Toray Group
Fibers & Textiles Business

January 11, 2018

Toray Industries, Inc.
Senior Vice President
General Manager, Fibers & Textiles Division
Mitsuo Ohya
I. Toray Group Profile

II. Business Environment

III. Outline of Toray Group Fibers & Textiles Business

IV. Basic Policy and Issues of Toray Group Fibers & Textiles Business in “Project AP-G 2019”

V. Future Direction of Toray Group Fibers & Textiles Business
I. Toray Group Profile
## Corporate Profile

- **Established**: January 1926
- **Capital Stock**: 147.9 billion yen (as of March 31, 2017)
- **Consolidated Net Sales**: 2,026.5 Billion Yen (FY March/2017)
- **Number of Consolidated Companies**: 255 (Japan: 99, Overseas: 156) (FY March/2017)
- **Number of Employees**: Toray 7,220
  - Japanese Subsidiaries: 10,657
  - Overseas Subsidiaries: 28,371
  - Total: 46,248

---

Akihiro Nikkaku
President
Management Philosophy

<Corporate Philosophy>
Contributing to society through the creation of new value with innovative ideas, technologies and products

<Corporate Missions>
For our customers To provide new value to our customers through high-quality products and superior services
For our employees To provide our employees with opportunities for self-development in a challenging environment
For our stockholders To provide our stockholders with dependable and trustworthy management
For society To establish ties and develop mutual trust as a responsible corporate citizen
**Sales and Operating Income by Business Category and Segment**

Position Core Growth Driving Businesses and Strategically Expanding Businesses as the drivers of revenue and profit growth. Nurture Intensively Developing and Expanding Businesses to be the next profit base.

(Mar/2017)

<table>
<thead>
<tr>
<th>Basic Categories</th>
<th>Segments</th>
<th>Major Products</th>
<th>Net Sales Billion yen</th>
<th>Operating Income Billion yen</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Core Growth Driving Businesses</strong></td>
<td>Fibers &amp; Textiles</td>
<td>856.1 (42%)</td>
<td>66.8 (39%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Performance Chemicals</td>
<td>724.6 (36%)</td>
<td>61.8 (37%)</td>
<td></td>
</tr>
<tr>
<td><strong>Strategically Expanding Businesses</strong></td>
<td>Carbon Fiber Composite Materials</td>
<td>161.6 (8%)</td>
<td>24.0 (14%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Environment &amp; Engineering</td>
<td>212.5 (10%)</td>
<td>11.7 (7%)</td>
<td></td>
</tr>
<tr>
<td><strong>Intensively Developing and Expanding Businesses</strong></td>
<td>Life Science</td>
<td>54.2 (3%)</td>
<td>2.1 (1%)</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td>17.4</td>
<td>2.6</td>
<td></td>
</tr>
<tr>
<td>Adjustment</td>
<td></td>
<td>▲22.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>2,026.5</td>
<td>146.9</td>
<td></td>
</tr>
</tbody>
</table>

Copyright 2018 Toray Industries, Inc. All rights reserved.
Long-term Corporate Vision and Medium-term Management Program

AP-Growth TORAY 2020  (Vision 2020 (abbr.))

Medium-term Management Program

AP-G 2013
Reform and Proactive Management
- A New Growth Track -
2011
April

AP-G 2016
Innovation and Proactive Management
- Implementation of Growth Strategy -
2014
April

AP-G 2019
Innovation and Proactive Management
- To Achieve the Vision 2020 Goals -
2017
April
2019
March
Basic Strategies and Key Initiatives

**AP-G 2016**

8 Basic Strategies

1. Business expansion in growth business fields
2. Business expansion in growth countries and regions
3. Bolstering competitiveness
4. Strengthening sales and marketing
5. R&D strategies / intellectual property strategies
6. Capital investment strategies
7. M&A and business alliance strategies
8. Human resources strategies

**AP-G 2019**

3 Basic Strategies

1. Business expansion in growth business fields
2. Expansion and advancement of global business
3. Strengthening competitiveness

5 Key Initiatives

1. New business creation
2. R&D and intellectual property
3. Capital investment
4. M&A and business alliances
5. Human resources
Medium-term Management Program and Trends in Consolidated Operating Income

