色生产。绿色示范工厂、绿色工业园区、绿色供应链管理示范企业

- Strengthen green standards. Establish and revise key standards and set up a perfect green standards system 健全绿色标准。重点标准制修订，建立健全绿色标准体系

Responsible for people
人本责任

Responsible for environment
环境责任

Responsible for market
市场责任

Green design
绿色设计

Clean production
清洁生产

Green logistics
绿色物流

Reutilization
循环应用
Promote Responsible Development of China’s Textile Supply Chain
推进中国纺织供应链责任发展

Win-win is the cornerstone 共赢是基石

With a positive attitude and practical actions, China’s textile industry is trying to get everyone in the industry involved in responsibility-based governance, so as to effectively promote win-win cooperation and sustainable development of global textile industry.

中国纺织正以积极的态度和落实的行动，推动行业多维责任共治，有力促进全球纺织行业合作共赢和可持续发展。

1. **Promote the construction of trade platforms** 推进贸易平台建设
   - International exhibitions; cross-border e-commerce 国际展会；跨境电子商务

2. **Promote the construction of co-operation platforms on production capacity** 推进产能合作平台建设
   - Industrial parks; cooperation on production capacity 园区；产能合作

3. **Promote the construction of the mechanism for economic and trade cooperation** 推进经贸合作机制建设
   - Align our policies with international economic and trading rules; strategic cooperation 政策对接、战略合作

4. **Strengthen economic and trade cooperation in major fields** 加快重点领域经贸合作

**Responsible Development Goals 2025**
中国纺织行业责任与可持续发展目标2025

- **Decent Work** 体面劳动
- **Social Dialogue** 社会对话
- **Gender Equality** 性别平等
- **Youth Development** 青年发展
- **Green Manufacturing** 绿色制造
- **Eco-friendly** 环境友好
- **Sustainable Innovation** 可持续创新
- **Responsible Supply Chain** 负责任供应链
- **Responsible Investment** 负责任投资
- **Responsible Consumption** 负责任的消费
- **Respect Property** 尊重产权
- **Integrity Competition** 诚信竞争

Responsible Consumption 负责任的消费
Respect Property 尊重产权
Integrity Competition 诚信竞争

Decent Work 体面劳动
Social Dialogue 社会对话
Gender Equality 性别平等
Youth Development 青年发展
Green Manufacturing 绿色制造
Eco-friendly 环境友好
Sustainable Innovation 可持续创新
Responsible Supply Chain 负责任供应链
Responsible Investment 负责任投资
Responsible Consumption 负责任的消费
Respect Property 尊重产权
Integrity Competition 诚信竞争
Sino-Africa Cooperation on Textile Industry Goes Well and Has Broad Prospects

中非纺织工业合作进展良好，前景广阔
Sino-Africa Cooperation on Textile Industry
中非纺织工业合作

- **Sino-Africa economic and trade cooperation is the key direction and important component of China’s opening-up to the outside world** 中非经贸合作是中国对外开放发展的重点方向和重要组成
  - According to the General Administration of Customs (GAC), the trade between China and Africa rose 17.3% year-on-year to US$ 99.84 billion in the first six months of 2018. In this period, China’s exports to Africa grew 8.1% to US$ 50.37 billion and imports rose 28.6% to US$ 48.47 billion, with a trade surplus of US$ 1.9 billion, down 78.6% from a year earlier.
  - According to the General Administration of Customs (GAC), the trade between China and Africa rose 17.3% year-on-year to US$ 99.84 billion in the first six months of 2018. In this period, China’s exports to Africa grew 8.1% to US$ 50.37 billion and imports rose 28.6% to US$ 48.47 billion, with a trade surplus of US$ 1.9 billion, down 78.6% from a year earlier.

- **Textile industry is a key industry in Sino-Africa cooperation** 纺织产业是中非合作的关键产业之一
  - In 2017, the textiles and apparel trade between China and Africa amounted to US$ 18.22 billion, accounting for 10.73% of the total Sino-Africa trade.
  - 2017年，中非纺织品服装贸易进出口总额为182.2亿美元，占中非进出口贸易总额比重为10.73%.

<table>
<thead>
<tr>
<th>Product 品类</th>
<th>Export 出口金额</th>
<th>Share in total 占比 (%)</th>
<th>Import 进口金额</th>
<th>Share in total 占比 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textiles &amp; apparel 纺织品服装</td>
<td>179.57</td>
<td>6.69</td>
<td>2.63</td>
<td>1.07</td>
</tr>
<tr>
<td>Apparel (including accessories 服装（含衣着附件）</td>
<td>77.71</td>
<td>4.91</td>
<td>2.35</td>
<td>3.27</td>
</tr>
<tr>
<td>Yarn &amp; fabric 纱线面料</td>
<td>77.92</td>
<td>11.69</td>
<td>0.14</td>
<td>0.10</td>
</tr>
<tr>
<td>Textile machinery 纺织机械</td>
<td>1.48</td>
<td>4.26</td>
<td>0.0053</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Source: “China Textile and Apparel Foreign Trade Report” (2017) 资料来源：中国纺织品服装对外贸易报告2017
- **Industry cooperation in some Sino-Africa Economic and Trade Cooperation Zones**

