

SK Chemicals Earnings Release

'18 4Q




Disclaimer:

The following 2018 fourth quarter financial results are unaudited data provided for your convenience only, and are subject to change should the audit results require.

The business results are subject to the K-IFRS(Korea International Financial Reporting Standards) and reported on a consolidated basis.

The forecasts contained herein are based on the Company's current business environment and strategy; and the actual results may differ from those in the forecasts as a result of certain uncertainties, such as changes in the Company's business environment and strategy in the future.



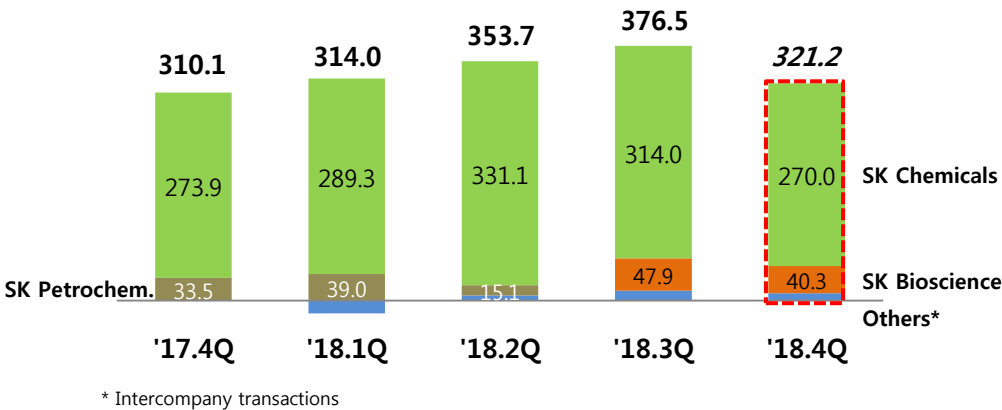
I. 4Q Performance Review

I. Business Divisions

1) Performance Review (Consolidated)

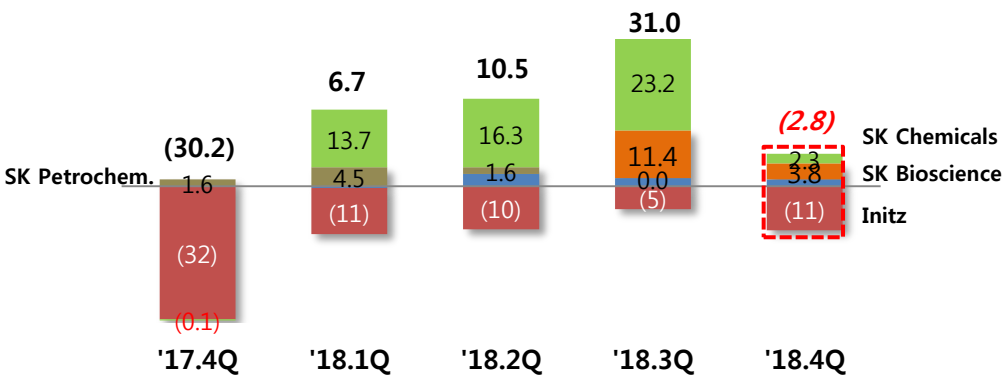
Sales

(Unit: KRW bn)



Operating profit

(Unit: KRW bn)



□ Sales

- Sales recorded 321.2 billion KRW(3.5%, yoy)

□ Operating profit

- Consolidated operating profit recorded -2.8 billion KRW
- Rapid hike in raw material cost and slow demand resulted GC Biz. Performance
- Initiz continued to experience loss

□ Net profit

- 43.2 billion KRW of net loss due to write off of SK Bioscience R&D expense(11.3 bil. KRW), and Initiz's deferred tax asset(20.6 bil. KRW)

(Unit: KRW bn, %)	SK Chemicals	SK Bioscience	Initiz	Others	Total
Sales	270.0	40.3	5.0	5.9	321.2
OP	2.3	3.8	△10.5	1.6	(2.8)
OPM	<u>0.8%</u>	<u>9.4%</u>	<u>△211.9%</u>	<u>27.3%</u>	<u>△0.9%</u>
Earnings before taxes	△15.1	△9.7	△12.1	17.1	△19.9
Net profit	△14.6	△7.5	△40.4	19.3	△43.2

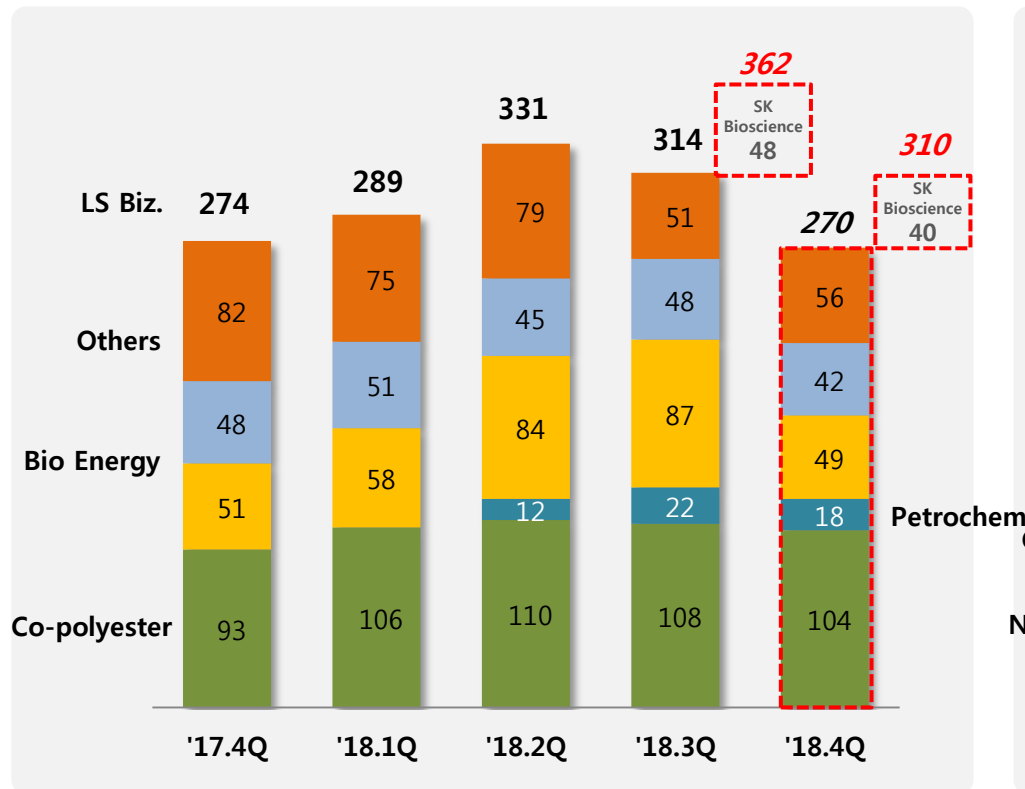
I. Business Divisions

2) Performance Review (Non-consolidated)

- Including SKBS's performance, sales grew 13%, and operating profit turning black in 4Q18 on YoY basis.
- Despite of improvement from the vaccine business, weak performance from Copolyester and LS biz (one-off expenses) off-set the effect.
- Recorded Net Loss of 15 bil. KRW largely due to loss from reduction in subsidiary's assets(15.5 bil. KRW)

