



**We create chemistry for a  
sustainable future**



We create chemistry

KOITA Global Forum 2016 - Sanjeev Gandhi, BASF





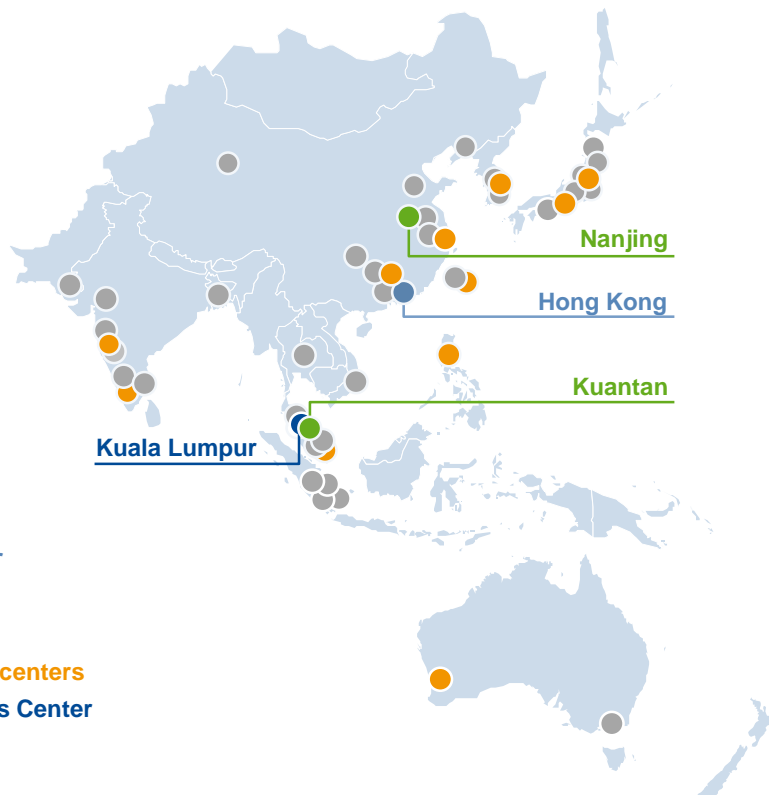
# About BASF

# Our Strategy – We create chemistry

- Our chemistry is used in almost all industries
- We combine economic success, social responsibility and environmental protection
- Sales 2015: €70,449 million
- EBIT 2015: €6,248 million
- Employees  
(as of December 31, 2015): 112,435
- 6 Verbund sites and 338 other production sites



# BASF in Asia Pacific 2015



BASF is active in **16** countries

Customers from **38** markets

Around **100** production sites\*

**>120** sales offices\*

**17,562** employees\*\*

**~€12.3 billion** sales\*\*\*

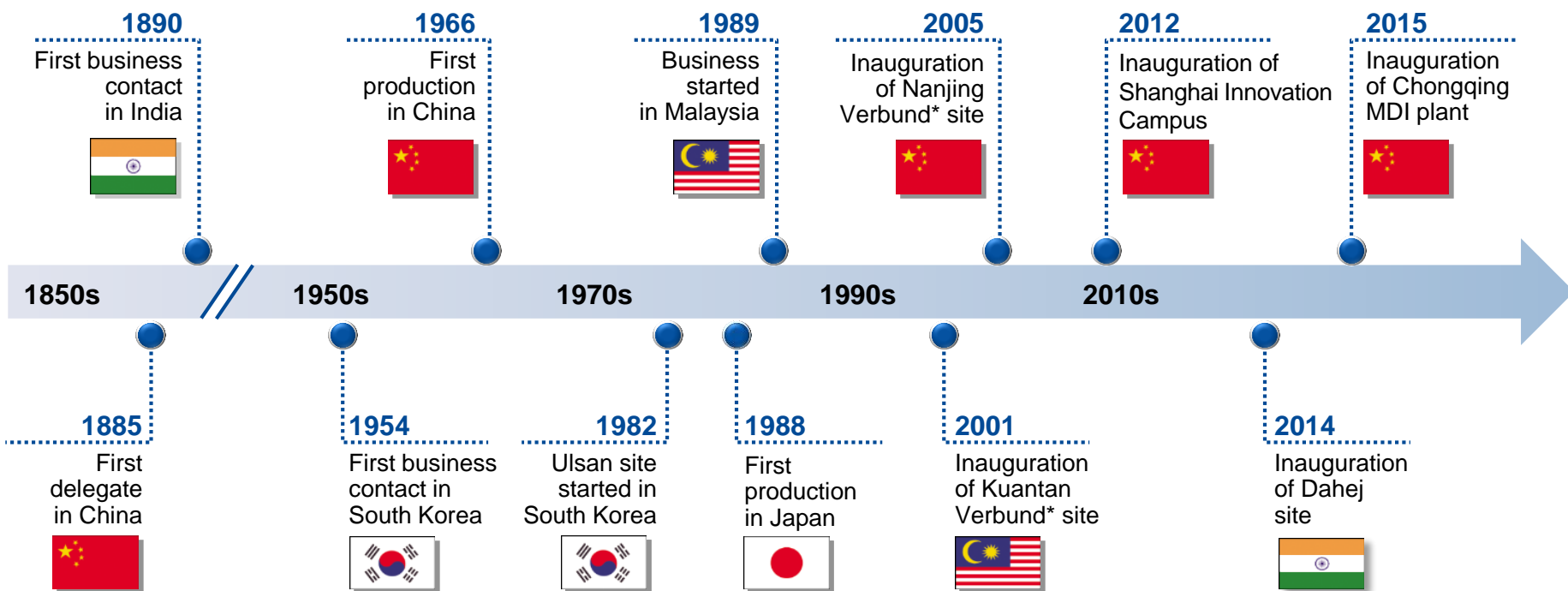
**~€0.9 billion** EBITDA before special items