Long-term Corporate Vision
AP-Growth TORAY 2020

Billion yen

AP-G 2019
Innovation and Proactive Management

AP-G 2016
Innovation and Proactive Management

AP-G 2013
Reform and Proactive Management

IT-2010
Management with Innovation and Creativity

NT-21
Corporate Structure Reinforcement, Defensive Management Postures

Offensive Management Postures

Reforms with no Exception

Innovation and Proactive Management

Reforms with no Exception

Mar/2001
Mar/2003
Mar/2005
Mar/2007
Mar/2009
Mar/2011
Mar/2013
Mar/2015
Mar/2017
Mar/2018 (Forecast)
Mar/2020 (Target)
around Mar/2021 (Image)

Copyright 2018 Toray Industries, Inc. All rights reserved.
II. Business Environment
Fibers & Textiles is Still a Growth Industry in the 21st Century

Fiber production volume increased by more than 20 times from 4 million tons to 88 million tons.
- Synthetic fibers have accounted for over 50% of total fibers since the late 1990s.
- Synthetic fibers (polyester, nylon, acrylic) totaled 58 million tons in 2016 (66% of total fibers)
- Further growth expects mainly in polyesters.

Total of major fibers in 2016
88 million tons

Polyester

Total of three major synthetic fibers (polyester, nylon, acrylic) in 2016
58 million tons
(66% of total fibers)

Cotton

Demand for fibers and textiles is expected to continue to grow as long as there are needs for improving life and culture and the prosperity of humankind.

Source: Production volume of 1900~2016 is based on the estimation by the Japan Chemical Fibers Association, Fiber Organon, and estimation of the production volume from 2017 and onwards is based on the PCI Supply/Demand Report 2016. World’s population trend is from the US Bureau of the Census International DB.

Copyright 2018 Toray Industries, Inc. All rights reserved.
Europe, US, and Japan were the key players in the 1970s.

Scale had expanded in Korea and Taiwan since the 1980s.

Production has grown rapidly in China since the late 1990s surpassing 10 million yen in 2003.

China, India, and ASEAN countries are expected to be the next growth drivers, though growth in China is slowing.
Restructuring of Fibers & Textiles Business at Major Synthetic Fibers Manufacturers in Europe and the US

**As of December 2017**

**USA**
- DuPont
  - 2004 Sold fibers business
- Hoechst
  - Koch / Kosa
    - 1998 Sold
- Monsanto
  - Solutia
    - 2003 Sold of Nylonfiber/Engineering plastics
- AlliedSignal
  - Honeywell
    - 1999 JV with Honeywell
- BASF
  - 1993 Specialize in N-BCF, 1994 Withdrawal of polyester fiber
  - 2003 Swap of Nylonfiber/Engineering plastics
  - 2004 Sold industrial P-FY
- ICI
  - 1993 Sold Nylon, Polyester
  - 2003 Spin-off by business
- Akzo
  - 1997 Spin-off
- Rhone-Poulenc
  - 1999 Separated
- SNIA
  - Nylstar
    - 2007 Sold stocks of both Rhodia, SNIA, and banks acquired each countries' business
- Eni
  - 1996 Sold

**Europe**
- Koch / INVISTA
  - 2006 Sold Europe’s garment N-FY to Nilit
- Ascend Performance Materials
  - 2008 Sold Europe’s, US’s P-FY
  - 2009 Sold nylon business
  - 2007 Sold China N-BCF
  - 2012 Sold Asia business to Indorama Thailand
  - 2010 Sold P-SF, PET resins to Indorama Thailand

**Performance Fibers**
- Diolen
  - 2005 Sold BCF, N-SF to US Shaw
- PHP / Polyester High Performance
  - 2009 Acquired German business
  - 2004 Sold industrial P-FY

**Dura Fiber Technologies (Europe, US)**
- Indorama
  - 2017 Sold plants in Mexico, France
  - 2017 Sold US Shelby plant
- Fiber Innovators (US)
  - 2017 Sold US Shelby plant
- Dura Fiber (Europe, US)
  - 2017 Sold plants in Mexico, France
  - 2017 Sold US Shelby plant

**Rhodia (Brazil / France)**
- Nexis Fibers
  - 2007 Sold Europe’s industrial Nylon business
- Nylstar (Spain)
  - 2009 Sold SF / mono-FY business

**Indorama/Sinterama /Trevira**
- 2009 Applied for bankruptcy
  - 2009 Financial groups continued financing
- 2011 Sold
- 2017 Indorama wholly-owned subsidiary

**Indorama/ Trevira**
- Orlandi / Montefibre
  - 2017 Sold US Shelby plant

Copyright 2018 Toray Industries, Inc. All rights reserved.