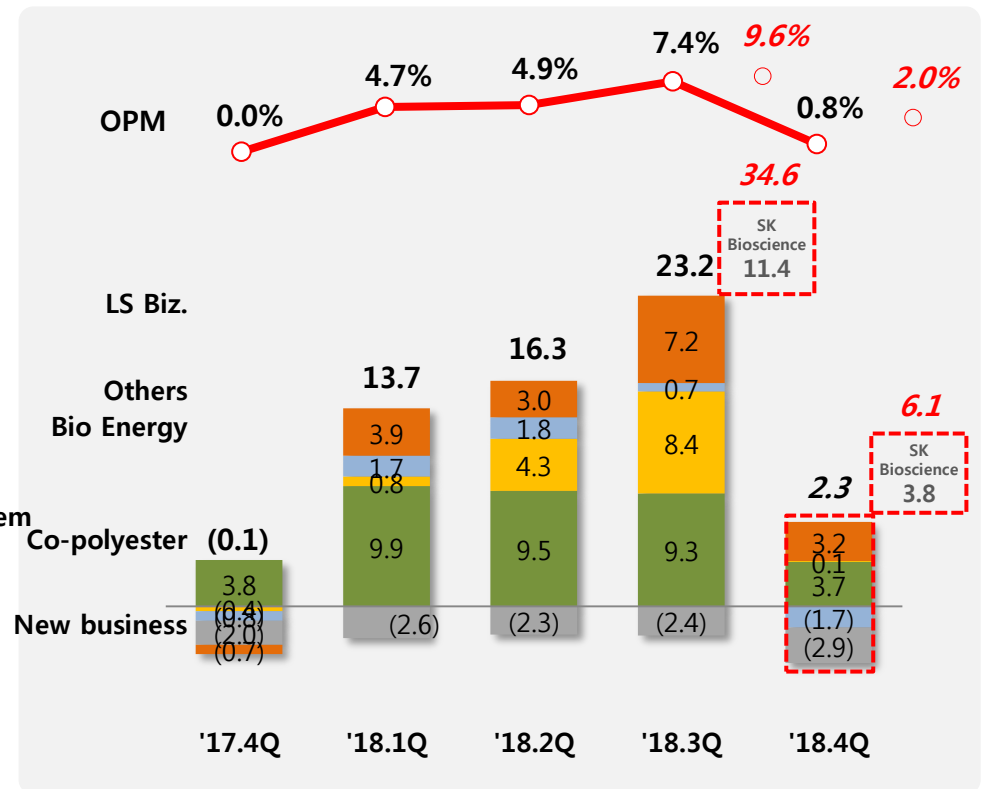
□ Sales

(Unit: KRW bn)

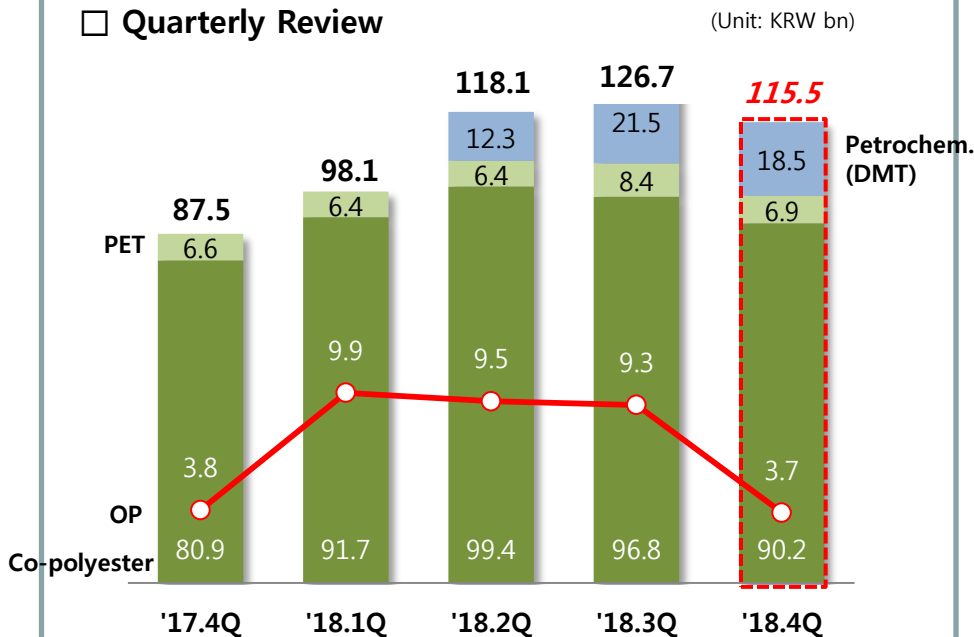


□ Operating Profit

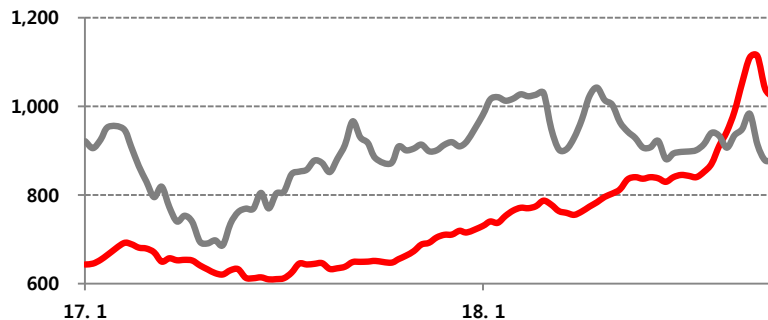
(Unit: KRW bn)



Performance



PTA/MEG price trend (US\$)



Review/Guidance

• '18.4Q Performance Review

- Sales: merger with SK Petrochemicals and price increase in copolyester products led to +30% growth YoY
→ Slower demand than expected due to US-China trade conflict
- OP: due to spike in raw material price effect from 3Q and slower sales, OP decreased QoQ

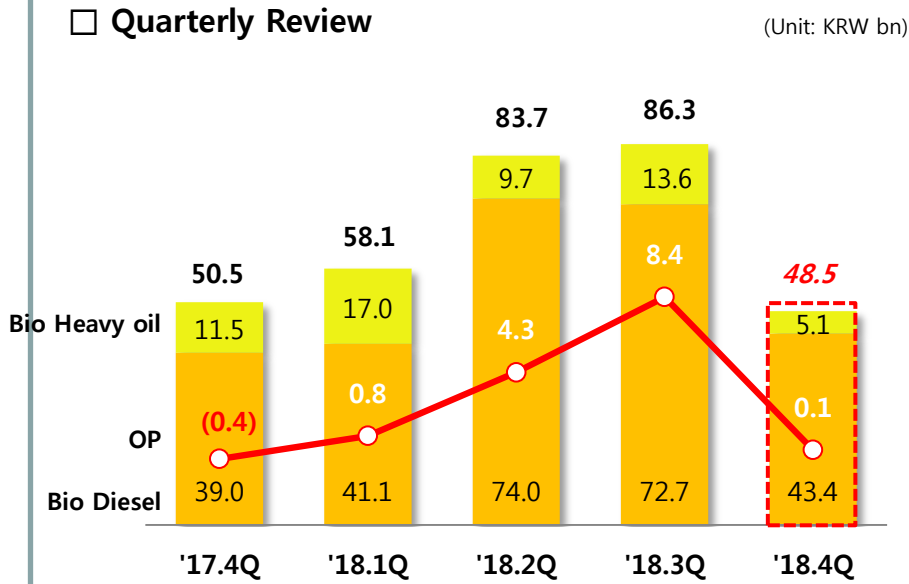
• '19.1Q Outlook

- Higher ASP and merger effect of SK Petrochemicals expected to help sales increase
- Raw material price pressure should be eased
- High base effect from last year expected as a burden

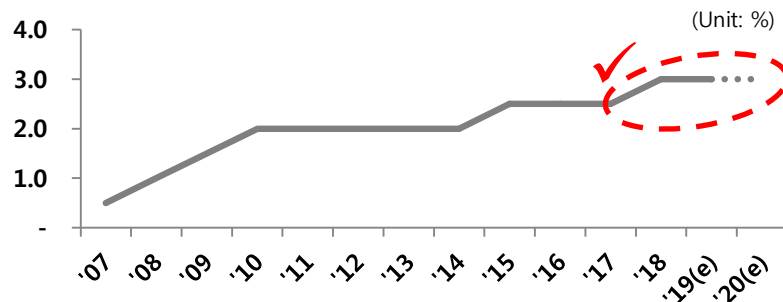
※ Application

- Food / Cosmetic Container, Electronic devices, etc.