\* Only selected sites and offices are depicted in this chart. Site and office numbers refer to companies of significant size where BASF holds a stake greater than 50%.

\*\* As of December 31, 2015

\*\*\* Sales by location of customer, not including BASF-YPC sales (€2.2 billion)

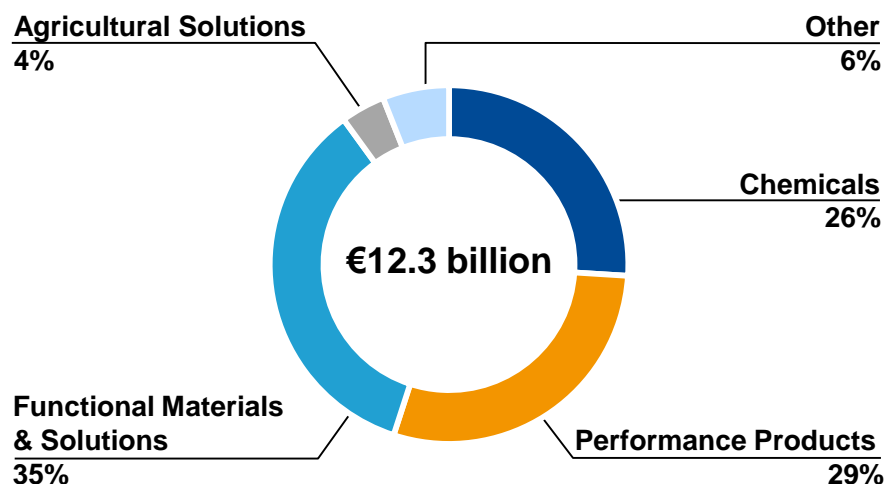
# BASF is growing in and with Asia Pacific



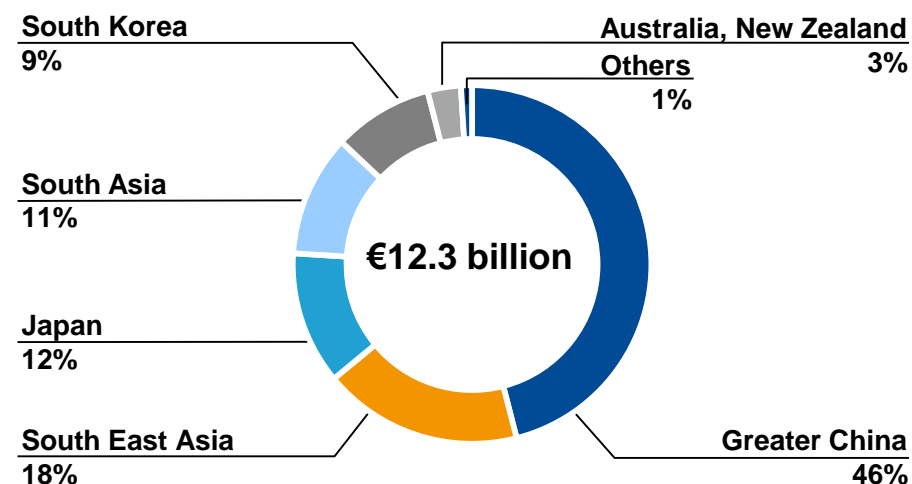
\* An integrated production complex where the manufacturing plants are interconnected to ensure that products, by-products and energy are used efficiently and intelligently and that costs and environmental impact are minimized.