Created by Toray Industries
Production Volume of Major Fibers in Japan

- **Cotton**
- **Cellulose**
- **Wool**
- **Polyester**
- **Acrylic**
- **Nylon**

**Total of Chemical and Synthetic Fibers**

- **The oil crisis**
- **Asian currency crisis**
- **Economic bubble burst**
- **Global recession**

Imports continue to increase


Changes in Japan’s Trade Balance of Fibers Products

Excess of exports

- Raw materials
- Yarn
- Woven fabrics
- Knitted fabrics

Excess of imports

- Economic bubble burst
- Dot-com bubble burst
- Global recession

Maintain woven and knitted fabrics exports

Exchange rate

Excess of imports since 1987

<Status of Initiatives of Japan’s Economic Partnership (FTA)>

- Entered into force (14 countries, one region): Singapore, Mexico, Malaysia, Chili, Thailand, Indonesia, Brunei, ASEAN, Philippines, Switzerland, Vietnam, India, Peru, Australia, Mongolia
- Agreed (3 countries): TPP11 (agreed outlines), EU (negotiation settled), ASEAN investment service negotiation (agreed substantially)
- Under negotiation: Japan, China, Korea, RCEP, Turkey, Columbia
- Negotiation postponed or suspended (2 countries, one region): Canada, Korea, GCC (Gulf Corporation Council)

(Source: Ministry of Economics, Trade and Industry)
III. Outline of Toray Group

Fibers & Textiles Business
Long-term Performance of Toray Fibers & Textiles Business

- **1990**: Thorough rationalization through APS (Action Program for Survival)
- **2000**: "Shingosen" (New Synthetic Fiber) Boom
- **2010**: TC - II
  - Strengthening business structure
  - As a Core Growth Driving Business
- **2016**: TC - III

Net Sales (Billion Yen)
- Plaza Accord (recession caused by the strong yen)
- Emergence of Korea / Taiwan
- Rapid growth in China

Operating Income (Billion Yen)
- Operating Income

Consolidated results
- Undisclosed

Thorough rationalization through APS (Action Program for Survival)
World’s Only Three Dimensional Business Model

Global Business Network

Global Assets & Global Operation

Wide Range of Business Areas & Human Network

Material Variety & Innovative Products

Vertical Integration in Supply Chain

Technological Development & Variety of Products

Fibers
Textiles
Garments

Japan
China
Korea
ASEAN
Europe
Americas
India

Nylon
Polyester
Acrylic
Industrial FY
Microfiber
Advanced Materials
PPS
PTFE
PLA
3GT
Nano
Long-term Technological Development and Variety of Products

- Polyester Fibers
- Aramid Fibers
- PTFE
- Acrylic Fibers
- PPS Fibers
- N6 Fibers
- N66 Fibers
- Non Woven
- Microfibers
- Nanofibers
- Biomass Cellulose-derived Fibers
- PLA Fibers
- PTT(3GT) Fibers
- Premium, luxurious advanced fibers material
- High-functional Fibers
- Thermoplastic Cellulose-derived Fibers
- Fully renewable bio-based PET
- Partially bio-based PET
- Nylon 610
- Premium, luxurious advanced fibers material
- Biomass Fibers

Timeline:
- 1950
- 60
- 70
- 80
- 90
- 2000
- 10
- 17

Copyright 2018 Toray Industries, Inc. All rights reserved.
Since the development in 1963 to emulate the structure of natural silk and introduction to the market in 1964, Toray “Sillook” has been a leading synthetic fiber both in the Japanese and Western clothing style, and celebrated its 50th anniversary. Toray “Sillook” is continually evolving, and Toray will continue to propose new styles of the “Sillook” series as well as Toray “Sillook” Kimono for the next era.
Continuous Promotion of Marketing Innovation: Supply Chain Innovation

Dawning of the Market
- Introduction of Synthetic fibers Materials

1960s - 1970s
- Establishment of the Ready-made Clothing Market
- Response to the Brand Apparel Market

1990s – 2000s
- Distribution Reforms
- Response to the expansion of First Fashion SPA Market

Toray

Material Brand Marketing (Toray Nylon™, TETORON™)

Integrated Business from Yarn to Textile
- (establishment of PT outsourced processing CHOP system)

Global Supply Chain

Established an Integrated Business Model from fibers to textiles and to final products

PT (Production Team)
Toray Synthetic Textile Cluster: Innovative business model for the next generation, transformed from the traditional outsourced textile production model.
UNIQLO × Toray “Strategic Partnership”

- A New Business Model Unique in the World -

Realizes “Total Industry” which integrates designing, developing, producing, and distributing of products from materials to final goods.