Performance



□ Mixing Ratio Trend



Review/Guidance

• '18.4Q Performance Review

- Biodiesel sales increased YoY, due to increase in mix ratio
- Operating profit recorded similar to last year due to off-season effect

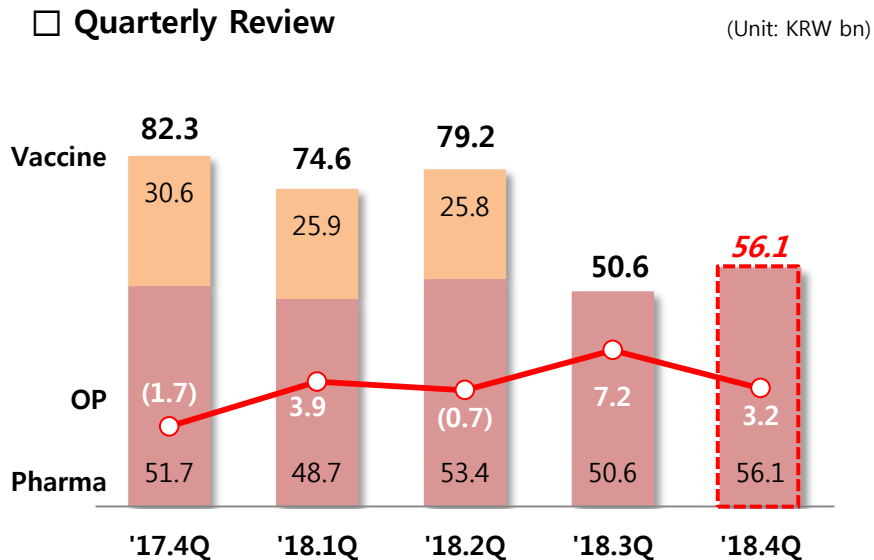
• '19.1Q Outlook

- No change in mix ratio, and similar shipment to last year expected
- Favorable spread margin continuous

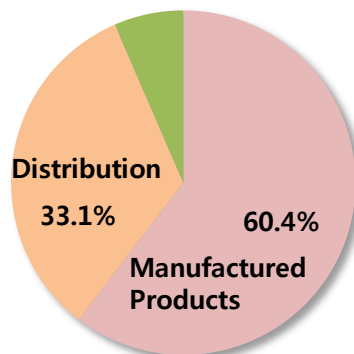
※ The mix ratio increase in 2018

- Before 2.5% → Current 3.0%

Performance



Sales composition (as of 2018)



- **Key manufactured products**
 - Ginexin : blood circulation disorder treatment
 - Joins : anti-arthritic treatment
 - Trast : anti-inflammatory and analgesic patch
- **Key distributing products**
 - Pantoloc : GERD treatment
 - Cymbalta : depression treatment

Review/Guidance

• '18.4Q Performance Review

- Sales increased +10% YoY
- Excluding one-off expenses, OP margin recorded 9.3%

• '19.1Q Outlook

- Stable sales and OP expected

※ Spin-off vaccine business on July, 1st 2018

→ 'SK Bioscience Co.,Ltd.' (reported on consolidated basis from 3Q18 onwards)

II. Subsidiaries

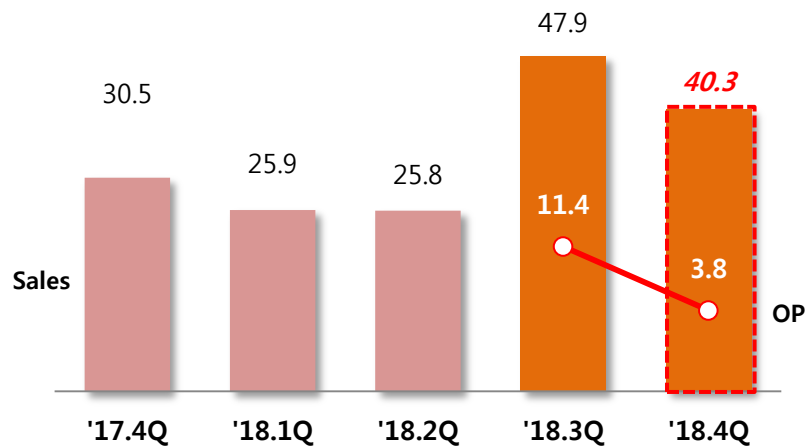
II. Subsidiaries

1) SK Bioscience (Vaccine)

Performance

Quarterly Review

(Unit: KRW bn)



Key product release

- 2015 : cell culture trivalent flu vaccine (Korea's 1st)
- 2016 : cell culture quadrivalent flu vaccine (World's 1st)
- 2017 : shingles vaccine (World's 2nd)
- 2018 : chickenpox vaccine

Review/Guidance

• '18.4Q Performance Review

- Sales increased +32% YoY thanks to Upfront fee from Sanofi Pasteur and SKYZoster sales
- OP stayed in black supported by Upfront fee from Sanofi Pasteur, SKYZoster sales

※ Other item: write-off of R&D asset (11.3 billion KRW) incurred due to losing the patent related lawsuit with Pfizer

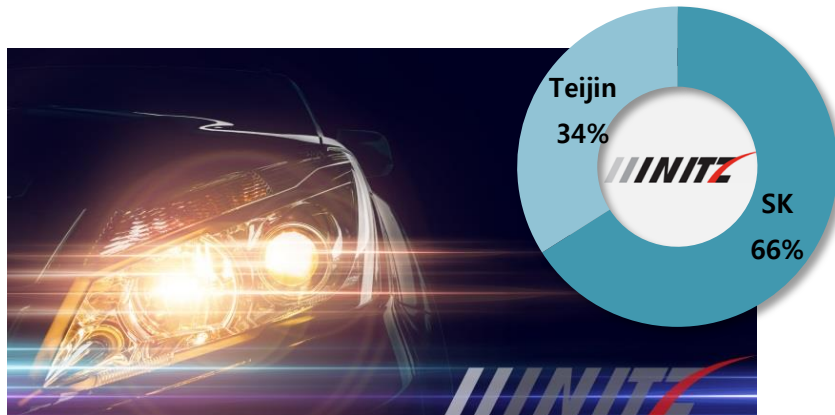
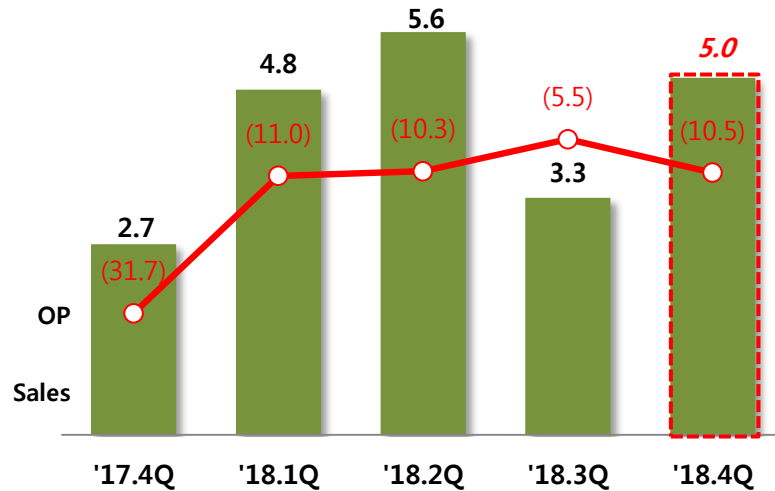
• '19.1Q Outlook

- SKYZoster vaccine sales expected to grow
- Milestone payment expected as SKYPAC enters into global clinical stage
- Milestone payment upon completion of transfer of cell culture technology is expected in 1H2019 from Sanofi Pasteur regarding the

Performance

Quarterly Review

(Unit: KRW bn)



Review/Guidance

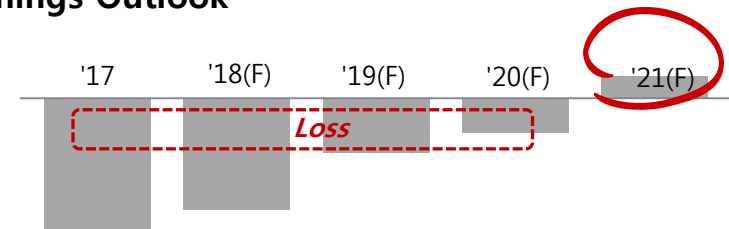
• '18.4Q Performance Review

- Sale of off-grade inventory increased QoQ
- OP loss continues to be around 100 bil. KRW per quarter

• '19.1Q Outlook

- Effect of the mixer installation expected to be confirmed by March

• Earnings Outlook



- Financial turnaround after reaching the lowest point in year 2017 → BEP expected in year 2021

SK Chemicals Company Introduction

'18 4Q



Contents

I. Overview

II. Business Divisions

- Green Chemicals Biz.
- Life Science Biz.