# BASF in Asia Pacific: a balanced portfolio

**Sales\* by segment in 2015**  
(in billion €)






















**Sales\* by sub-region in 2015**  
(in billion €)



\* Sales to third parties by location of customer

# BASF is the only Western chemical company among Asia's top 10

		Company		2015 Chemical sales in Asia Pacific (in billion €)	
1		Sinopec		41.4	External Sales – Chemical Segment
2		Formosa Group		32.6	4 related companies: FPC, NPC, FCFC, FPCC
3		ChemChina		31.9	Turnover – 4 related segments
4		Mitsubishi Chemicals		22.7	Net Sales – excluding healthcare & others, adjusted for calendar year 2015
5		LG Chem		16.1	2015 sales revenue
6		Sumitomo Chemical		15.6	Net Sales – excluding pharma & others, adjusted for calendar year 2015
7		Toray		12.6	Net Sales – excluding life science & others, adjusted for calendar year 2015
8		<b>BASF*</b>		12.3	Sales by location of customers
9		Reliance Chemicals		11.4	External turnover – adjusted for calendar year 2015
10		Mitsui Chemicals		10.5	Net Sales – adjusted for calendar year 2015

Source: Company annual reports, BASF \* BASF would rank #7 with BASF-YPC sales included (€2.2 billion in 2015).

# BASF in Korea



- Sub-regional headquarters
- Selected sites
- R&D/Technical centers

**1** wholly owned subsidiary  
**7** production sites  
**1** central sales office  
**1,108** employees\*  
**~€1.1 billion** sales\*\* in 2015

\* Employee number as of December 31, 2015

\*\* By location of customer; as of December 2015

# Some sites are not shown due to scale.

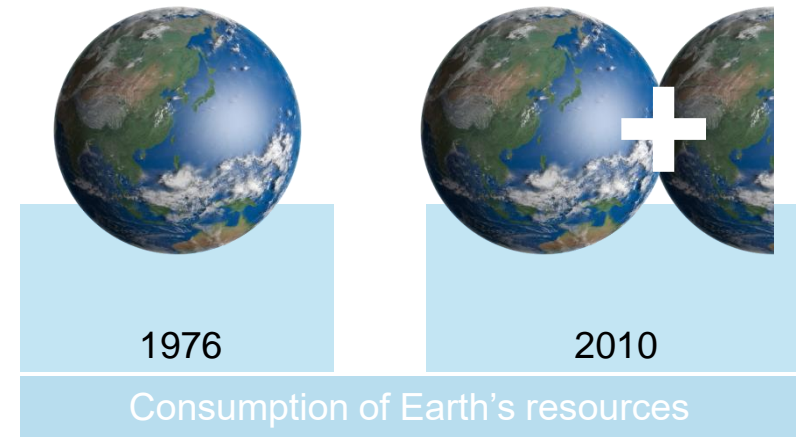
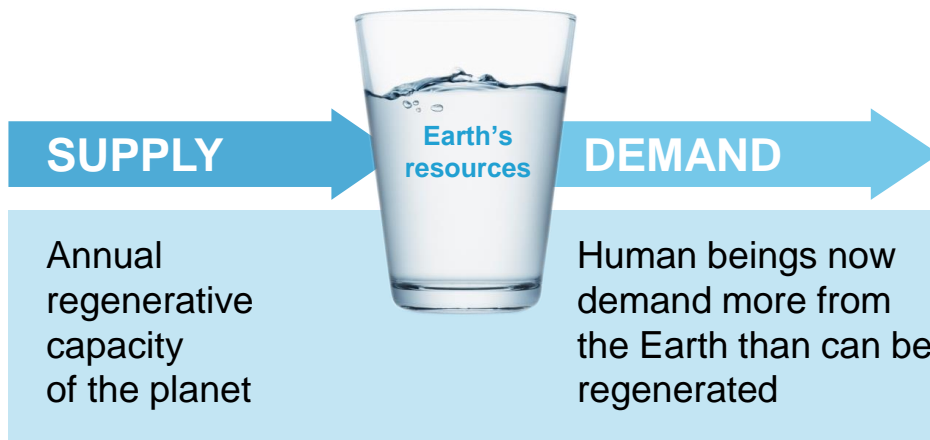