An integrated joint development and production system from materials to final products.

June 2006
“First Stage Strategic Partnership”
Agreement
Start of Next Generation Material Development Project

Created a 200 billion Yen scale business by supplying materials and products (5 years from 2006 to 2010) <Achieved 250 billion yen>

July 2010
“Second Stage Strategic Partnership”
Agreement
Expand Global Initiatives

Created a 400 billion Yen scale business by supplying materials and products (5 years from 2011 to 2015) <Achieved 600 billion yen>

November 17, 2015
“Third Stage Strategic Partnership”
Agreement

Develop innovative new products utilizing core technologies Promote reasonable global operations

Created a 1,000 billion Yen scale business by supplying materials and products (5 years from 2016 to 2020)
### Long-term Overseas Investment and Expansion of Global Business

| Response to Industrial Development Programs in the Developing Countries: Established local production to maintain the export markets |
|---|---|---|---|---|---|---|
| Established | Country | Company Name | Business | Established | Country | Company Name | Business |
| 1963 - | Thailand | TTTM | P/R spinning, weaving, dyeing | 1970 - | Indonesia | ISTEM, CTX | P/R + P/C spinning, weaving, dyeing |
| | | TNT | N-FY | 1971 - | | ITS | N-FY, P-FY, P-SF |
| 1970 - | Indonesia | TTTM | Viscose spinning, weaving, dyeing | 1973 - | | ACTEM | A spinning |

| Response to the Strong Yen after the Nixon Shock and Export Regulations of Fibers & Textiles to the US: Established local production bases in ASEAN |
|---|---|---|---|---|---|---|
| Established | Country | Company Name | Business | Established | Country | Company Name | Business |
| 1972 - | Thailand | LTX | P/C spinning, weaving, dyeing | 1988 - | Thailand | LTX | P-FY weaving, dyeing (increased capacity) |
| | | PFR | P-SF | 1991 - | | TFL | P-FY |
| 1973 - | Malaysia | PAB | P/C spinning, weaving, dyeing | 1994 - | England | TTEL | FY weaving, dyeing |
| | Indonesia | ETX | P/C spun, woven | 1995 - | Italy | Alcantara | Ultra-microfiber non-woven fabric with suede texture (acquired management rights) *2017—capacity increase |

| Response to the Opening of the Chinese Market |
|---|---|---|---|---|
| Established | Country | Company Name | Business | Established | Country | Company Name | Business |
| 1994 - | China | TSD | FY weaving, dyeing, knitted (later: airbag fabric) | 1999 - | Korea | TAK | P-FY non-woven (increase in ‘16–’18) |
| | | | | 2006 - | China | TPN | Non-woven (increased in ‘12–’15) |
| 2009 - | Bangladesh | TMBD | Knitted, dyeing, garment | 2013 - | Korea | TCK | P-SF, P-FY |

| Response to the Growth Market | ★Further investment for capacity increase, advancement of business and upgrading of overseas bases |
|---|---|---|---|---|---|---|
| Established | Country | Company Name | Business | Established | Country | Company Name | Business |
| 2009 - | Indonesia | TPS | Non-woven (increased in ‘15–’16) | 2013 - | Korea | TCK | P-SF, P-FY |
| 2014 - | India | TKAT | Fabric for airbag | 2014 - | Mexico | TAMX | Yarn and fabric for airbag |
| 2015 - | | | | 2017 | Hong Kong | PTHL | Knitted, dyeing (investment) |
50 years History of the ASEAN Business

50th Memorial Ceremony in Thailand
March 20, 2013

40th Memorial Ceremony in Malaysia
April 10, 2013

40th Memorial Ceremony in Indonesia
March 18, 2013
Toray Group’s Global Network (Fibers & Textiles)

Production capacity (nameplate) : As of March 2017

Annual Production Capacity: Fiber (k tons/year)