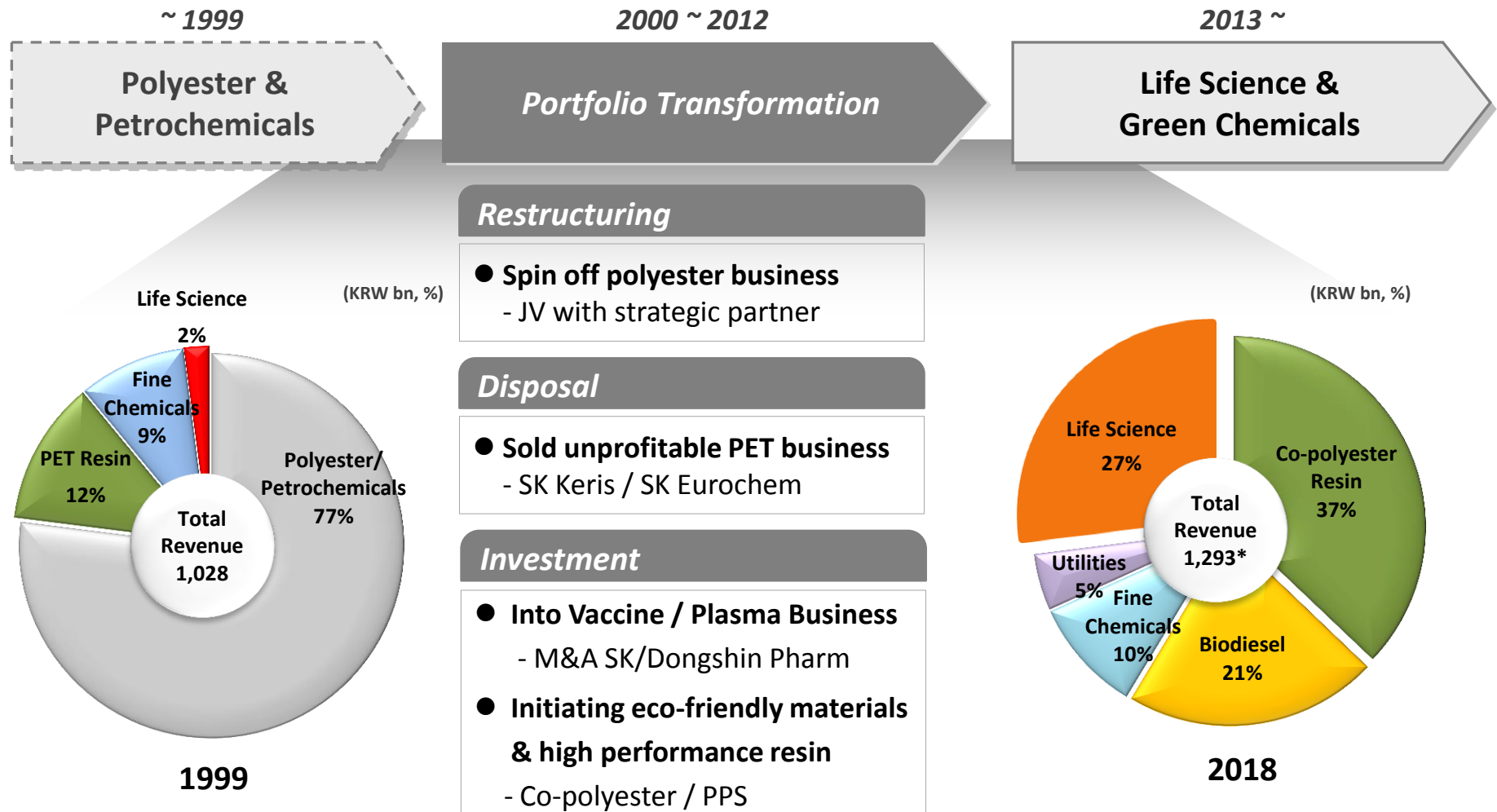
III. Summary

I. Overview

I. Overview

1) Portfolio Transformation

Through continuous change and innovation, SK Chemicals has grown into a Life Science and Green Chemicals company with higher and stable profitability.



*Non-consolidated financial results with SK Bioscience

I. Overview

2) Restructuring and Investment

Since 2000, SK Chemicals has restructured its business portfolio by selling/spinning off businesses with total sales of 1.7 trillion KRW, and developing new ones with higher growth potential.

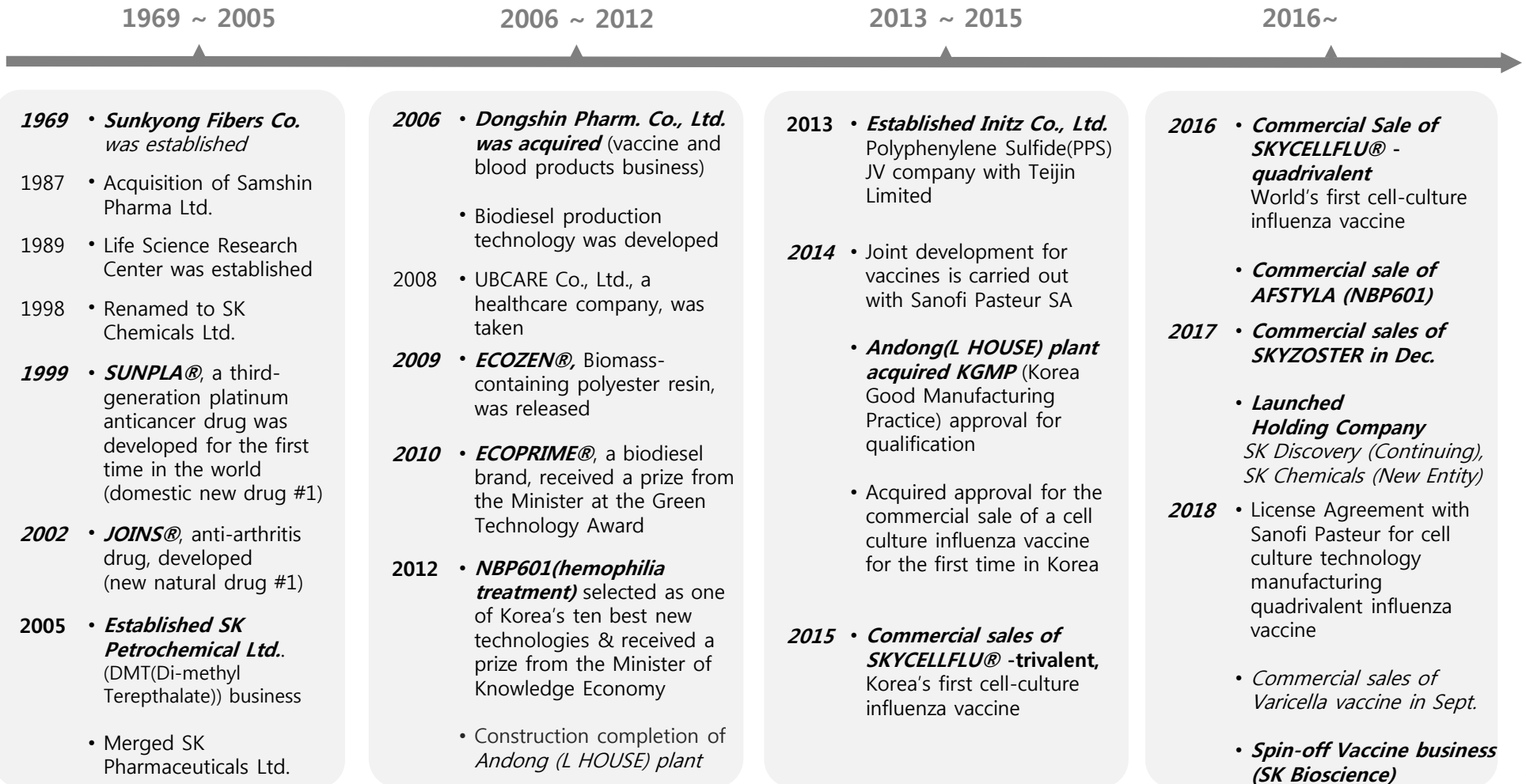
Restructuring <small>(Unit: KRW bn)</small>		
Biz.	Product	Sales
• Yarn/Cotton('00)	-	337
• Textile('03)	-	62
• Fiber('07)	IDY	16
• Petrochemicals('08)	PTA/DMT	528
• Acetate ('09)	Tow, PU	164
• Keris / Eurochem('10)	PET chip	601
• Utis('10)	Polyurethane	15
Total Sales		1,722

Investment <small>(Unit: KRW bn)</small>		
Biz.	Amount	Sales('18)
• Co-polyester	154 ¹⁾	378
- Expansion of Co-polyester		
• Initiate Bio diesel business	31	278
• Accelerate Pharma Business	400	349
- M&A SK / Dongshin Pharm.		
- In-house Vaccine development		
• Initiate PPS business	142 ²⁾	19
Total Amount	727	1,023