<table>
<thead>
<tr>
<th>Cooperation Zone</th>
<th>Major Investment and Cooperation Industries</th>
</tr>
</thead>
<tbody>
<tr>
<td>China-Egypt Suez Economic and Trade Cooperation Zone</td>
<td>Textiles &amp; apparel, universal machinery, automobile, high- and low-voltage electrical appliances</td>
</tr>
<tr>
<td>Oriental Industrial Park in Ethiopia</td>
<td>Light industry, textile, metallurgy, building materials, electromechanical, etc.</td>
</tr>
<tr>
<td>Zambia China Economic and Trade Cooperation Zone</td>
<td>Light industry, textile, building materials, food, etc.</td>
</tr>
<tr>
<td>Mauritius Tianli Economic and Trade Cooperation Zone</td>
<td>Textiles and apparel, electromechanical</td>
</tr>
<tr>
<td>Pearl River Special Economic Zone in Kenya (under construction)</td>
<td>Electronic information, medical &amp; hygiene, building materials and machinery, apparel, textiles, etc.</td>
</tr>
</tbody>
</table>

Source: "China Textile and Apparel Foreign Trade Report" (2017)
Invitation  邀请

World Textile Merchandising Conference 2018  世界布商大会

Organizer: China National Textile & Apparel Council  主办：中国纺织工业联合会

Supporter: ITMF  支持：国际纺联

Venue: Keqiao, Shaoxing City, Zhejiang Prov.  地点：浙江省绍兴市柯桥区

Date: Sep. 20-21, 2018  时间：2018年9月20-21日
Thank you!

谢谢！

Sun Ruizhe 孙瑞哲
CNTAC 中国纺织工业联合会
Christian Schindler, Director General
International Textile Manufacturers Federation (ITMF)
christian.schindler@itmf.org

«The development pattern of the global textile industry»

ITMF 2018 Annual Conference
September 9th, 2018
Nairobi, Kenya
Contents

World textile/apparel industry

New disruptive technologies

Geographical re/distribution across the industry

Implications for the global textile industry
Situation & outlook for the global textile/apparel industry for manufacturing
Textile/apparel industry | Disruption | Re/distribution | Implications

Apparel and Clothing Exports (1980-2016)

Growth (00-16)

Vietnam: x 14
China: x 5
Bangladesh: x 5.5
India: x 3
EU28: x 1.6
Store-based retailing is shrinking…

Source: Euromonitor 2018
Store-based retailing is shrinking…

Deep Discount Has Become a Norm

APPAREL OFFERED ON SALE AT KEY U.S. RETAILERS IN 2016

- Fast Fashion: 8%
- Mass Stores: 16%
- Specialty: 42%
- Department: 73%

Source: Cotton Incorporated 2016 Retail Monitor Survey
... internet retailing grew strongly since 2010.

Source: Euromonitor 2018
Apparel sales will grow strongest in Asia and Latin America

**Source:** Euromonitor 2018
New disruptive technologies and innovation in textile manufacturing
High demand for ever more automated and ever more energy- and water-efficient textile machines
Power Costs: A Relevant Cost Factor

Manufacturing costs for ring-spinning in 2016

Source: ITMF
Energy efficiency has improved constantly

**Energy consumption in spinning (average of countries)**

- **Ring-spinning**
  - Decrease: -9%
  - Graph showing a decrease in energy consumption from the mid-1990s to 2014.

- **Rotor-spinning**
  - Decrease: -61%
  - Graph showing a more significant decrease in energy consumption from the mid-1990s to 2014.

Source: ITMF
Industrial trends

Mass customization

Industry 4.0

Environmental sustainability

Infrastructure projects
Industrial trends:

Mass customization

“Producing goods and services to meet individual customer's needs with near mass production efficiency.” (Tseng, M.M.; Jiao, J. (2001)
Industrial trends:

**Industry 4.0**

“The fourth industrial revolution, is the current trend of automation and data exchange in manufacturing technologies.”
Industrial trends:

Environmental sustainability

- Circular economy
- Recycling
- Bio-based textiles
Industrial trends:

Infrastructure

One Road one Belt Initiative

Canals in Panama and Suez
Political trends:

- Increasing national sentiment among countries and political leaders affecting countries’ national and international political and economic positions

- Inability to reach agreement on key issues within countries because of diverging or extreme values, political or religious views

- Shifting power from state to non-state actors and individuals, from global to regional levels, and from developed to emerging market and developing economies

(WEF - Descriptions of Global Risks and Trends 2018)
Where are currently the areas of investments in textile manufacturing?
Global Shipments of New Textile Machinery

Spinning Machines
Texturing Machines
Weaving Machines
Circular Knitting Machines
Flat Knitting Machines
Finishing Machines
1. Shipments - Short-staple spindles

Last year world growth: +8%
1. Shipments - Short-staple spindles

- China's share: 60% in 2008, decreasing to 59% in 2017
- Rest of the World: 40% in 2008, increasing to 41% in 2017

Chinese investments increased last year by: +8%

Installed Ring Spindle Capacity (1974 - 2016)

- 100 million spindles in 1974
- 200 million spindles in 2000
- 300 million spindles in 2016

Units per country in Asia & Oceania:
- 0 to 3899200 units per country
- 2017
1. Shipments - Short-staple spindles

The biggest investors in 2017

- China
- India
- Bangladesh
- Uzbekistan
- Pakistan
- Indonesia
- Vietnam
- Turkey
- Malaysia
- U.S.A.
- Iran
- Thailand
- Mexico
- Azerbaijan

million spindles

relative size = number of units per country
1. Shipments - Short-staple spindles

<table>
<thead>
<tr>
<th>Year</th>
<th>Asia &amp; Oceania</th>
<th>Turkey</th>
<th>America, North</th>
<th>Africa</th>
<th>America, South</th>
<th>Europe, East</th>
<th>Europe, West</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>7'349'216</td>
<td>263'420</td>
<td>80'240</td>
<td>93'408</td>
<td>70'960</td>
<td>7'932</td>
<td>17'176</td>
<td>7'882'352</td>
</tr>
<tr>
<td>2017</td>
<td>8'115'226</td>
<td>166'876</td>
<td>111'375</td>
<td>76'132</td>
<td>15'792</td>
<td>50'796</td>
<td>15'136</td>
<td>8'551'333</td>
</tr>
</tbody>
</table>
2. Shipments - Open-end rotors