<table>
<thead>
<tr>
<th></th>
<th>Nylon</th>
<th>Polyester</th>
<th>Acrylic</th>
<th>Spunbond</th>
<th>Others</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>82</td>
<td>169</td>
<td>20</td>
<td>8</td>
<td>3</td>
<td>282</td>
</tr>
<tr>
<td>Korea</td>
<td>383</td>
<td>51</td>
<td>5</td>
<td>73</td>
<td>134</td>
<td>434</td>
</tr>
<tr>
<td>China</td>
<td>5</td>
<td>52</td>
<td>73</td>
<td>130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>18</td>
<td>81</td>
<td>37</td>
<td>136</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thailand</td>
<td>43</td>
<td>34</td>
<td>78</td>
<td>78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malaysia</td>
<td>0</td>
<td>51</td>
<td>51</td>
<td>100</td>
<td>51</td>
<td>100</td>
</tr>
<tr>
<td>USA</td>
<td>0</td>
<td>51</td>
<td>51</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>148</td>
<td>770</td>
<td>20</td>
<td>169</td>
<td>4</td>
<td>1,110</td>
</tr>
</tbody>
</table>

Annual Production Capacity: Textile (million m/year)

<table>
<thead>
<tr>
<th></th>
<th>FY Fabric</th>
<th>Spun Fabric</th>
<th>Knitted Fabric</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Korea</td>
<td>1</td>
<td>12</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>UK</td>
<td>19</td>
<td>19</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>Czech</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>120</td>
<td>14</td>
<td>134</td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>78</td>
<td>78</td>
<td>78</td>
<td></td>
</tr>
<tr>
<td>Thailand</td>
<td>44</td>
<td>108</td>
<td>155</td>
<td></td>
</tr>
<tr>
<td>Malaysia</td>
<td>79</td>
<td>79</td>
<td>79</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>216</td>
<td>277</td>
<td>18</td>
<td>510</td>
</tr>
</tbody>
</table>

N: Nylon, P: Polyester, A: Acrylic, C: Cotton, R: Rayon
Others: PPS (polyphenylene sulfide) and PTFE (polytetrafluoroethylene) fibers
FY: Filament Yarn, SF: Staple Fiber, P/C: Polyester/Cotton, P/R: Polyester/Rayon

*Others: microfiber with artificial texture: 6 million square meters/year (Japan) and 10 million square meters/year (Italy).
*Textile capacity includes TCTI (Indonesia) and does not include fabrics for airbag.
World’s Only Three Dimensional Business Model

Provide solutions to customers by combining three elements: Variety of products based on technical development (Material domain), Supply chain, and Global business.

World’s only business model that offers a global supply chain management integrating fibers and textiles to final products, and creates value-added products from the value chain of synthetic fibers.
Ⅳ. Basic policy and issues of Fibers & Textiles in “Project AP-G 2019”
Basic policy of Fibers & Textiles in “AP-G 2019”

Challenges to significant growth by strengthening the profit structure as the Core Growth Driving Business, expanding business in growth business fields and regions, and enhancing global operations

<table>
<thead>
<tr>
<th>Japan: Maintain domestic business foundation and strengthen competitiveness</th>
<th>Overseas: Reinforce overseas production bases and expand new sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Maintain and reinforce business foundation</td>
<td></td>
</tr>
<tr>
<td>- Maintain and reinforce partner fabric manufactures</td>
<td></td>
</tr>
<tr>
<td>- Further strengthen competitiveness</td>
<td></td>
</tr>
<tr>
<td>- Reinforce business foundation of existing sites and businesses</td>
<td></td>
</tr>
<tr>
<td>- Expand business in growth business fields and regions</td>
<td></td>
</tr>
</tbody>
</table>

Functional enhancement of HQs as a comprehensive controller: Strengthening of global operation

Expand business domain
- Expansion of material domain
- Creation of new business models
- Strategic M&A, alliance

Create new business domain

Extend and diversify global supply chain
- Equip multi-layered supply chains
- Establish strategic supply sources

Multilevel business development and expansion by combining the three elements of Material domain, Supply chain, and Global business development

Expand Toray Group Fibers & Textiles business by enhancing global SCM from fibers and textiles to final products and value chain of strategic materials and by extending new business domain
## Major issues of Fibers & Textiles in “AP-G 2019”