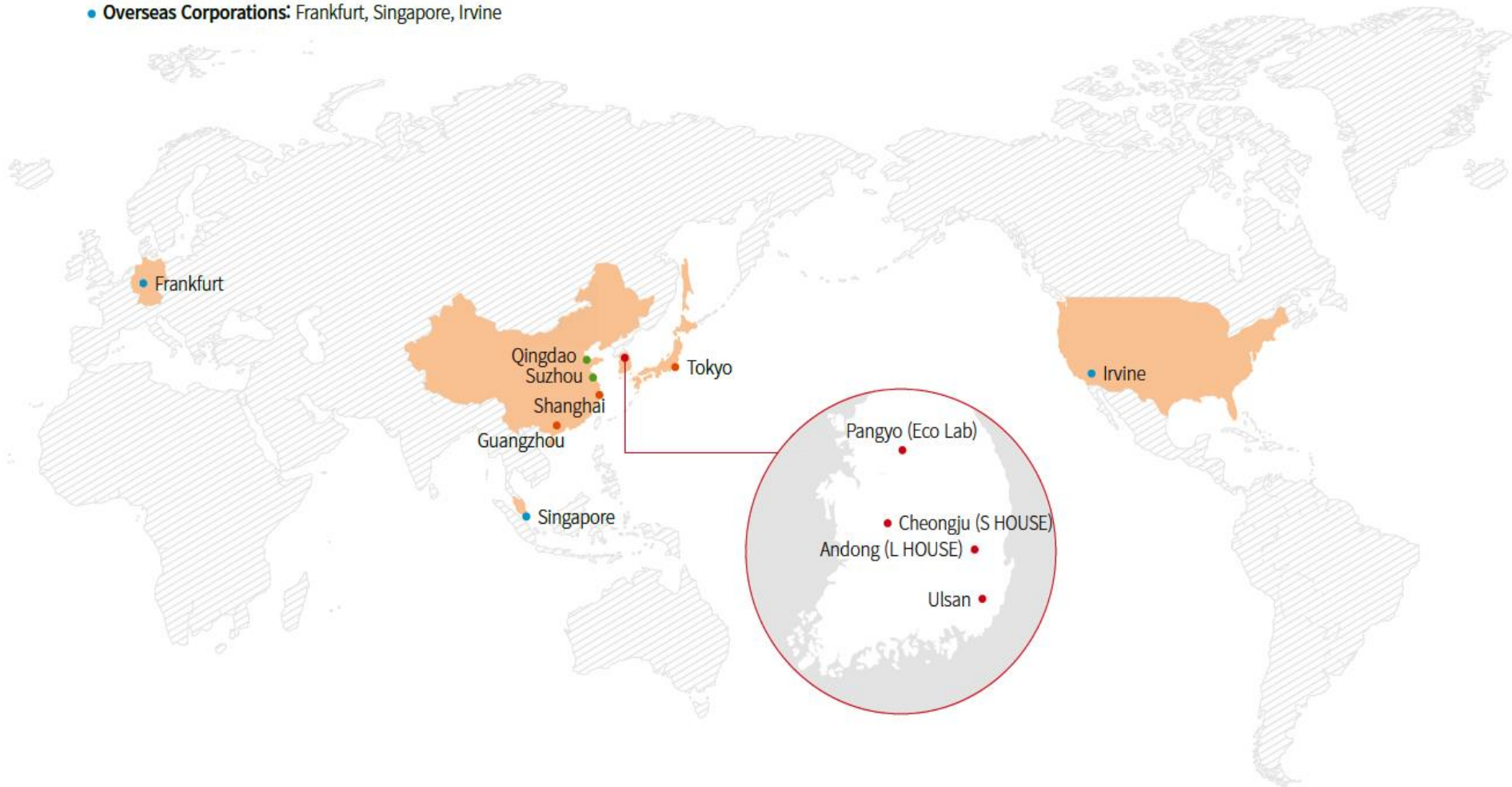
1) Total amount including latest expansion

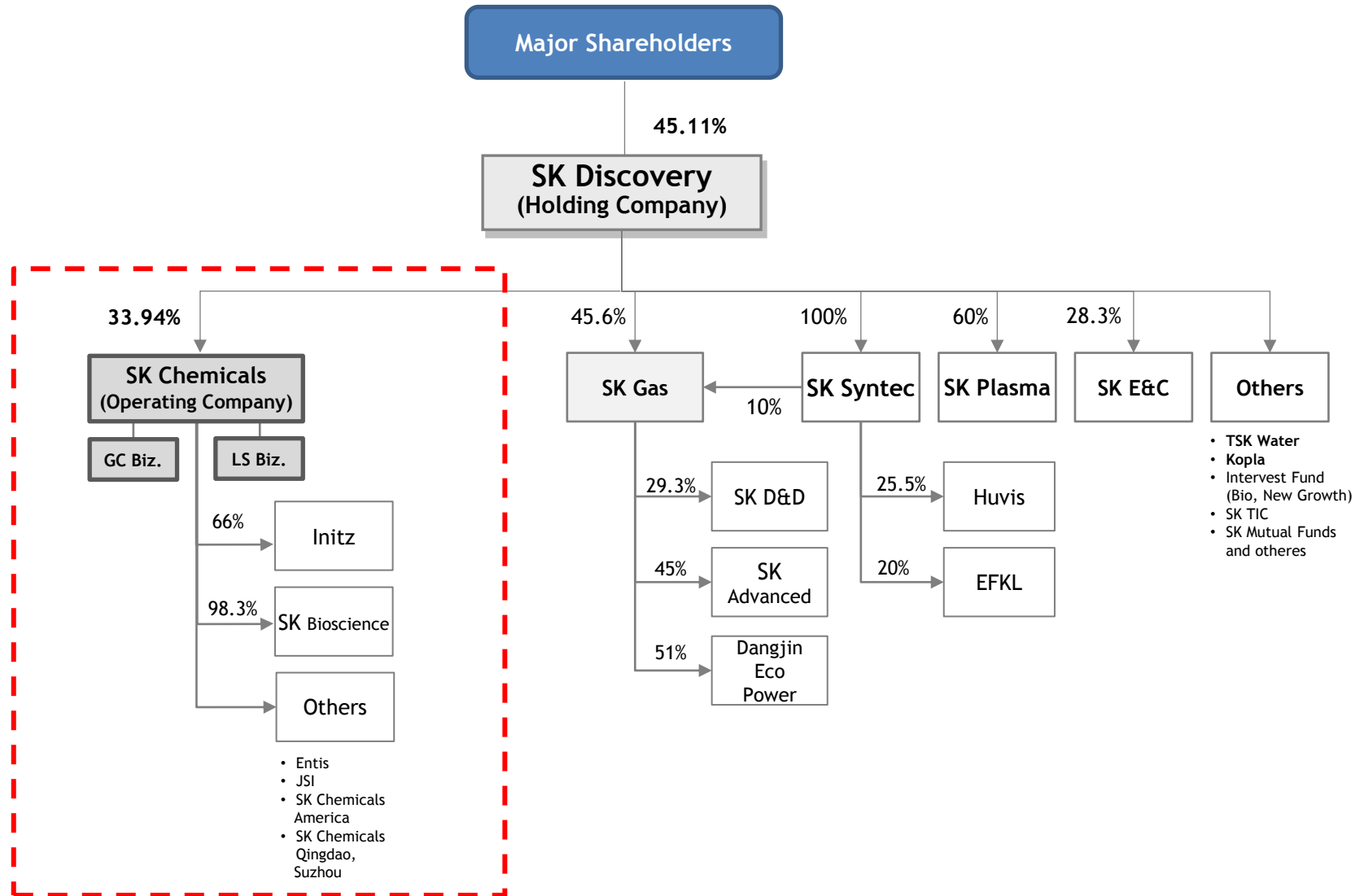
2) SK Chemicals' share (Total investment ; KRW 230 bn)

Since the establishment of Sunkyung Textiles in 1969, SK Chemicals has grown through continuous change and innovation into a chemical and life sciences enterprise representing South Korea.