# Future industry changes in Korea – a global view

# Industrial growth in a global context

**Growing demand is putting an increasing strain on our planet**



# Macroeconomic trends in Asia Pacific



**Asia: dominating  
global growth**



**China influence  
increasing**



**Demands of society  
and government**



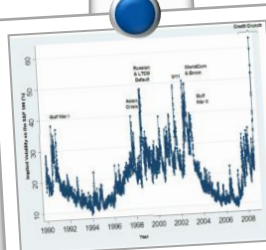
**Resource  
scarcity**



**Urbanization**



**Competition  
for top-talent**



**Volatility, speed  
and uncertainty**

Growing opportunities, growing demands

# Chemicals remains a growth industry



Agriculture



Health &  
Nutrition



Energy &  
Resources



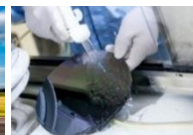
Construction &  
Housing



Consumer  
products



Automotive &  
Transport



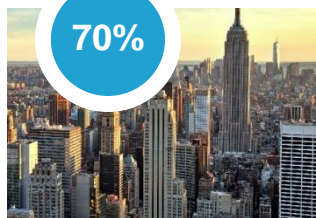
Electric &  
Electronics

## Chemistry as enabler for current and future needs



~10bn

...people by 2050



70%

...of the world population  
will live in cities by 2050



50%

...more primary energy  
consumption by 2050



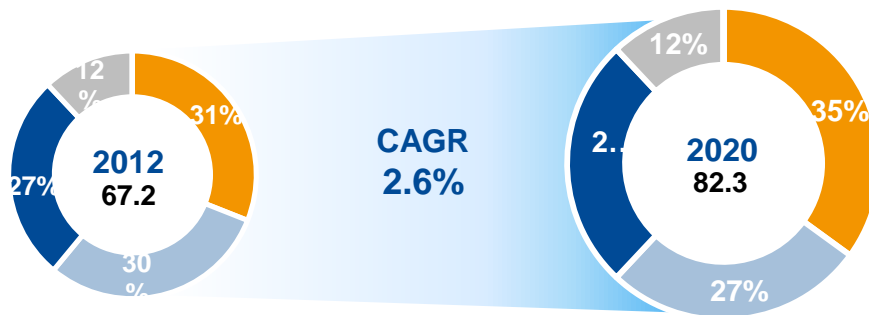
30%

...more food needed  
by 2050

# Asia Pacific will continue to grow ...

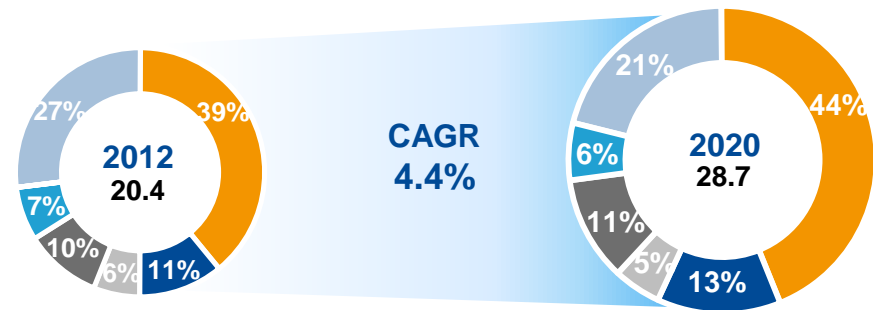
**Real GDP**  
(in trillion US\$)