<table>
<thead>
<tr>
<th>Main Issues</th>
<th>Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Structural &amp; competitiveness improvement</td>
<td>■ Strengthen business structure</td>
</tr>
<tr>
<td></td>
<td>■ Strengthen competitiveness</td>
</tr>
<tr>
<td>2. Expansion in growth fields</td>
<td>■ Expand GR business</td>
</tr>
<tr>
<td></td>
<td>■ Expand LI business</td>
</tr>
<tr>
<td>3. Expansion and advancement of global business</td>
<td>■ Expand business in growth regions and markets</td>
</tr>
<tr>
<td></td>
<td>■ Pursue global brand strategy</td>
</tr>
<tr>
<td>4. Strategic creation of new business</td>
<td>■ Extend business domain by expansion of non-woven fabric businesses</td>
</tr>
<tr>
<td></td>
<td>■ Extend and diversify global supply chain</td>
</tr>
<tr>
<td>5. Advancement of business model</td>
<td>■ Strengthen cooperative relationship with Major SPAs &amp; Apparels</td>
</tr>
<tr>
<td></td>
<td>■ Expand integrated business from fiber to fabric in non-apparel fields</td>
</tr>
<tr>
<td>6. Organization and Human resources</td>
<td>■ Reinforce organization responding to enhanced global operation</td>
</tr>
<tr>
<td></td>
<td>■ Optimize headcount and securement and education of global HR</td>
</tr>
</tbody>
</table>

### Major businesses and products supporting growth

- Integrated business from fiber and textile to final products
- Fibers & textiles for airbags
- PP-SB for hygiene application
- Premium, luxurious advanced fibers material
Major issues of Fibers & Textiles ①

Strengthening business structure and cost competitiveness as the core growth driving business

1. Continually strengthen business structure

(1) Business foundation in Japan

   Maintain domestic production bases of all filament yarns and staple fibers

i) Improve sales efficiency
   • Further improvement of asset efficiency by continued cost and inventory management
   • Enhancement of sales and marketing (including further expansion of interpreted business) and optimization of headcount

ii) Improve production efficiency
   • Continual reduction of variable and fixed costs (Unit cost improvement, value analysis, optimization of headcount)

(2) Japanese partner fabric manufactures

   • Enhancing prioritization and reorganization of textile production sites
   • Strengthening integrated operation between Toray Group fabric companies and partner fabric manufacturers

   Maintain and enhance the world’s highest level of textile production bases that support Toray’s textile business

   • Strengthening activities of Toray Synthetic Textile Cluster

2. Strengthen competitiveness

(1) New product development, and new customer/application cultivation

   • Optimum use of resource for high priority development themes
   • Drastic speed-up of development / marketing

(2) Innovative production process

   • Speeding up and simplifying of fiber production processes
   • Efficiency improvement of textile production utilizing fiber/textile integrated operation

(3) Total operating cost reduction

   • Utilizing EPA / FTA and optimizing production sites (especially garments)

(4) Reformation of operating infrastructure system

   • Building shared systems among Toray Group companies and customers
   • Information sharing of market and production by utilizing ICT and big-data

   → Reduction of time and cost for development/production and enhancement of capability to meet customer requirements

Revitalize partner fabric manufactures

Maintain and enhance the world’s highest level of textile production bases that support Toray’s textile business

Copyright 2018 Toray Industries, Inc. All rights reserved.
Major issues of Fibers & Textiles ②

Business expansion in growth fields

1. GR business expansion
   
   (1) Energy-saving and low environmental impact
   - Expansion of functional innerwear
   - Expansion of water repellent products without fluorinated compounds
   
   (2) Biomass
   - Expanding partially BIO-PET products and 100% BIO-PET business

2. LI business expansion
   
   (1) Improvement in quality of healthcare, and ease burden on medical professionals
   - Establishment of service business and overseas development of the bio-electrode conductive textile hitoe®
   
   (2) Contribution to health and longevity
   - Expansion of non-woven fabric for hygiene application (PP-SB, specialized SF)
   - Expansion of chemical protective clothing (LIVMOA®)
**Major issues of Fibers & Textiles**

### Expansion and Advancement of Global Business

- **Advancement in China as the largest consumer market and expansion in ASEAN as world’s sewing sites**
- **Increase in exports to North America and emerging countries (India, Mexico, etc.) mainly in automotive use**

