Dow Chemical:
A Growth and Sustainability Journey in China

Presentation at International Advanced Coal Technologies Conference
Xian, 4 June 2012
Dow Chemical, A Leading Chemical Company in the World

- 2nd largest chemical company in the world
- Founded in 1897 by Herbert H. Dow in Midland, Michigan, U.S.
- A science and technology leader with annual sales of $60 billion in 2011

North America
Sales: $21.35bn

Latin America
Sales: $7.25bn

Europe, Middle East & Africa
Sales: $20.84bn

Asia Pacific
Sales: $10.55bn
17.6% global sales

- Supplies a broad range of products/services to customers in approximately 160 countries
- More than 5,000 products manufactured at 197 sites in 36 countries
- Employs 52,000 employees worldwide
- Greater China is Dow’s 2nd largest market: 2011 sales = US$ 4.4 billion
# Dow Chemical’s Business Operating Segments

## Advanced Materials
- Dow Electronic Materials
  - Semiconductor Tech
  - Interconnect Tech
  - Display Technologies
  - Growth Technologies
- Functional Materials
  - Dow Wolff Cellulosics
  - Dow Home & Personal Care
  - Dow Microbial Control
  - Performance Additives
  - **JV:** Dow Corning

## Electronic & Functional Materials
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## Coatings & Infrastructure Solutions
- Dow Building & Construction
  - Dow Building Solutions
  - Dow Construction Chemicals
  - Dow Solar Solutions
- Dow Coating Materials
  - Architectural Coatings
  - Industrial Coatings
- Dow Water & Process Solutions
- Performance Monomers
  - **JV:** Dow Corning

## Agricultural Sciences
- Dow AgroSciences
  - Agricultural Chemicals
  - Seeds, Traits, & Oils
  - AgroFresh

## Performance Materials
- Amines
- Automotive Systems
- Chlorinated Organics
- Dow Formulated Systems
- Dow Oil & Gas
- Dow Plastics Additives

## Performance Plastics
- Polyethylene
- Plastics Licensing & Catalyst
- Dow Packaging & Converting
- Dow Elastomers
- Dow Electrical & Telecommunications
  - **JV:** EQUATE
  - **JV:** Equipolymers
  - **JV:** The Kuwait Olefins Company K.S.C.
  - **JV:** SCG-Dow
  - **JV:** Univation Technologies

## Feedstocks & Energy
- Chlor-Alkali/Chlor-Vinyl
- Energy
- Ethylene Oxide/Ethylene Glycol
  - **JV:** EQUATE
  - **JV:** MEGlobal
- Hydrocarbons (Olefins, Aromatics, Aromatic Derivatives)
  - **JV:** Compañía Mega
  - **JV:** SCG-Dow
  - **JV:** The Kuwait Olefins Company K.S.C.
Dow’s Value-added Portfolio in China

- Headquarters
- 5 Business Centers
- 18 Key Manufacturing Sites
- BPSC Center

- Becoming Dow’s 2nd largest market
- Total assets $1.2 Bn
- 2011 sales $4.45 Bn, 7% of Global, 19% YoY Growth*
- ~3600 employees, 7% of Global

* Excludes Styron

Value-Added Business Portfolio 2011

- Performance Business 66%
- Market Driven Business 31%
- Others <3%

2011 Revenue Breakdown

- Performance Materials
- Performance Plastics
- Electronic and Functional Materials
- Coatings and Infrastructure Solutions
- Feedstocks and Energy
- Agricultural Sciences

>97% Performance + Market Driven!
Dow Chemical’s China journey so far…

- **Dow has achieved 16% compound annual growth in Greater China over the last decade**

1989: Polyol JV in Ningbo
1998: PU System House in Guangzhou
2002: Zhangjiagang integrated site
2004: Greater China Regional Headquarters
2009: Shanghai Dow Center ROH Acquisition Glycol Ether Plant
2011: Univation Plant EM / IT Plant

Annual Sales (US$ billion)