## World



Asia Pacific North America  
Europe Others

## Asia Pacific



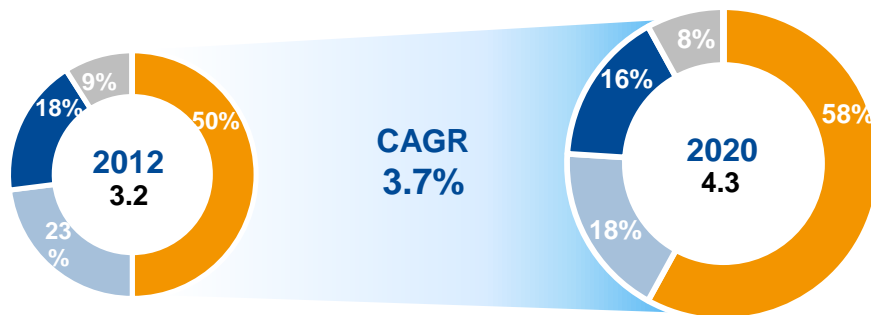
Greater China South Asia South East Asia  
Japan South Korea ANZ



# ... with production dominated by China (example chemical industry)

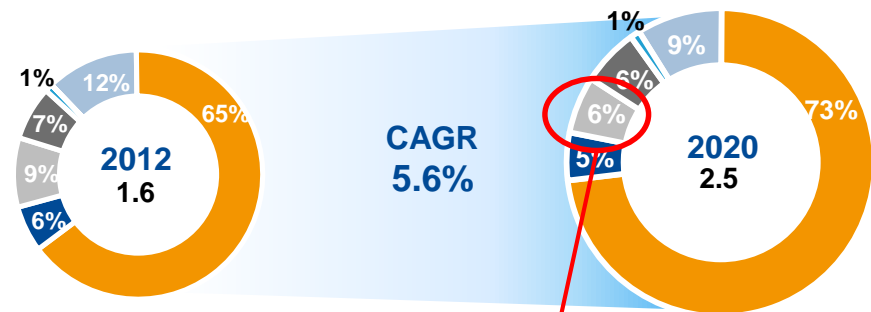
Real chemical production (excl. pharma)  
(in trillion US\$)

## World



Asia Pacific North America  
Europe Others

## Asia Pacific



Greater China South Asia South East Asia  
Japan South Korea ANZ



## BASF's approach

# Our corporate purpose

Sustainable development is about balancing economic, environmental and social needs – today and tomorrow



We create chemistry  
for a sustainable future

# Our strategy



## Market

Grow sales faster than Asian chemical production

## Innovation

Accelerate innovation by utilizing new R&D assets

## Portfolio

Continue to optimize our portfolio

# We create chemistry in Asia Pacific

## Investment

Selectively expand our local production network

## People

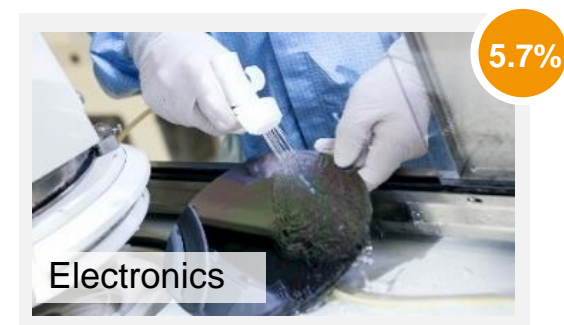
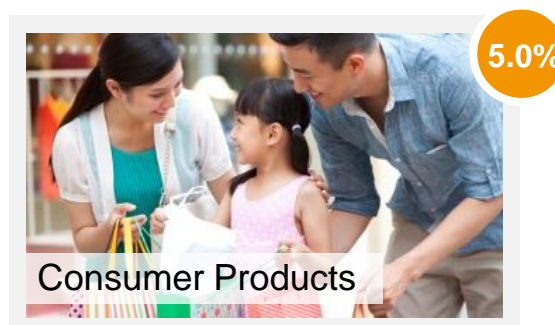
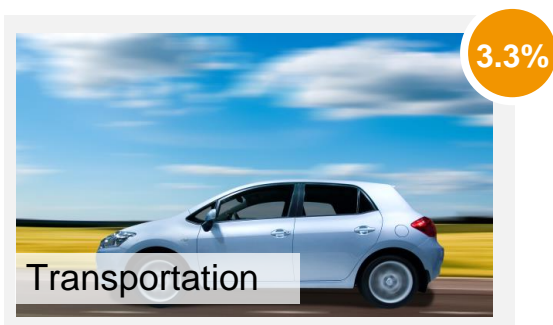
Attract, develop and retain talent