- China's share: +1%
- Rest of the World: -9%

Installed OE-Rotors Capacity (1974 - 2016)

Textile/apparel industry | Disruption | Re/distribution | Implications
2. Shipments - Open-end rotors

The biggest investors in 2017

<table>
<thead>
<tr>
<th>Year</th>
<th>Asia &amp; Oceania</th>
<th>Turkey</th>
<th>America, South</th>
<th>America, North</th>
<th>Europe, West</th>
<th>Europe, East</th>
<th>Africa</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016:</td>
<td>582'702</td>
<td>21'978</td>
<td>6'422</td>
<td>9'072</td>
<td>6'900</td>
<td>2'154</td>
<td>4'834</td>
<td>634'062</td>
</tr>
<tr>
<td>2017:</td>
<td>545'232</td>
<td>49'108</td>
<td>20'808</td>
<td>10'128</td>
<td>6'044</td>
<td>5'736</td>
<td>1'040</td>
<td>638'096</td>
</tr>
</tbody>
</table>
3. Shipments – Texturing spindles

- **China's share**: +23%
- **Rest of the World**: +17%
3. Shipments - Texturing spindles

The biggest investors in 2017

<table>
<thead>
<tr>
<th>Country</th>
<th>Asia &amp; Oceania</th>
<th>Africa</th>
<th>Turkey</th>
<th>America, South</th>
<th>Europe, East</th>
<th>America, North</th>
<th>Europe, West</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016:</td>
<td>229'415</td>
<td>12'000</td>
<td>13'368</td>
<td>6'886</td>
<td>6'720</td>
<td>4'800</td>
<td>3'017</td>
<td>276'206</td>
</tr>
<tr>
<td>2017:</td>
<td>308'552</td>
<td>6'960</td>
<td>4'560</td>
<td>6'000</td>
<td>5'902</td>
<td>6'062</td>
<td>2'960</td>
<td>340'996</td>
</tr>
</tbody>
</table>

Relative size = number of units per country
4. Shipments - Shuttel-less looms

Water-Jet looms
- China's share
- Rest of the World

+ 14%

+ 9%

Installed Shuttel-less Looms (1974 – 2016)
4. Shipments - Shuttel-less looms

The biggest investors in 2017

<table>
<thead>
<tr>
<th>Country</th>
<th>Year 2016</th>
<th>Year 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia &amp; Oceania</td>
<td>77'183</td>
<td>87'718</td>
</tr>
<tr>
<td>Turkey</td>
<td>3'095</td>
<td>3'203</td>
</tr>
<tr>
<td>Europe, West</td>
<td>2'018</td>
<td>1'904</td>
</tr>
<tr>
<td>Africa</td>
<td>479</td>
<td>1'533</td>
</tr>
<tr>
<td>America, North</td>
<td>693</td>
<td>781</td>
</tr>
<tr>
<td>Europe, East</td>
<td>770</td>
<td>643</td>
</tr>
<tr>
<td>America, South</td>
<td>460</td>
<td>389</td>
</tr>
<tr>
<td>World</td>
<td>84'698</td>
<td>96'171</td>
</tr>
</tbody>
</table>
5. Shipments – Circular knitting machines

- Shipments of circular knitting machines have seen a decline in global shipments from 2008 to 2017.
- China's share of global shipments has increased significantly over the years.
- The Rest of the World's share of global shipments has decreased.

Key Points:
- 2008: 23,6 thousand machines
- 2017: 28,0 thousand machines
- China's share has increased by -7%.
5. Shipments – Circular knitting machines

The biggest investors in 2017.
6. Shipments – Electr. flat knitting machines

- **China's share**
- **Rest of the World**

- **Shipments to China from the rest of the world**
- **Chines domestic shipments**

- **World**
- **Asia & Oceania**
- **Turkey**
- **Europe, West**
- **Europe, East**
- **America, South**
- **Africa**
- **America, North**

- **2017**: 201,7 thousand machines
- **2016**: 194,6 thousand machines
- **+ 44%**

- **2017**: + 6%
6. Shipments – Electr. flat knitting machines

The biggest investors in 2017

<table>
<thead>
<tr>
<th>Year</th>
<th>Asia &amp; Oceania</th>
<th>Turkey</th>
<th>Europe, West</th>
<th>Europe, East</th>
<th>America, South</th>
<th>Africa</th>
<th>America, North</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>131,398</td>
<td>2,975</td>
<td>2,138</td>
<td>1,060</td>
<td>988</td>
<td>653</td>
<td>422</td>
<td>139,634</td>
</tr>
<tr>
<td>2017</td>
<td>194,609</td>
<td>1,721</td>
<td>1,602</td>
<td>1,417</td>
<td>1,322</td>
<td>449</td>
<td>607</td>
<td>201,727</td>
</tr>
</tbody>
</table>
7. Shipments – Finishing machines

- **World**: +44%
- **Asia & Oceania**: +2%
- **Turkey**: 0%
- **Europe, West**: 20%
- **America, North**: 40%
- **Africa**: 60%
- **Europe, East**: 80%
- **America, South**: 100%