- 1990: 0.3
- 1995: 0.7
- 2000: 0.9
- 2001: 1.0
- 2002: 1.3
- 2003: 1.6
- 2004: 2.2
- 2005: 2.3
- 2006: 2.7
- 2007: 3.3
- 2008: 3.2
- 2009: 3.7
- 2010: 4.0
- 2011: 4.5
China is in transformation; so is Dow Chemical

Pillars for 12th Five Year Plan

Restructuring The Economy
- Inflation Control
- Increased Consumption
- Value-adding Industries

Promoting Social Equality
- Urbanization
- Go West
- Northeast Area Revitalization

Protecting the Environment
- Energy efficiency
- Environment quality
- Alternative Energy

China 2015 Key Targets

- GDP growth: 7% annually (higher expected)
- Income increasing > 7% annually
- Unemployment <5%
- Energy consumption reduction: 16%/GDP unit
- CO₂ Emission reduction: 17%/GDP Unit
- Alternative energy >11.7% (8% in 2010)
- Pollution reduction: 8%-10% from 2010

Dow’s Transformational Strategy

- Grow in Emerging Markets
- Ride Global Mega Trends
- Drive for Advantaged Business Mix

Favorable Trend to

- Stimulate domestic consumption, develop consumer electronics, home appliances, packaging, etc
- Enhance environment protection, develop alternative energy & improve energy efficiency
- Reduce provincial imbalances, electric vehicle leadership
- Improve social welfare, farming efficiency, water conservation
Dow Chemical’s 2015: Growth Enablers

Accelerate Existing Business Growth

- Deeper customer partnerships
- X-Biz collaboration

Organic Business Growth

- Increased investment in local assets
- ESD Materials
- Photovoltaic
- Energy Efficiency

Mid-Term Opportunities

- Sales Office Network
- Logistics & supply capability
- People
- Brand & reputation

Increase Organizational Presence & Innovation

Thai Growth Projects

- ESD Materials
- Photovoltaic
- Energy Efficiency

Growth Project

Bolt-on M&A

Sadara Downstream

- Preferential Business Investments
- Taiwan Growth
- 3rd Party’s Capacity

2015: $ 7 ~8 Bn

2010

$ 3.7 Bn*

* Exclude Styrenics

$ > 5 Bn

$ ~ 1 Bn
Dow Chemical’s 2015: Growth by 7 Dimensions

- Collaboration with **Customers**
- Increased **Local Investment**
- **Innovation** around growth platforms
- Maximizing our **Taiwan** presence
- Enhanced **Brand & Reputation**
- Expanded **Market Reach**
- Investment in **People**
Dow Chemical’s 2015: Expanded Market Reach

- Dow coastal footprint
  - Traditional market location
  - Increasingly high cost & mkt remote

- Sales office network expansion
  - More effective access to emerging market and new customers
  - Enhancement of customer intimacy
  - Competitive cost
  - “Clusters” create critical mass

- More coastal footprint

- Coastal Provinces today account for >75% of total sales revenue in Mainland China
- Coastal Provinces account for 60% total GDP of Mainland China in 2010
Yulin Coal to Chemical Project

- World scale integrated Coal, Power and Chemical complex, manufacturing high value added downstream chemicals from coal

- Partnership with ShenHua Group, the largest coal company in China and the world

- Designed with the state of art coal to chemical technologies to achieve cleaner manufacturing, EHS excellence and business sustainability

- Demonstrated commitment to China’s Go-West Initiative, Energy Security and Feedstock Diversification Strategies

- Needs continuous strong support from the government
Sustainability: A Commitment From the Beginning

- 1897: Developed water-based, acrylic technology that revolutionized the paint industry
- 1906: War on BTUs energy conservation program launched
- 1935: First industrial use of bacteria to degrade phenolic waste
- 1953: HH Dow partners with Westinghouse to develop Co-Generation
- 1967: Corporate Environmental Advisory Council formed
- 1986: Claude Fussler writes: Driving Eco Innovation
- 1991: 2005 Goals Set
- 1996: 2005 Goals saved company $5 billion on $1 billion Investment, 2015 Sustainability Goals Set
- 2000: Won 7th Presidential Green Chemistry award
- 2005: Frank Popoff pens Eco-Efficiency: The Business Link to Sustainable Development
- 2007: Dow Signs UN Global Compact
- 2010: Collaboration announced with The Nature Conservancy
- 2011: Waste Reduction Always Pays (WRAP) launched
- 2015: 2015 Goals Set
In 1996 we publicly launched Dow’s 2005 EH&S Goals,* telling the world we would reduce:

– Injuries and illnesses per 200,000 work hours by 90 percent.
– Leaks, breaks and spills by 90 percent.
– Transportation incidents per 10,000 shipments by 90 percent.
– Process incidents, including fires, explosions and significant chemical releases, by 90 percent.
– Motor vehicle incidents per one million miles by 50 percent.
– Dow employee and contractor fatalities
– Repeat incidents with Dow product at customer facilities by 50 percent (from 2001 levels)
– Etc.

* From 1994 baseline
As a result of the 2005 Goals we have:

- Reduced personal safety and health incidents by 84%
- Reduced solid waste by 1.6 billion pounds
- Reduced water use by 183 billion pounds
- Saved 900 trillion BTUs of energy

= Saved more than $5 billion with a $1 billion investment

Reduced chemical emissions by 56% while production increased 31%

*Working at Dow is 20x safer than working at a grocery store!*
**Sustainability: 2015 Goals**

- Reduce our GHG intensity 2.5% per year
- Achieve at least three breakthroughs that will significantly help solve world challenges
- Achieve on average a 75% improvement of key indicators for EH&S operating excellence from 2005 baseline
- Double the percentage of sales to 10% for products which are advantaged by sustainable chemistry
- Reduce our energy intensity 25%
- Publish product safety assessments for all products
- Achieve individual community acceptance ratings for 100% of Dow sites where we have a major presence
Sustainability: Dow’s Four Pillars

**Smart Solutions for Today**

Our technologies enable our customers, and their customers, to develop products and services.

**Innovations For Tomorrow**

We contribute to the sustainability of society and our planet by developing innovative technologies for current and future markets.

**Responsible Operations**

Our infrastructure has a positive impact on our company, our communities and ourselves; our operations are a model for others, wherever we operate.

**Partners For Change**

We are leaders in advancing all aspects of sustainability, openly collaborating with customers, suppliers, communities, civil society and governments.
Sustainability: Practice in China

Cleaner Production Demonstration Project (2005 – 2008)
- Partner with MEP
- 2,130 projects implemented for cleaner production

- Partner with MEP and UNEP
- Aim to establish a chemical safety management system in China's chemical industry

- Partner with the State Administration of Work Safety
- Safety trainings for 2,500 SMEs in the chemical industry

Food Safety Risk Assessment Project (2008 – 2010)
- Partner with National Institute for Nutrition & Food Safety (CDC)
- Aim to boost China’s food safety assessment capability
Sustainability: Practices in China

- 2008-2009, Dow initiated Elm tree planting program in Yulin City, Shaanxi Province
- Partnering with Chinese People’s Association for Friendship with Foreign Countries

- 2009-2011, Dow initiated GHG Reduction Project in Shaanxi Province
- Partnering with Environment Defense Fund, and Shaanxi DOA (Department of Agriculture)
Back Up Slides
## Recognitions for Sustainability

<table>
<thead>
<tr>
<th>7 Presidential Green Chemistry Awards</th>
<th>Named Eleven Times</th>
<th>China’s “Most Innovative Corporation” Award</th>
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<tr>
<td>- more than any other company</td>
<td>Dow Jones Sustainability Indexes</td>
<td>for sustainable innovation of corporate ecosystem, CEO CIO Magazine and the Research Center for Technological Innovation</td>
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### 2010 Robert W. Campbell Award

![National Safety Council Logo](image)

### 100 Most Technologically Significant New Products of the Year

for IMPAXX™

![R&D 100 Logo](image)

### “50 Best Inventions of 2009”

Dow POWERHOUSE™ Solar Shingle
TIME Magazine’s

![TIME Magazine Logo](image)