## Excellence

Drive profitable growth through excellence

# We participate in innovative and growing markets

## Estimated CAGR 2015–2020 for selected industries, Asia Pacific





# We invest in Asia Pacific for profitable growth



## Aroma ingredients complex

Kuantan, Malaysia

- Startup of first plants in 2016
- Total investments > €500 million



## Automotive coatings

Caojing, China

- Startup planned for second half of 2017
- Second coatings plant within three years



## Polyisobutene plant

Kuantan, Malaysia

- Capacity: 50,000 metric tons
- Startup planned for second half of 2017



## Chemical catalysts

Caojing, China

- BASF's first facility in Asia Pacific to produce process catalysts
- Startup planned for first half of 2017



## Mobile emissions catalysts

Rayong, Thailand

- New site to produce light-duty and motorcycle emissions catalysts
- Startup planned for first half of 2017

- Investments 2012–2015: €3.0 billion (13% of BASF Group)
- Increasing focus on investments where BASF: is technologically leading, has a competitive advantage. expects strong profitable market growth
- Target remains: ~75% own manufactured products by 2020 (today: ~55%)
- Plan to invest €3.5 billion from 2016-2010

# Investing in Korea

- Chemistry lies at the heart of Korea's industry.  
BASF sales in Korea 2015: €1,113 million
- Innovation for future needs
  - ▶ PU application technology center in Daejeon, electronics R&D hub and home and personal care lab in Suwon.
  - ▶ Technology Development Center and laboratory in Dongtan.
- Manufacturing raw materials for Korea's future growth
  - ▶ Engineering plastic Yesan for light-weight automotive and high-density electronic products
  - ▶ Engineering plastics product development laboratory Ansan
  - ▶ Joint venture with Kolon Plastics for world's largest POM production (2018), used in industrial, transportation, construction and consumer



# We innovate to meet challenges, create new business areas

- BASF: a 150 year history of innovation
  - ▶ Expenditures 2015 for research and development: €1.9 billion
  - ▶ Around 3,000 research projects
  - ▶ No.1 in the Patent Asset Index™
- Innovation addresses global challenges
  - ▶ Mobility
  - ▶ Urbanization
  - ▶ Resource scarcity