#### (1) China

**Fibers & textiles for apparel use**
- Advancement of business in Chinese subsidiaries (TSD, TFNL) and business expansion by increased domestic sales

**Nonwoven fabric**
- Advancement of business in Chinese subsidiary (TPN) and enhancement of further business expansion

#### (2) ASEAN

**Textiles for apparel use**
- Re-strengthening existing textile business footing
- Considering new dyeing site in Vietnam

**Fiber and fabric for Airbags**
- Business expansion, based on integrated production from fibers to fabrics in Thailand (TTS, LTX)

**Nonwoven fabric**
- Indonesian subsidiary (TPJ): Full operation of the new 2nd facility at an early stage, feasibility study for the next ramp-up
- Indonesian subsidiary (ITS): Secure launch of PET/PE staple fiber for hygiene applications

#### (3) Emerging countries

**Fiber and fabric for Airbags**
- Secure launch of Indian subsidiary (TKAT) and Mexican subsidiary (TAMX)

**Nonwoven fabric**
- Continued feasibility study of PP-SB business in India

**Garments**
- Expansion of sites in Bangladesh and Africa

#### (4) Other regions

**Korea**
- Expansion of domestic business of nonwoven products
- Increasing value-added products of polyester staple and filament fiber

**Europe**
- Sales expansion in automotive and industrial use
- Alcantara: Business expansion in automotive upholstery use
Pursuing global brand strategy

Japanese advanced material brand with wide variety of products made by leading technology of Toray and Japanese features

Made in Japan
(Toray Industries Inc.(Japan))

Global luxury brand with Italian management, unique positioning at crossroad between technology and emotion, and strong commitment to sustainability

Made in Italy
(Alcantara S.p.A.(Italy))

Enhancing & expanding both premium brands of advanced fibers material, to be used for all applications around the world.

Comprehensive brand of fashion textiles for overseas market with sophisticated texture and comfortability which are unique to synthetic textiles. Expansion in high-fashion markets in Europe, USA and others, as the best materials made in Japan.

Comprehensive brand of comfortable textiles, characterized by softness & elasticity, which are realized by the bimetallic fiber structure. Expanding globally (including Japan) for sports & casualwear.

Prestige brand of comfortable materials having both characteristics of water proofness and moisture permeability at high levels. Pursuing global expansion of textiles with highly engineered garments not only for outdoor use but for lifestyle market.

senbism™

Prinemflex

Bimetallic fiber

SENBISM™ is a registered trademark of Toray Industries, Inc.
### Major issues of Fibers & Textiles ④

#### New business creation strategy

<table>
<thead>
<tr>
<th>Extending business domain by expansion of non-woven products business</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Establishing a business framework covering both spunbonded fabric composed of filament yarn and staple fiber nonwoven fabric</td>
</tr>
<tr>
<td>• Implementing comprehensive development project using Toray Group materials in hygiene applications</td>
</tr>
<tr>
<td>• Expanding business domain by creation of new businesses</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Extending &amp; diversifying global SCM</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Pursuing multi-level enhancement of supply chain from fibers and textiles to garments among Toray Group production sites</td>
</tr>
<tr>
<td>• Developing strategic supply sources</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Creating new business model</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Establishing and expanding service business of IoT using the bio-electrode conductive textile hitoe®</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Expanding protective products</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Developing and expanding industrial and apparel protective clothing (e.g. chemical proof, anti-virus/-bacterial, cut resistant, flame proof) and other protective products</td>
</tr>
</tbody>
</table>

| Enhancing strategic M&A and alliance |
Major issues of Fibers & Textiles ④

Extension of the business domain by sales expansion of nonwoven products

(1) Establishing a business framework covering both SB and staple fiber nonwoven products

【Filament yarn (PP-SB, PET-SB)】
- Continuing business expansion in Asia and emerging countries mainly by TAK-G
- Developing value-added products and improving productivity by installment of development machines in Japan

【Staple fiber】
- Strengthening specialized SF business for nonwoven products (e.g. P-SF, PPS-SF)
- Establishing SF nonwoven product supply chain in cooperation with nonwoven fabric customers

【Establishing business framework】
- Establishing “Performance Nonwoven Products Department” in Toray Japan as the HQ
  → Strengthening capability responsible both for SB fabric and SF nonwoven products, responding to the end customers