China’s share vs Rest of the World
6. Shipments – Finishing machines

The biggest investors in 2017

<table>
<thead>
<tr>
<th>Year</th>
<th>Asia &amp; Oceania</th>
<th>Turkey</th>
<th>Europe, West</th>
<th>America, North</th>
<th>Africa</th>
<th>Europe, East</th>
<th>America, South</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>3'147</td>
<td>121</td>
<td>77</td>
<td>63</td>
<td>30</td>
<td>27</td>
<td>12</td>
<td>3'477</td>
</tr>
<tr>
<td>2017</td>
<td>4'638</td>
<td>133</td>
<td>67</td>
<td>58</td>
<td>64</td>
<td>45</td>
<td>12</td>
<td>5'017</td>
</tr>
</tbody>
</table>
7. Shipments – Finishing machinery  (Fabrics Woven & Knits, 2017)

- **Continuous**
  - Washing (stand-alone)
  - Stenters
  - Singeing Line
  - Sanforizers / Compacters
  - Relax Dryers / Tumblers
  - Mercerizing - Line
  - Dyeing - Line (Hotflue)
  - Dyeing - Line (CPB)
  - Bleaching - Line

- **Discontinuous**
  - Overflow Dyeing
  - Jigger Dyeing/Beam...
  - Air Jet Dyeing

Regions:
- Asia & Oceania
- Europe, West
- America, North
- Europe, Other
- Africa
- America, South

Machines:
- 0
- 500
- 1 000
- 1 500
- 2 000
- 4 000
Order Intake (Textile Machines) from China in 2018

**Perspectives for the order intake from China 2nd half 2018 (year-on-year)?**

1. Very good > +10%  
   - 11.9 %
2. Good +1 to +10%  
   - 39.3 %
3. Moderate -1/+1  
   - 34.5 %
4. Bad -1 to -10%  
   - 8.3 %
5. Very bad > -10%  
   - 6.0 %
Competitive Chinese Textile Industry

Competitiveness as Measured by Unit Labor Cost

Implications for the global textile industry
• Advent of synthetic fibres
  – Wearing comfort improves
  – Functional clothing
  – Technical textiles
  – Easy to control quality and quantity

• Cotton consumption stagnated in recent years due to both volatile and relative high cotton prices since 2010.

Source: PCI Fibres (2017)
## Fiber Production - World (in million tons)

<table>
<thead>
<tr>
<th>Material</th>
<th>2017</th>
<th>2020 **</th>
<th>%-change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cotton *</td>
<td>24.50</td>
<td>25.00</td>
<td>2%</td>
</tr>
<tr>
<td>Wool *</td>
<td>1.15</td>
<td>1.17</td>
<td>2%</td>
</tr>
<tr>
<td>Acrylic</td>
<td>1.68</td>
<td>1.69</td>
<td>0%</td>
</tr>
<tr>
<td>Nylon (filament)</td>
<td>0.19</td>
<td>0.22</td>
<td>14%</td>
</tr>
<tr>
<td>Nylon (staple)</td>
<td>4.26</td>
<td>4.71</td>
<td>11%</td>
</tr>
<tr>
<td>Polypropylene (staple)</td>
<td>0.35</td>
<td>0.37</td>
<td>6%</td>
</tr>
<tr>
<td>Polypropylene (filament)</td>
<td>1.65</td>
<td>1.90</td>
<td>15%</td>
</tr>
<tr>
<td>Polyester (staple)</td>
<td>16.76</td>
<td>17.58</td>
<td>5%</td>
</tr>
<tr>
<td>Polyester (filament)</td>
<td>35.49</td>
<td>39.28</td>
<td>11%</td>
</tr>
<tr>
<td>Cellulosic (staple)</td>
<td>4.28</td>
<td>5.10</td>
<td>19%</td>
</tr>
<tr>
<td>Cellulosic (filament)</td>
<td>0.27</td>
<td>0.29</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Total MMF</strong></td>
<td>64.94</td>
<td>71.14</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Total Fibre Production</strong></td>
<td>90.59</td>
<td>97.31</td>
<td>7%</td>
</tr>
</tbody>
</table>

* Consumption figures

** Forecast

Source: PCI Fibres (2017)
# World Man-made Fibre Production by Country/Region (million tons)

<table>
<thead>
<tr>
<th>Country/Region</th>
<th>2017</th>
<th>2020 *</th>
<th>%-change</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>44.96</td>
<td>48.89</td>
<td>9%</td>
</tr>
<tr>
<td>Western Europe</td>
<td>2.52</td>
<td>2.69</td>
<td>7%</td>
</tr>
<tr>
<td>Eastern Europe</td>
<td>.74</td>
<td>.88</td>
<td>18%</td>
</tr>
<tr>
<td>Turkey</td>
<td>1.38</td>
<td>1.75</td>
<td>27%</td>
</tr>
<tr>
<td>Africa/Middle East</td>
<td>.80</td>
<td>.90</td>
<td>13%</td>
</tr>
<tr>
<td>Chinese Taipei</td>
<td>1.77</td>
<td>1.79</td>
<td>1%</td>
</tr>
<tr>
<td>North America</td>
<td>2.84</td>
<td>3.19</td>
<td>12%</td>
</tr>
<tr>
<td>India</td>
<td>5.93</td>
<td>6.96</td>
<td>17%</td>
</tr>
<tr>
<td>Japan</td>
<td>.67</td>
<td>.66</td>
<td>-2%</td>
</tr>
<tr>
<td>South Asia</td>
<td>4.87</td>
<td>5.66</td>
<td>16%</td>
</tr>
<tr>
<td>S. Korea</td>
<td>.05</td>
<td>.05</td>
<td>6%</td>
</tr>
<tr>
<td>Latin America</td>
<td>1.71</td>
<td>1.67</td>
<td>-2%</td>
</tr>
<tr>
<td>Australasia</td>
<td>.79</td>
<td>.90</td>
<td>14%</td>
</tr>
<tr>
<td><strong>Total Fibre Production</strong></td>
<td><strong>69.03</strong></td>
<td><strong>75.99</strong></td>
<td><strong>10%</strong></td>
</tr>
</tbody>
</table>