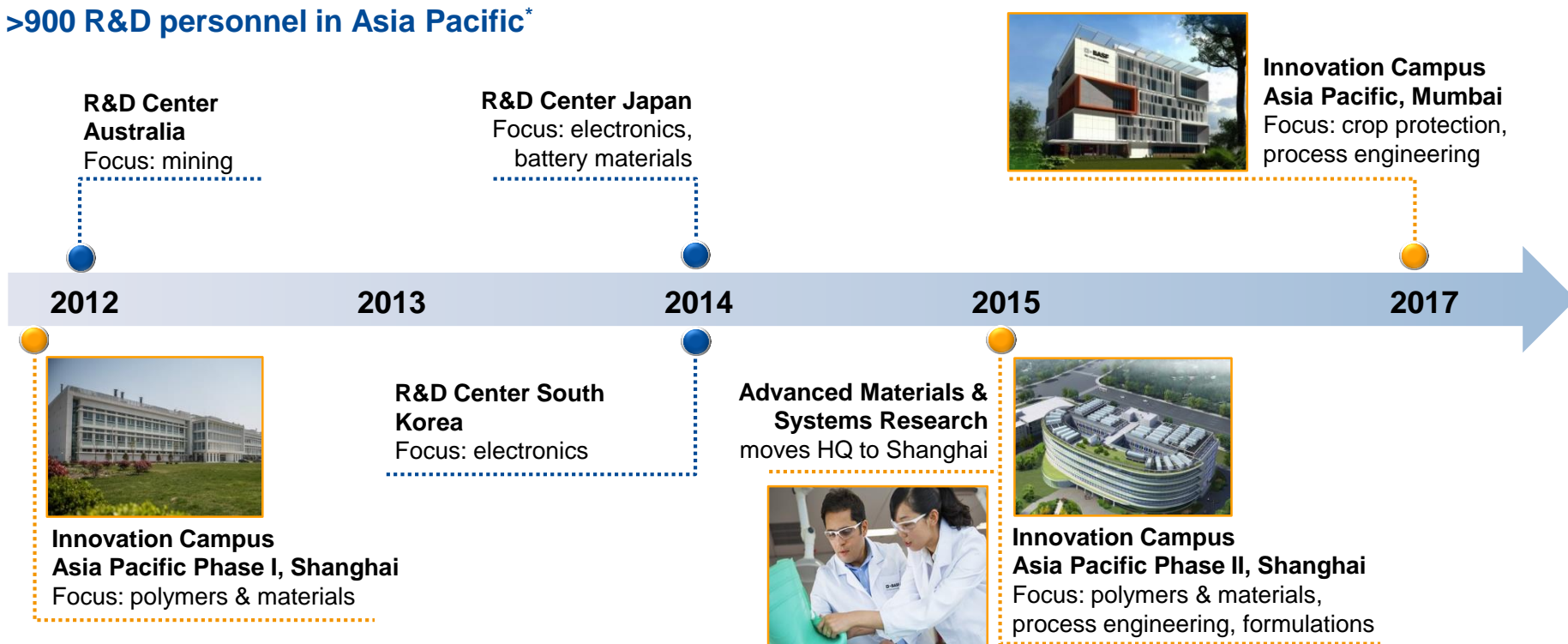
*Hyundai RN30 concept car*



With our innovations we provide sustainable solutions for global needs.

# Dedicated resources for innovation

>900 R&D personnel in Asia Pacific\*



\* As of December 31, 2015

Strong innovation clusters provide opportunities for individuals and companies



# Factors for innovation development

## “Hard” innovation drivers

Proximity to production	Proximity to the market	Favorable policies
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## “Soft” innovation drivers

Talent pool	Research excellence	Future prospects for talent
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Factors go beyond incentives and scientific talent



# Best team and talent development



- Strong talent base is needed for future development
- Cooperation with leading universities to access talents and training
- Consider mobility, international prospects





## Case studies

# Protecting coastlines with polyurethanes

- Long coastlines are affected by numerous heavy storms and erosion; changing climate will increase the issue
- Revetments made with BASF's innovative solution for coastal protection, Elastocoast® address this challenge in a unique way.
- Now in use in Goseong, Gyeong-nam province in South Korea.
- Helps manage sediment and provides the protection against coastal erosion during the typhoon season.
- Alternative to concrete or tar; prevents damage to the revetments and reduces wave run-up.
- Protects the coast against undercurrents and floods as the wave energy is absorbed by Elastocoast.



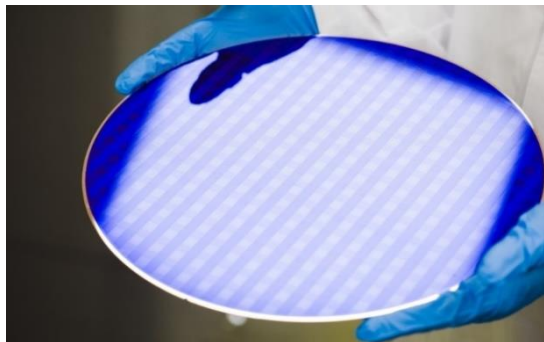


# World's first animal feed additives from vitamin B2 residue

- BASF manufactures Vitamin B2, an important nutrition ingredient for animal feed in Gunsan, Korea, using vegetable oil and the fungus *Ashbya gossypii*.
- High density vitamin B2 fermentation residue is created during production, which was previously discarded
- The plant proactively reviewed and refined the production process and to make the best use of the residue
- BASF now recycles the residue and recovers its nutrients for animal feed mixing components. This is the world's first such process.
- Conserves resources, minimizes waste and emissions, fulfills stricter government waste disposal regulations.



# More efficient materials for semiconductors and displays



## Semiconductors

- Ultra-pure process chemicals
- Formulations for cleaning, etching, plating and polishing

## Displays

- Pigments for color filters
  - Light stabilizers
  - Photoinitiators
- Flexible display materials



- BASF provides reliable products for most advanced technology nodes
  - ▶ Ultra-pure process chemicals for 10 nanometer scale processors
  - ▶ Advanced formulations tailored to customer needs and increasing technology requirements
  - ▶ Future developments: Anti-fingerprint hard-coat and scratch-proof over-coat, materials for flexible displays
- BASF R&D and production at customers' doorsteps
  - ▶ BASF Electronic Materials R&D Center Asia, in Suwon, South Korea
  - ▶ Production in Taiwan, China, Singapore, Malaysia
  - ▶ Local application labs in Taiwan and China





## Looking ahead



We create chemistry

# Opportunities and challenges for Korea in future industrial development

Highly efficient manufacturing

Uncompetitive costs (labor, energy)