- **Headquarters & Domestic Plants:** Headquarters (Pangyo, Eco Lab), Ulsan, Andong (L House), Cheongju (S House)
- **Overseas Offices:** Shanghai, Guangzhou, Tokyo
- **Overseas Plants:** Qingdao, Suzhou
- **Overseas Corporations:** Frankfurt, Singapore, Irvine





II. Business Divisions

II. Business Divisions_Green Chemical(GC) Biz.

□ Co-polyester

- High-performance eco-friendly material that competes with PC, PVC (petroleum-based materials)
- Only two global co-polyester manufacturers

□ Features

- Eco-friendly material (BPA free)
- High chemical & heat resistance
- Transparent, a glass-like appearance

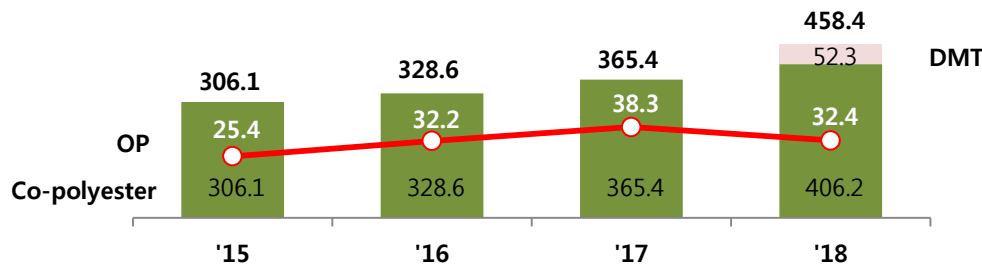
□ Applications

- Food / Cosmetic container, Special / Shrink film, Electronics & Home Appliance, Building & Construction and others



□ Performance Review

(Unit: KRW bn)



□ Bio Diesel

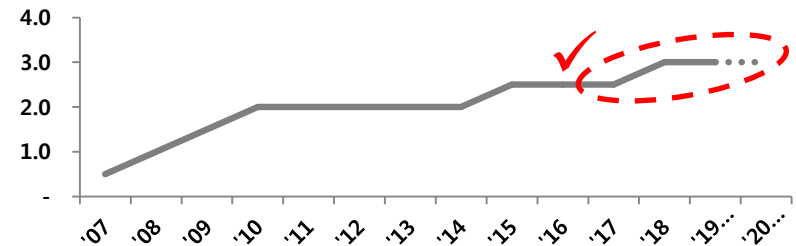
- Alternative energy manufactured by animal and vegetable oils(fats)
- Government policies(mixing ratio) to blend biodiesel with diesel fuel
- No.1 M/S in Domestic Market

□ Strength of our Bio Diesel

- **Cost competitiveness**
 - Derived from palm oil sources
 - Splitting plant
- **Stable supply**
 - SK Innovation, S-Oil (Domestic refiners)

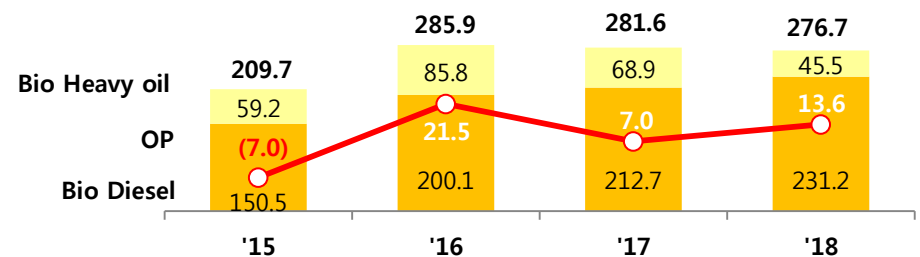
□ Mixing Ratio Trend

(Unit: %)



□ Performance Review

(Unit: KRW bn)



II. Business Divisions_Green Chemical(GC) Biz.

□ Initiz (Polyphenylene Sulfide, PPS)

- World's first chlorine-free eco-friendly PPS manufacturer
- Eco friendly continuous polymerization process without using polar solvent
- Joint venture with Teijin (SK Chemicals: 66% of shares)

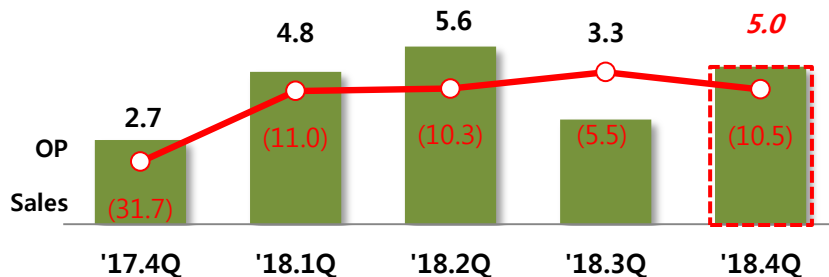
□ Key features and application

- Excellent in thermal and chemical resistance
- Good electrical insulating properties

Electricity	• CD/DVD Pick up, Bobbin, Connectors
Automotive	• Pump impeller, Generator parts, etc
	• <u>Weight lightening trend in automotive industry</u>
Film	• Bag filter, High-performance fiber

□ Performance Review

(Unit: KRW bn)



□ Other businesses

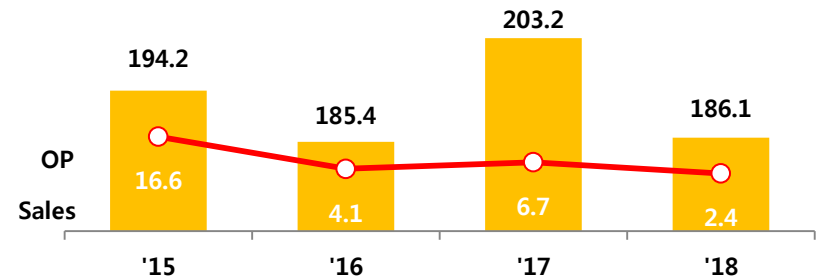
- SKYBON: thermal resin used in binders and adhesives
- Prepreg: intermediate material in sheet forms of specially formulated resin matrix with reinforcing fiber such as carbon fiber, glass fiber etc.
- EP: manufactures variety of Engineering Plastic
- Utility: provider of steam, electricity etc. to companies in the Ulsan plant

□ Overseas subsidiaries/sales posts

- SK Chemicals Suzhou: manufactures SKYBON products
- SK Chemicals Qingdao: manufactures prepreg products
- SK Chemicals America: Copolyester sales office
- ST Green Energy: sourcing office for biodiesel raw materials

□ Performance Review(excl. oversea subsidiaries)

(Unit: KRW bn)



II. Business Divisions_Life Science(LS) Biz.

2) LS Overview

☐ Pharmaceuticals

- **Manufacturing & distributing chemical drugs**
- **Focus areas:** Cardio vascular system, Musculoskeletal system, Urinary system, Nervous system
- **Major products:** JOINS, GINEXIN, TRAST, Rivastigmine Patch and others

☐ Vaccines

- **In house R&D from 2006, leading premium vaccine market**
 - In house development: SKYCellflu trivalent & quadrivalent, SKYZOSTER
- **Spin-off to enhance business progress & corporate value**
 - Spin-off Vaccine business on July 1st → SK Bioscience
 - Attract SI and IPO → advance to global market & speed up the development

☐ R&D Achievements



'SUNPLA'
3rd generation
antitumor drug,
(domestic new
drug #1)

1999



'JOINS'
Anti-arthritis
drug,
(new natural drug
#1)

2001



CSL - NBP601
(hemophilia
treatment) L/O
first for new
biomedicine
developed in
Korea

2009



'SID710'
A dementia
treatment patch
(generic) world's
first approval in
the EU

2012



Joint
development
for vaccines
was carried out
with Sanofi
Pasteur SA

2014



Released
SKYCellflu, Korea's
first cell-culture
influenza vaccine
(trivalent)

Approval for the
commercial sale of
the world's first
quadrivalent cell-
culture influenza

2015



CSL - NBP601
(hemophilia
treatment)
acquired approval
for sale in the U.S.
and Canada
first for new
biomedicine
developed in Korea

2016



Commercial
sales of
'SKYZOSTER'
Developed the
world's second,
Korea's first
Zoster vaccine

2017



License
Agreement
with Sanofi
Pasteur for cell
culture
technology
manufacturing
quadrivalent
influenza
vaccine