* Forecast  
Source: PCI Fibres (2017)
### World Polyester Production by Country (million tons)

<table>
<thead>
<tr>
<th>Country</th>
<th>2017 Polyester (staple)</th>
<th>2017 Polyester (textile filament)</th>
<th>2020 * Polyester (staple)</th>
<th>2020 * Polyester (textile filament)</th>
<th>%-change Polyester (staple)</th>
<th>%-change Polyester (textile filament)</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>10.14</td>
<td>26.95</td>
<td>9.93</td>
<td>29.64</td>
<td>-2%</td>
<td>10%</td>
</tr>
<tr>
<td>India</td>
<td>1.51</td>
<td>3.48</td>
<td>1.70</td>
<td>4.29</td>
<td>13%</td>
<td>23%</td>
</tr>
<tr>
<td>USA</td>
<td>.65</td>
<td>.75</td>
<td>.76</td>
<td>.80</td>
<td>16%</td>
<td>8%</td>
</tr>
<tr>
<td>Turkey</td>
<td>.26</td>
<td>.24</td>
<td>.51</td>
<td>.30</td>
<td>97%</td>
<td>8%</td>
</tr>
<tr>
<td>Chinese Taipei</td>
<td>.53</td>
<td>.80</td>
<td>.57</td>
<td>.80</td>
<td>7%</td>
<td>0%</td>
</tr>
<tr>
<td>South Korea</td>
<td>.76</td>
<td>.64</td>
<td>.74</td>
<td>.61</td>
<td>-3%</td>
<td>-5%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>.67</td>
<td>.69</td>
<td>.71</td>
<td>.69</td>
<td>6%</td>
<td>0%</td>
</tr>
<tr>
<td>Thailand</td>
<td>.33</td>
<td>.37</td>
<td>.35</td>
<td>.38</td>
<td>4%</td>
<td>0%</td>
</tr>
<tr>
<td>Malaysia</td>
<td>.11</td>
<td>.26</td>
<td>.12</td>
<td>.26</td>
<td>12%</td>
<td>10%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>.18</td>
<td>.33</td>
<td>.43</td>
<td>.41</td>
<td>131%</td>
<td>25%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>.07</td>
<td>.06</td>
<td>.07</td>
<td>.06</td>
<td>12%</td>
<td>2%</td>
</tr>
<tr>
<td>Others</td>
<td>1.54</td>
<td>.94</td>
<td>1.70</td>
<td>1.02</td>
<td>10%</td>
<td>9%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16.76</strong></td>
<td><strong>35.49</strong></td>
<td><strong>17.58</strong></td>
<td><strong>39.27</strong></td>
<td><strong>5%</strong></td>
<td><strong>11%</strong></td>
</tr>
</tbody>
</table>

* Forecast

Source: PCI Fibres (2017)
Economic catch-up in Asia continues

Growing global GDP, current prices (billion USD)

<table>
<thead>
<tr>
<th>Year</th>
<th>World</th>
<th>Europe</th>
<th>USA</th>
<th>China</th>
<th>India</th>
<th>Middle East &amp; North Africa</th>
<th>Sub-Saharan Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>87.5</td>
<td>22.9</td>
<td>20.4</td>
<td>14.1</td>
<td>2.9</td>
<td>3.1</td>
<td>1.7</td>
</tr>
<tr>
<td>2023</td>
<td>114.3</td>
<td>28.1</td>
<td>24.5</td>
<td>21.6</td>
<td>4.66</td>
<td>3.8</td>
<td>2.6</td>
</tr>
<tr>
<td>Growth %</td>
<td>30.7</td>
<td>22.7</td>
<td>20.2</td>
<td>53.1</td>
<td>63.5</td>
<td>25.1</td>
<td>55.8</td>
</tr>
</tbody>
</table>

GDP per capita, current prices (thousand USD)

<table>
<thead>
<tr>
<th>Year</th>
<th>World</th>
<th>Europe</th>
<th>USA</th>
<th>China</th>
<th>India</th>
<th>Middle East &amp; North Africa</th>
<th>Sub-Saharan Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>11.7</td>
<td>30.9</td>
<td>62.2</td>
<td>10.1</td>
<td>2.1</td>
<td>6.6</td>
<td>1.7</td>
</tr>
<tr>
<td>2023</td>
<td>14.5</td>
<td>37.9</td>
<td>71.8</td>
<td>15.2</td>
<td>3.3</td>
<td>7.5</td>
<td>2.3</td>
</tr>
<tr>
<td>Growth %</td>
<td>23.5</td>
<td>22.6</td>
<td>15.1</td>
<td>50.5</td>
<td>53.5</td>
<td>13.6</td>
<td>37.1</td>
</tr>
</tbody>
</table>

- Global GDP is expected to increase by over 30% from 2018 to 2023
- Economic growth in emerging and developing countries will be strong
- Asian retail markets for textile and apparel become more and more important
- Customer preferences in Asian countries change towards Western-style. On the other hand, Asian-style will influence textile industry

Sources: IMF, UN
## Strong increase in fibres consumption in China and India

Higher per capita fibre consumption (kg per capita)

<table>
<thead>
<tr>
<th>Period</th>
<th>World</th>
<th>West Europe</th>
<th>Turkey</th>
<th>North America</th>
<th>China*</th>
<th>India</th>
<th>Africa/Middle East</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>12.5</td>
<td>22.4</td>
<td>26.8</td>
<td>32.6</td>
<td>20.1</td>
<td>5.8</td>
<td>5.8</td>
</tr>
<tr>
<td>2020</td>
<td>13.1</td>
<td>23.1</td>
<td>26.9</td>
<td>34.1</td>
<td>21.9</td>
<td>6.3</td>
<td>5.9</td>
</tr>
<tr>
<td>2030</td>
<td>15.2</td>
<td>26.5</td>
<td>29.0</td>
<td>38.5</td>
<td>29.0</td>
<td>8.2</td>
<td>6.2</td>
</tr>
</tbody>
</table>