Advances in biotechnology

Inflexible labor market

Highly educated population

Weak English skills

Strong software skills

Perceived lack of transparency

World class infrastructure

Barriers to collaboration

Industry valued by community

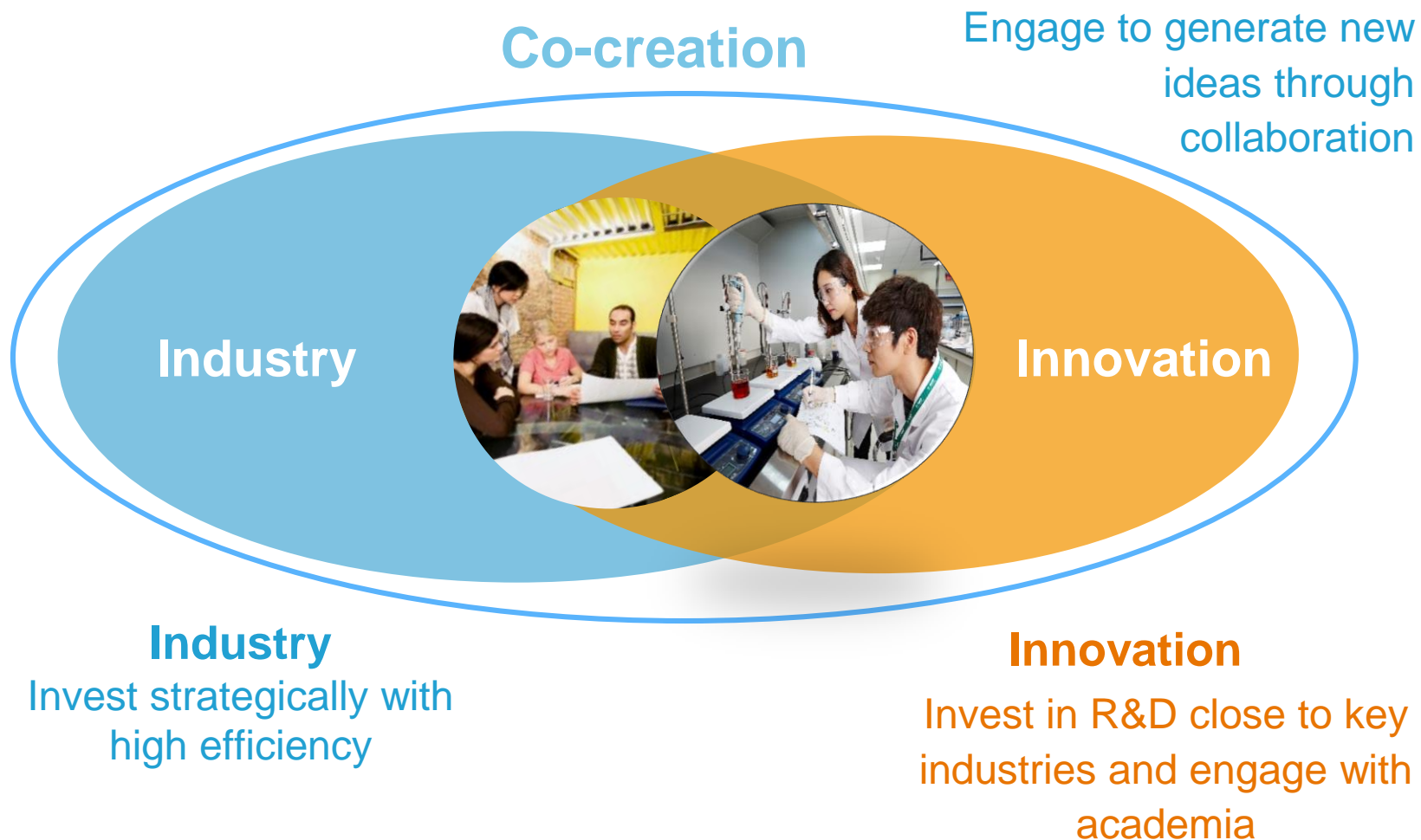
Highly regulated heavy industry

# Recommendations



- Recommendations:
  - ▶ Develop Korean talent for international business
  - ▶ Open up the industrial landscape to global competition
  - ▶ Support international academic and industrial collaboration
  - ▶ Concrete policy support to innovation projects which address challenges of sustainability
  - ▶ Focus on efficiency and automation to address cost competitiveness

# Summary





We create chemistry