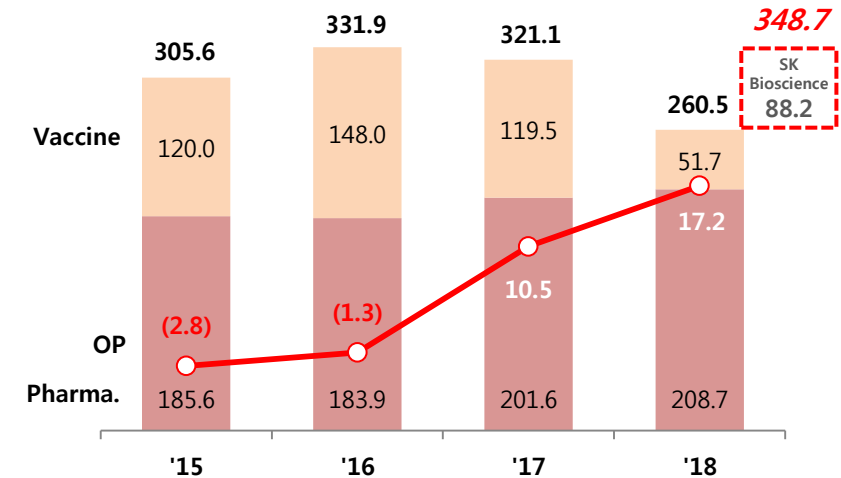
2018

Pharmaceuticals

Bio

☐ Performance Review

(Unit: KRW bn)



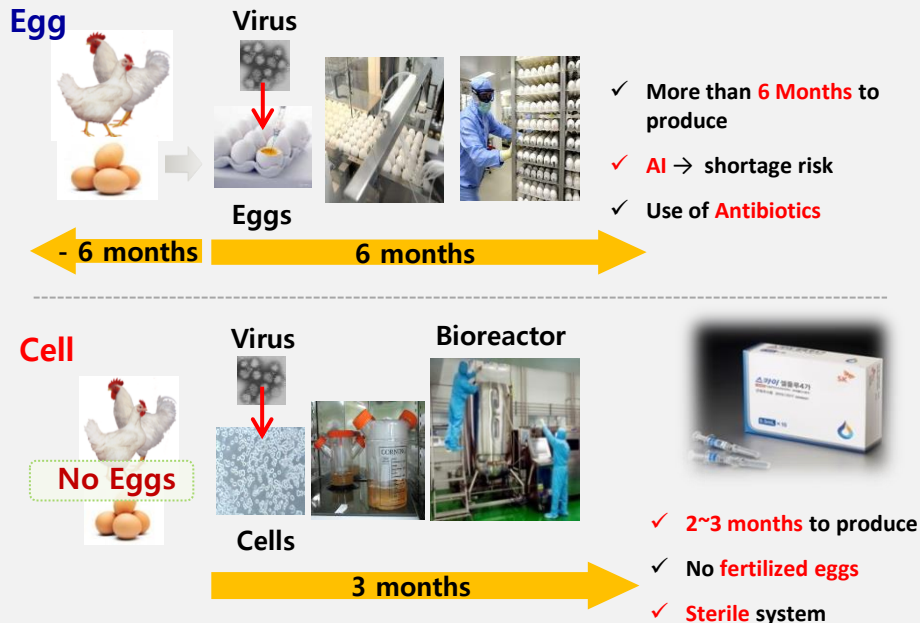
II. Business Divisions_LS Biz.

3) Cell-culture influenza vaccine

❑ Cell-culture influenza vaccine

• Features

- High yield 3-Dimensional Suspension Cell-culture & high purity process
- No fertilized eggs → stable supply, reduce maintenance costs
- Shorter production period → Faster response to influenza pandemics



❑ SK Chemical's influenza vaccine

- ✓ '15 Released "SKYCELLFLU® -trivalent", Korea's first cell-culture influenza vaccine
- ✓ '16 Released 'SKYCELLFLU® -quadrivalent', World's first cell-culture influenza vaccine

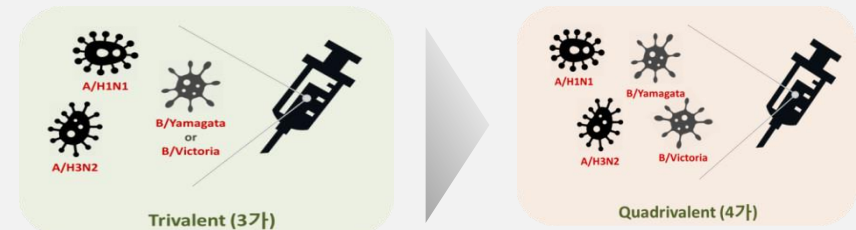
❑ Influenza vaccine market

• Domestic market

- Trivalent → quadrivalent market shift
- Increasing NIP influenza vaccination

• Potential global market

- Market shift to quadrivalent in developed countries
- Rise in demand for influenza vaccines in developing countries



Shifting to quadrivalent influenza vaccines → 'broader protection against circulating flu viruses'

❑ Domestic NIP market

	Current	Future(e)
Product	Trivalent	Quadrivalent
Age	'17: ~ 59 Months, '18: ~ Elementary	After '19: Middle/High school students(e)
Pregnant women	-	To be introduced(e)
Aging population (age 65↑)	7.08 mil. people	In '30: 1.296 mil. people

II. Business Divisions_LS Biz.

4) Herpes Zoster Vaccine (SKYZOSTER)

□ About Herpes Zoster (Shingles)

• What is Herpes Zoster (Shingles)?

- Herpes Zoster is a viral disease due to a reactivation of varicella zoster virus (VZV) within a person's body.^[1] Chickenpox is caused by the initial infection with the same varicella zoster virus, but once chickenpox has resolved, the virus may remain inactive in nerve cells.^[1]
- The number of new cases per year ranges from 1.2–3.4 per 1,000 person-years among healthy individuals to 3.9–11.8 per 1,000 person-years among those older than 65 years of age of the US population^[2]

[1] Hamborsky J (2015). *Epidemiology and Prevention of Vaccine-Preventable Diseases (13 ed.)*. Washington D.C. Public Health Foundation. pp. 353–74. Archived from the original on 2017-01-20.

[2] Dworkin RH, Johnson RW, Breuer J, et al. (2007). "Recommendations for the management of herpes zoster". *Clin. Infect. Dis.* 44 Suppl 1: S1–26.

• Global Market

- Global Sales \$685M in 2016¹⁾
- Zoster Vaccine: 'ZOSTAVAX' developed by Merck in 2006 is the only zoster vaccine currently approved for human use
- No. of domestic patients in 2016: 691,339 ²⁾

1) Datamonitor

2) Health Insurance Review & Assessment Service



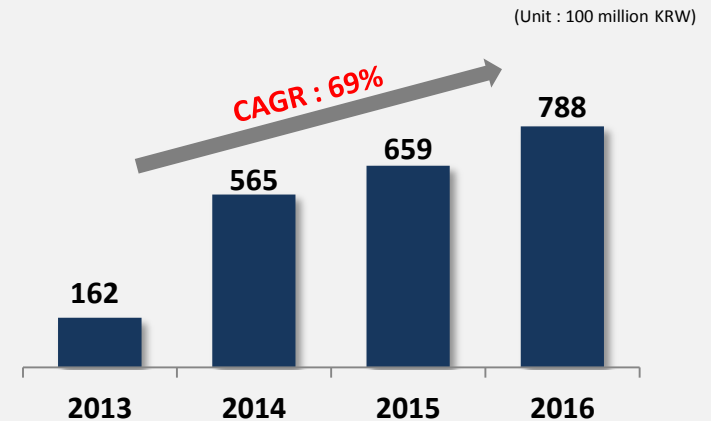
* Picture: The blistering Shingles rash on face, body

□ SK Chemicals' Zoster Vaccine

- Indications: Indicated for prevention of zoster (shingles) in individuals 50 years of age and older
- Dosage: Given as a single dose by injection under the skin
- Dosage Forms: Single dose vial (reconstituted to a suspension)

- ✓ Developed the world's second, Korea's first Zoster vaccine
- ✓ Successful commercialization of our premium vaccine within this year
- ✓ Act as a catalyst that can accelerate Vaccine business earnings turnaround

※ Domestic market size for Zoster Vaccine



ref. IMS Health Korea

II. Business Divisions_LS Biz.

5) Global Project w. Sanofi

The cell-culture based manufacturing technology for influenza vaccine

□ Background

- SK Chem. has developed world best cell culture technology
 - Commercially proven, the most advanced technology
- Sanofi adapts SK's cell culture technology to manufacture next generation influenza vaccine development

□ Main contents

- Upfront Fee: USD 15 mil (upon signing)
- Completion of tech. transfer: USD 20mil
- Milestone at each level: USD 120mil
- Contract Region: Global market (Exclusivity rights in US/Europe)
- Royalty : % of product sales
 - 15 years after commercialization or patent expiry (whichever is longer)