(2) Promoting development of Toray group-wide materials in the hygiene materials field
- Developing the most appropriate products by combining materials in Toray Group (PP-SB, PET/PE-SF, SAP, and spandex)

(3) Business expansion by new businesses
- Expanding new supply chain for nonwoven fabric business by cooperation with Japan Vilene
- Expanding business in growing fields (e.g. air filters), using M&A as an option
Major issues of Fibers & Textiles ⑤

Advancement of business model (further expansion of integrated business)

1. Expand integrated supply chain by strengthening cooperative relationships with major SPAs and Apparels

   - **fibers**
     - Integrated global SCM from fibers to garments and value chain of strategic materials
       - Specialized fibers
       - High functional textiles
     - Bimetal fibers, etc.

   - **textiles**
     - Product planning with functional materials
     - Garment making full use of Toray’s unique materials

   - **garments**
     - Diverse lineup of products
     - Brand strategy
     - One stop sales & marketing
     - Expanding of garment factory

   - SPA
   - GMS
   - EU&US Sports apparel

2. Expand integrated business in non-apparel fields

   - **polymer**
     - Integrated supply from polymer through fibers to fabrics

   - **fibers**
     - Toray Group
       - Okazaki Plant
       - TSD
       - Marui
       - TTCE
       - LTX
       - TKAT
       - TAMX

   - **textiles**
     - Toray Group

   - **module**
     - Japan
     - Europe
     - North America
     - China

   - **automobiles**
     - Global strategic model
     - Japan
     - Europe
     - North America
     - China

Non-apparel (Airbag fabrics)
Non-apparel: Fiber and textile supply chain for airbag

Overseas bases of fiber and fabric for airbags (from 2018 onwards)

Airbag textile market in Europe
- Europe
- China
- Japan
- USA
- Mexico
- Brazil

Airbag textile market of the Americas
- India
- Thailand

Airbag textile market in Asia

Production and sales of fiber: 3 countries
Production and sales of textiles: 6 countries
R&D: 2 countries
Marketing: 8 countries

Stable supply of textile fabrics to airbag manufacturers from bases in Europe, Americas, and Asia
Major issues of Fibers & Textiles ⑥

Organization and Human Resources (securement and education)

(1) Reinforcing organization responding to expansion of business domain and enhancing of global operation

- Establishment of the Performance Nonwoven Products Department
  - Act as HQ of comprehensive nonwoven products business, including filament yarn & staple fiber
  - Controls entire business, including PP-SB
- Strengthening HQ functions of the airbag business
- Strengthening global management structure of the textile business
  - Establish one-stop sales structure
  - Strengthen converting function

(2) Strengthening the functions of staff organization

- Strengthening overseas business management and capability responsible for new projects
- Strengthening function of strategic business planning, including M&A

(3) Securing and educating human resources

- Optimizing headcount by promoting strategic work shifts and work efficiency
- Enhancement of OJT, education and job-rotation
V. Future Direction of Toray Group Fibers & Textiles Business
Future Direction of Toray Group Fibers & Textiles Business

Multilevel business development and expansion by combining the three axes of Material domain/Supply chain/Globalization

World’s only Three dimensional business model

Expand significantly the Toray Group Fibers & Textiles business by enhancing global SCM from fibers and textiles to final products and extending new business domain
Future Direction of Toray Group Fibers & Textiles Business

Toray Group Fibers & Textiles Segment

(Consolidated Net Sales : Billion yen)

(Consolidated Operating Income: Billion yen)

FY2011: 63.8 Billion yen, 4.5 Billion yen
FY2012: 63.2 Billion yen, 4.3 Billion yen
FY2013: 75.6 Billion yen, 5.3 Billion yen
FY2014: 85.7 Billion yen, 5.6 Billion yen
FY2015: 89.2 Billion yen, 6.9 Billion yen
FY2016: 85.6 Billion yen, 6.7 Billion yen
FY2019 (target): 9.2 Billion yen
around 2020 (image): 112.0 Billion yen

AP–G 2016  ➟  AP–G 2019

Copyright 2018 Toray Industries, Inc. All rights reserved.
Thank you for your attention

‘TORAY’
Innovation by Chemistry
Descriptions of predicted business results, projections, and business plans contained in this material are based on predictive forecasts of the future business environment made at the present time.

The material in this presentation is not a guarantee of the Company’s future business performance.