*with Hong Kong

Source: PCI-Fibres (2017)
Global Textile Mill Consumption

Source: PCI Fibres (2017)
Summary

- Growing Global Textile & Apparel Market
- Share of e-Commerce is on the rise
- New technologies allow mass customized production
- Internet of Things (IoT) offers new potential to increase productivity
- Sustainability is a trend and an integral part of business (CSR)
- Infrastructure Projects (OROB-Initiative) – Creating new opportunities
- Textile production concentrated in Asia (especially in China)
- Shifts of textile production to other countries (Asia and partially Africa)
- Production in other regions (Africa, Americas, Europe) has more potential due to
  - Technologies (digital and 3-D printing, automation)
  - Fashion trends (fast fashion)
  - Reduced cost differentials (rising labor costs)
  - Sustainability (traceability, circular economy)

- Global fiber consumption is on the rise (GDP and population)
- Man-made fibers (mmf) are benefiting most
- Within mmf, cellulosic staple + polyester filaments are growing strongly
- Wool has become a «luxury» fibre
- Is cotton is becoming a «luxury» fiber as well?
THANK YOU	
FOR YOUR ATTENTION!

www.itmf.org
Digitalization – to be or not to be!

risks and chances form mass production to mass customizing by Industry 4.0

Prof. Thomas Gries, Dr. Volker Lutz
everything is changing…
Small innovative companies enter most important German stocks index DAX, while established financial institutes have to leave.
Fiber based solutions 4 you
INTERDISCIPLINARY

INTEGRATED

INDUSTRY-ORIENTED

INTERNATIONAL
4 Divisions

400 Employees

Natural & synthetic fibrous material

Yarn

Fabric

Composite

(Semi-) Finished parts

INTERDISCIPLINARY

RESEARCH AND SERVICE IN ONE HAND
Fiber based solutions for you

- Health
- Materials
- Mobility
- Energy & environment
- Building & living
- Information & communication
- Knowledge Transfer
- Production

- AME TE
- AMIMB
- ITA Augsburg
- ITA TR
- TFI e.V. (GmbH)
- STC
RWTH with the biggest technology campus in Europe

500+ Industrial Clients

Client Base across over 100 countries

15 clusters of high-tech companies

Active Collaboration with Turkey
4 Global Locations

Ansan/Korea

Istanbul/TR

Aachen/GER

Augsburg/GER
The industrial revolution
1. Industrial Revolution
Follows introduction of water- and steam powered mechanical manufacturing facilities

end of 19th century

2. Industrial Revolution
Follows introduction of electrically-powered mass production based on the division of labor

start of 20th Century

3. Industrial Revolution
Uses electronics and IT to achieve further automation of manufacturing

start of 1970s

4. Industrial Revolution Baseline on cyber-physical systems
today

1969: First programmable logic controller
Risks of digitalization
By 2020, 60% of digital businesses will experience a major service failure because of IT teams’ inability to „manage digital risk in technology and use cases“

Gartner Projection
but there is more ...
Cost reduction

Energy/material efficiency

Ongoing growth rate

New business models

New generation of IT skilled workers
Already connected textile value chain
Only textile value chain?

A few more examples....
Case Study – SpeedFactory
Customized solutions for the sportswear industry

Aim:
• Production of highly individualized products
• Highly flexible production infrastructure
• Future of Manufacturing

Results:
• Basic cognitive technologies
• Interfaces between process steps
• Human-machine interaction
• 3-D in industrial applications

Supported by:
Federal Ministry for Economic Affairs and Energy
on the basis of a decision by the German Bundestag
Case Study – SpeedFactory
Customized solutions for the sportswear industry
Case Study – StoreFactory
Customized solutions for the apparel industry

Aim:
• In-Store production of individualized products with minimized delivery times
• Customer integration into manufacturing
• Garment production on 2-bed-flat- knitting machines
• Digital data transfer – From 3D scan to product

Results:
• Minimized Production chain in Store
  – yarn, knitted fabric, washing, heat setting, labeling
• Customized product regarding size and design
  – Use of body-scanner, unique customization area
• Delivery time: 4 hours from order to pick-up
Der Faktor Mensch im Zeitalter der Digitalisierung
How does the workplace change in the digital age?
We still need People to operate Machines!!
i4.0 SozioTex
Training the next generation workforce

SozioTex
Scientific Team

ELSI aspects
= ethical, legal and social implications

Technological change

Interaction
Social change

Human

Machine

Design

Interdisciplinary approach

Development and implementation of new production technologies/ assistance systems with socio-technical perspective

AR for machine service
How to transfer to industry...
Reality – DCC: Digital Capability Center
Model Factory for Digitalization along the textile process chain

- Model factory industry 4.0
- Accelerator for digitization
- Place for qualification
- Current state ⇒ Future state

Shop floor of the DCC in Aachen, Germany
DCC - Example

Condition Monitoring

Enhanced reliability of machines and reduced machine stops by -75%
DCC - Example
Digital Assistance

Reduction of need for training and complexity of required operator skills by -50%
Next textile products

Smart Textronics
Products – Smart Textronics
Increased functionality in textile products by electronics

Smart Textiles sense, react or interact with the environment by the change of their physical, chemical and/or electrical properties