□ Implication & Significance

- Another monumental event following '14 SKYPAC contract
- Demonstration of global competitiveness of our cell-culture technology
- Royalty potential
(SP global influenza vaccine sales: about 2 trillion KRW)

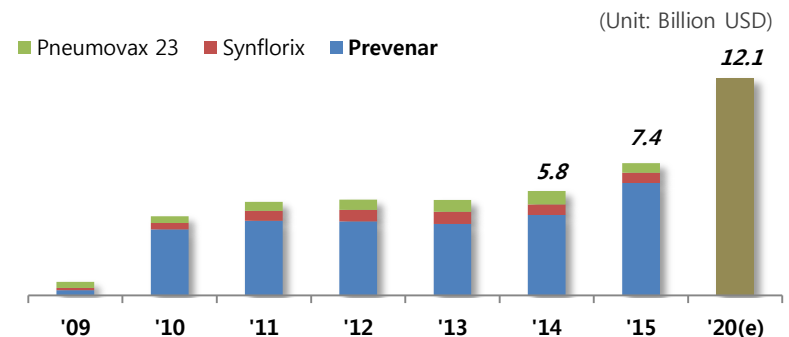
Co-development of PCV



- Strategic business alliance for co-development of "Best in Class" pneumococcal vaccine
- Collaboration on R&D, Clinical, Production, Commercialization
- Production in An-dong vaccine facility in Korea for global distribution

□ PCV Market

- Market demand is boosted by aging population and expected to grow to \$12.1B by 2020
- Considering the Prevenar case, we expect meaningful market share after launching SKYPAC



(Ref : Visiongain 2015, Pfizer, GSK, Merck)

II. Business Divisions_Others

6) Vaccine business spin-off

Key Message

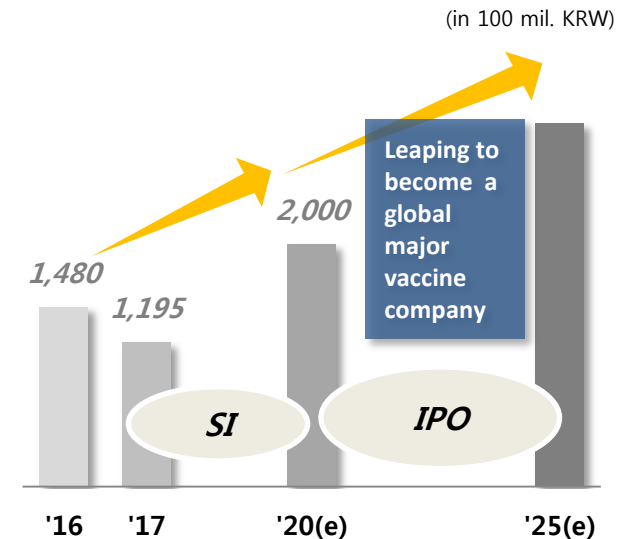
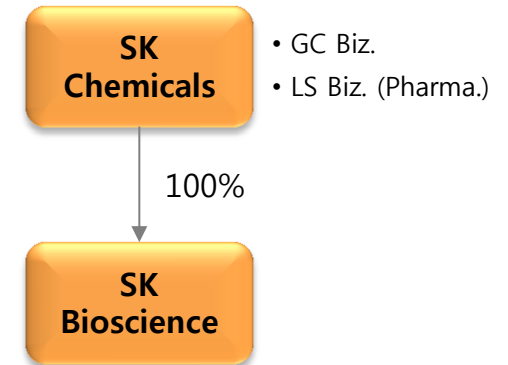
Background

- **Acceleration of business development after holdings structure transition**
 - 1) **Strengthen specialty in vaccine business**
 - Acceleration of vaccine business
 - Attract strategic investors
 - 2) **Build an optimal infrastructure for vaccine business**
 - Build an organization/HR system, capable of reflecting characteristics of Bio biz.
 - 3) **Enhance SK chemical's shareholder value**
 - Building a clear vaccine business corporate identity
(resolve discount factor and ensure appropriate evaluation of business)

Main Contents

- **'Spin-off vaccine business on July 1st → SK Bioscience**
- **Focus on vaccine business, strengthen specialties/advance & accelerate business development to maximize the value**
 - Manufacturing business (Green Chemicals Biz.) and Vaccine business have different business DNA/corporate cultures
 - Focusing on business / strengthening core competencies
 - Separated HR system and Organization to set out optimal operation and vision for a future
- **As a Vaccine specialist, we plan to make our best efforts to advance into global market by establishing global partnership**
- **IPO when shareholder value can be maximized**
- **Plan to expedite vaccine business with capital raised from IPO**

Corporate governance after spin-off



III. Summary

III. Summary

1) Past Five Years

2000 ~

Restructuring & Investment

- '00 : Established HUVIS(Spin off of polyester business)
- '05 : M&A SK/Dongshin Pharm
Spin off of SK Petrochemicals
- '08 : Sold off SK Petrochemicals

2008 ~

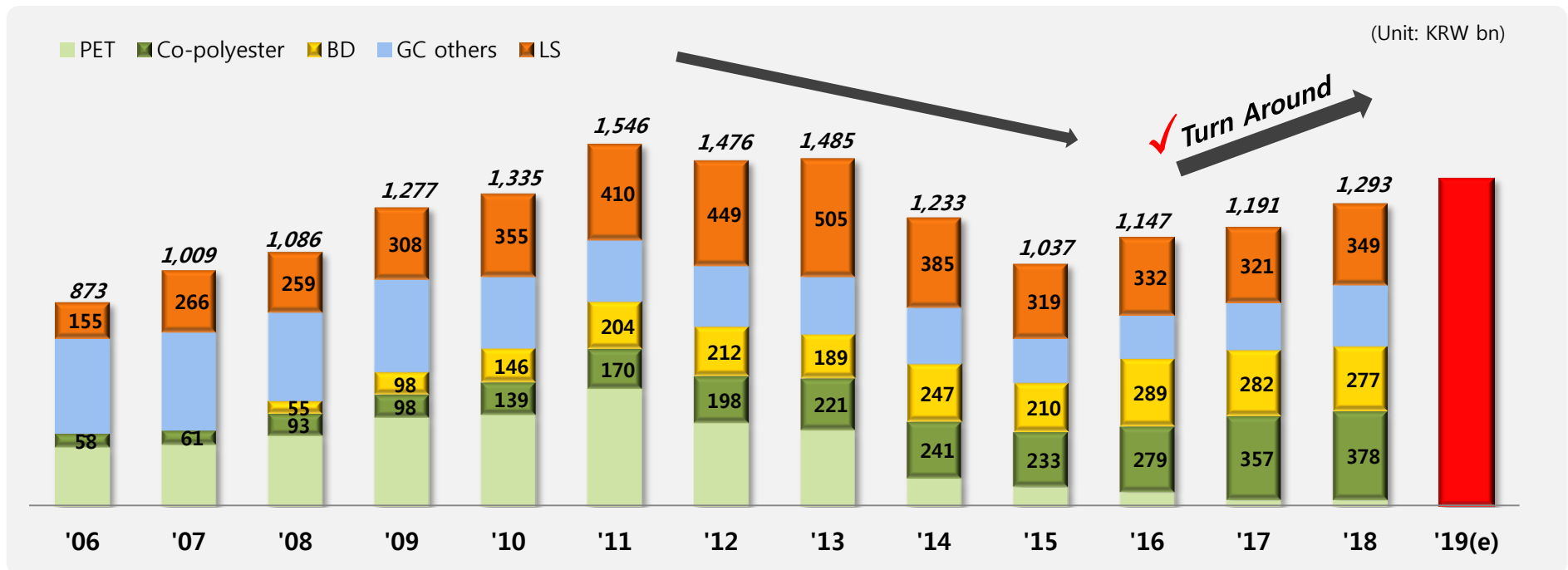
Accelerating Investment

- '08 : Initiating Vaccine development/
Bio diesel business
- '09 : NBP601 L/O (to CSL)
- '12 : Co-polyester capacity increasing
- '14 : L House acquired KGMP(Korea
Good Manufacturing Practice)

2015~

Realization of Investment

- '14 : Next PCV collaboration (w/ Sanofi)
- '15 : Cell flu trivalent (Korea 1st)
- '16 : Cell flu quadrivalent (World's 1st)
The US FDA approval of NBP601
- '17 : Zoster (World's 2nd)
- '18 : Varicella vaccine



End of Documents