- **Smart Materials** sense and response

- **Smart Textiles** incorporate especially electrical functions

![Diagram showing the components of a smart textile system including sensor, energy source, actuator, and data processing.](image)
Products – Smart Textronics Center
Largest international research institute for smart textiles

- strength of Korea in electronics
- strength of Germany in production technologies
- strong partnerships between ITA, SKKU & KITECH
- regional partnership between Ansan & Aachen
- interest of governments in D & KOR for digitalization
- strong focus on SME

Bright Future Ahead

Oct 2015 Nov 2016  May 2017  Sep 2017  2018+
Products – Smart Textronics Center

Largest international research institute for smart textiles

2 interdisciplinary research centres for production of electronics and textiles

Development of processes, value chains, smart services and skilled personnel

Smart Products

Production Technologies

Business Model
Products – Example: INTUITEX
User oriented textile interfaces

Aim:
• development of an extended textile touch pad
• highly flexible production infrastructure

Areas of research:
• new user oriented interaction concepts
• textile based interaction concepts
• socio-psychological trials
• user diversity
What is the next step?

One more vision....
What are 4D-Textiles

The term „3D Textiles“ has been defined by Wulfhorst et al. in 2000. **4D Textiles** are fabrics and textile products being able to change shape and function over **time**. This change is achieved by the complex interaction between **hybrid materials** and by the use of **external stimulus**.

Additional to the spatial expansion of fabrics (3D) the change over time faces the **4th dimension in textiles**.
Digitalization – to be or not to be

still talking or doing it?
Supporting your business

We offer:

- Material development (from fibre to product)
- Development and engineering along the textile process chain
- Industry 4.0
- Innovative business development e.g. Open Innovation
- Training, workshops and education
- International partner network
with our strong partners

Do you know?.....
Prof. Frank Piller
The Open Innovation Expert
Boris Radke
CIO at ProSiebenSat1 Media SE, Zalando etc…
Osthus GMBH
Connecting data, people and organizations
Believing in what we deliver…
Agility will transform Chances into reality

"In the new world, it is not the big fish which eats the small fish, …

… it's the fast fish which eats the slow fish"

KLAUS SCHWAB
Founder and Executive Chairman World Economic Forum
Thank you for your kind attention!

Univ.-Prof. Prof. h.c. (MGU) Dr.-Ing. Dipl.-Wirt.-Ing. Thomas Gries
Institute of Textile Technology
RWTH Aachen University
Otto-Blumenthal-Straße 1
52074 Aachen
Design for AUTOMATION

Pete Santora
Chief Commercial Officer

softwearautomation.com Copyright © 2018
AN AUTONOMOUS DRIVING CAR FOR SEWING
Problem

Fabric’s Not Rigid
eCommerce is Crushing The Supply Chain
And it’s accelerating

Internal
- Shorter lead times
- Zero-inventory initiatives

External
- Labor unavailability
- Rising global wages
Global

Off-shoring extended lead times to 12+ weeks.
SEWLOCAL™

The on-demand, local supply solution that shortens lead times to 1-3 days.
Inventory ZERO

1. PRODUCTION ORDER INFORMATION
   The order information is quickly incorporated into the production line.

2. TIMELY PRODUCTION
   Efficiently producing vehicles with different specifications one at a time,
   in a timely manner while ensuring high quality.

3. REPLACEMENT OF PARTS USED
   Only those parts that have been used up are retrieved in a timely manner.

4. PRODUCTION OF PARTS RETRIEVED
   Efficiently producing and replenishing only those parts that have been retrieved.

Production instruction
Heljukka sequence plan
Production plan
Product order

Body processing
Painting
Assembly

Line-off

Dealer
Customer

Press
Parts plant

Various completed parts
Production instruction kanban

Various parts
Production instruction kanban

PARTS PRODUCTION

The parts retrieval kanban

The parts retrieval kanban

softwearautomation.com Copyright © 2018
Revolutionary Technology

SEWBOT® worklines with:

Swarm of intelligent robots for precise fabric handling
Full Sewing Automation with our

SEWBOT® Worklines

for Automotive & Home Goods are already enabling local supply chains
Digital
T-Shirt Workline
## T-Shirts Comparison

<table>
<thead>
<tr>
<th>Manual vs Digital T-Shirt Workline</th>
</tr>
</thead>
<tbody>
<tr>
<td># of Manual Operators</td>
</tr>
<tr>
<td><img src="image" alt="Manual Operators" /> (x10)</td>
</tr>
<tr>
<td>Manual Output / Shift</td>
</tr>
<tr>
<td><img src="image" alt="Manual Output" /> x669</td>
</tr>
</tbody>
</table>

Contact for more details or purchase: p.santora@softwearinc.com
# T-Shirts Comparison

<table>
<thead>
<tr>
<th>Labor Cost</th>
<th>Manual Sewing</th>
<th>Digital T-Shirt Workline</th>
</tr>
</thead>
<tbody>
<tr>
<td>India (INR)</td>
<td>$0.40</td>
<td>$0.05</td>
</tr>
<tr>
<td>China (CNY)</td>
<td>$0.52</td>
<td>$0.09</td>
</tr>
<tr>
<td>USA (USD)</td>
<td>$0.70</td>
<td>$0.33</td>
</tr>
</tbody>
</table>

Expected average wage over all major textile production countries: $2.50/h

Contact for more details or purchase: p.santora@softwearinc.com
T-Shirts

Good for the environment is good for your business

-10% CO₂ PER SHIRT
LOCAL FOR LOCAL MODEL
On-Demand, Made to Measure

Carbon Light
~80% Less Transport

Cost Efficient
$2.8 Per t-shirt

Reliable
> 40% Per t-shirt

Responsive
> 90% Reduced lead times

Asset Light
> 90% Inventory reduction

Flexible
> 80% Less change over time
Join Us to SEWLOCAL™

Become #uncrushable

Contact for more details or purchase:

Pete Santora
Chief Commercial Officer
p.santora@softwearinc.com
Digital Transformation Survey 2018

Digital transformation of the textile value chain

Mark Jarvis
Managing Director, WTiN

Presented at the ITMF Conference 2018, Nairobi
"We define DIGITAL TRANSFORMATION as the agenda to achieve a substantial change in business performance through durable digitalisation techniques..."
Respondent Profile

**Sector**
- Brand/Retail: 16%
- OEMs: 44%
- Manufacturers: 40%

**Job Function**
- Senior: 21%
- C-level: 12%
- Management: 41%
- Executive: 20%
- Entry level: 6%
Respondent Sentiment
Attitudes to digital transformation

Emerging
Game-changing
Late Adopters

Slow
Mandatory
Transparent
Revolutionary
Challenging
Critical

Fast Fashion
Digital Factory
Very Slow
Nascent
Data Analytics Continuum

- Retrospective: 36%
- Real time: 46%
- Predictive: 18%
38% of businesses intent to look at their digitalisation strategy in next 5 years

- 38% within 1 year
- 29% 1-2 years
- 23% 2-5 years
- 4% 5-10 year
- 2% Over 10 years
62% of businesses have started their digitalisation journey

- Developed our own strategy and have started to implement it: 34%
- Drafted a strategy but are yet to implement: 13%
- We have adopted it via our parent company and started to implement it: 6%
- No strategy - but we have invested in new digital technology: 9%

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Where did the digital transformation initiative begin

- **Senior Management**: 33%
- **Research and Development**: 33%
- **Manufacturers**: 29%
- **OEMs**: 33%
- **Brand/Retail**: 33%
Business goals for digital transformation

OEMs
- Launch new digital products and/or services: 45%
- Digitise the business operations: 22%

Manufacturers
- Digitise the business operations: 37%
- Use digital channels to interact with customers: 21%

Brand/Retail
- Use digital channels to interact with customers: 56%
- Launch new digital products and/or services: 17%
Key challenges to digital transformation

- 46% Business partners / suppliers/ customers are unable to collaborate around digital solutions
- 38% Lack of clear vision and leadership on digital transformation
- 38% Unclear economic benefits of digital investments
- 35% High financial investment requirements
- 27% Lack of skilled professionals
- 13% Lack of digital standards/norms/certification
- 8% Concerns around loss of IP
Investment in people to bridge the skills gap

OEMs

- Training: 33%
- Working with consultants: 29%

Manufacturers

- Training: 55%
- Working with consultants: 39%

Brand/Retail

- Hiring specialists: 33%
- Working with consultants: 33%
Structural changes happening within businesses since the digital transformation began

Manufacturers

- Modified standard operating procedures to include new digital technologies: 40%
- Modified business structure for working with suppliers – more relational than transactional: 34%
- Created a network for cross-functional working across teams/roles/responsibilities: 31%
Need for digitalisation vs investment likelihood

Digital technologies required

- Artificial intelligence
- Augmented reality
- Smart sensors for capturing your manufacturing data
- Virtual reality / 3D tools

Likelihood of investment in the medium term

- Artificial intelligence
- Augmented reality
- Smart logistics
- Virtual reality / 3D tools
Industry 4.0: Gaps in expectations

What Brand/Retail & OEMs think Manufacturers require

- Cloud technology: 36% (Brands & Retailers), 36% (Manufacturers), 44% (OEMs)
- Connected ERP / MES / PLM systems: 33% (Brands & Retailers), 33% (Manufacturers), 38% (OEMs)
- Data analytics: 29% (Brands & Retailers), 33% (Manufacturers), 45% (OEMs)
Measurable impact in lead time and business process efficiencies

- Improved lead times for products: 44% (Brand/Retail), 50% (Manufacturers), 45% (OEMs)
- Cost savings: 28% (Brand/Retail), 36% (Manufacturers), 45% (OEMs)
- Improved quality of new products: 28% (Brand/Retail), 34% (Manufacturers), 40% (OEMs)
- Increased customer satisfaction: 22% (Brand/Retail), 39% (Manufacturers), 41% (OEMs)
- Increased efficiency of business processes: 22% (Brand/Retail), 37% (Manufacturers), 45% (OEMs)
- Improved flexibility in catering to customised product demands: 12% (Brand/Retail), 33% (Manufacturers), 34% (OEMs)

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Industry is confident that digital investment returns positive benefits

- 49% Positive
- 26% No impact yet
- 21% Negative
- 4% Don't Know

Impact of digitalisation on revenue
Most companies expect digitalisation investment to pay back within 5 years

Average Investment: $837,000 USD*

Average Payback = 4.5 years

Investment expected in digitalisation within next 12 months:*

- Within 5 years: 23%
- In next 12 months: 42%
- 1-2 years: 10%
- 2-5 years: 17%
- 5-10 years: 2%
- Over 10 years: 6%
- Don’t know: 17%

Expected ROI on digitalisation investment:

- Within 1 year: 5%
- 1-2 years: 17%
- 2-5 years: 10%
- 5-10 years: 2%
- Over 10 years: 6%
- Don’t know: 23%

Average Investment: $837,000 USD*  
Average Payback = 4.5 years

*based on survey sample size of 153
What does the future look like?

Slightly positive

0.37
Innovate
Textile & Apparel

Three days • Four events • One destination

6 - 8 November, 2018 Amsterdam, Netherlands

ita.wtin.com

Sponsors & partners

œrlkon SoftWear Automation
ARCHIPELAGO TECHNOLOGY
Inspectorio spgprints GHERZI
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