OPENING REMARKS

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Chairman, GPCA Research & Innovation Committee
WHY THE RESEARCH & INNOVATION SUMMIT???

- Evolution of the Petrochemicals Industry in the Gulf
- Impact of Petrochemicals and Chemicals Development on the GCC Economy
- Technology and Innovation are the keystones for developing a globally competitive industry
- Key technological achievements of the Gulf Petrochemicals Industry
- Technological challenges and the path forward
- Technological uncertainty
- What is new in this year R&I Summit?
FEEDSTOCK INFLUENCE ON THE EVOLUTION OF THE PETROCHEMICALS INDUSTRY IN THE GULF

- **1960**: Associated gas flaring waste
- **1970**: Establishment of first class infrastructure, gas collection & treatment, industrial cities
- **1980**: Heavier feedstock, diversification
- **1990**: Establishment of commodity chemical plants, methane, ethane
- **2000**: Integration, growth, production of more sophisticated products

Fertilizers plants established in many GCC countries, production of propylene derivatives and aromatics.
EVOLUTION OF THE GULF PETROCHEMICALS INDUSTRY

• BUILDING TECHNOLOGICAL CAPABILITIES
  • THE EMERGENCE OF TECHNICAL AND R&D CENTERS IN THE REGION
  • JOINT VENTURES AND ACQUISITIONS

BOROUGE INNOVATION CENTER
ABU DHABI, UAE

SABIC PLASTICS APPLICATION DEVELOPMENT CENTER
RIYADH, KSA

TASNEE PLASTICS APPLICATION CENTER
JUBAIL, KSA

SIPCHEM TECHNOLOGY & INNOVATION CENTER
DHAHRAN, KSA
THE PETROCHEMICALS AND CHEMICALS GROWTH IN THE GULF IS ONE OF THE MOST IMPRESSIVE TECHNOLOGICAL AND ECONOMIC DEVELOPMENTS ANYWHERE IN THE WORLD

THE CONSISTENT EXPANSION OF THIS INDUSTRY IN VOLUME AND PRODUCT DIVERSITY WITHIN A FEW DECADES IS UNPRECEDENTED GLOBALLY

THE DEVELOPMENT OF NATIONAL MANPOWER AND THE ABSORPTION OF TECHNOLOGY HAVE BEEN REMARKABLE ACHIEVEMENTS
IMPACT OF PETROCHEMICALS AND CHEMICALS DEVELOPMENT IN THE GULF

• THE PETROCHEMICALS INDUSTRY’S DEVELOPMENT IS A KEY ENABLER FOR MANY OTHER INDUSTRIES IN THE GULF, INCLUDING:
  • DOWNSTREAM INDUSTRIES SUCH AS PLASTICS CONVERSION
  • SOPHISTICATED SERVICES AND SUPPORT INDUSTRIES, for e.g. SUPPLY CHAIN (LOGISTICS, SHIPPING, etc.)

“ADDING VALUE”
THE CHEMICAL INDUSTRY IS THE FIRST HI-TECH INDUSTRY

- FIRST INDUSTRIAL RESEARCH CENTERS WERE ESTABLISHED BY THE CHEMICALS INDUSTRY IN ADDITION TO COOPERATION WITH ACADEMIA
- MOVING FROM COAL TO PETROLEUM
- MOVING FROM ACETYLENE TO ETHYLENE
- SCALE UP, SINGLE STREAM UNITS

TECHNOLOGY IS A MAIN DRIVER

SPREAD OF TECHNOLOGY THROUGH RESEARCH AND LICENSING
TECHNOLOGICAL ACHIEVEMENTS OF THE GULF PETROCHEMICALS INDUSTRY

- The industry is based on the most modern technologies adopting the best environmental and safety standards.
- The Gulf Petrochemicals Industry is a leader in exploiting the economies of scale - a key element in its competitiveness.
- Key achievements revolve around:
  - Pushing the capacity of its units through development and innovation (capacity creep).
  - Commercialization and development of new process technologies.
MANAGING R&D DURING DIFFICULT TIMES: CREATING GLOBAL COMPETITIVENESS

TECHNOLOGICAL CHALLENGES AND THE PATH FORWARD

• ESTABLISHING A TECHNOLOGICAL DIRECTION
• BALANCING BETWEEN SHORT-TERM INCREMENTAL & LONG-TERM MORE RADICAL EFFORT
• INTEGRATING THE MANAGEMENT OF R&D WITH OTHER CORPORATE FUNCTIONS
• MEASURING R&D RETURNS & EFFECTIVENESS
• DETERMINING ALLOCATION OF FUNDS AND RESOURCES TO R&D
• ACCOMMODATING THE IMPACT OF BUSINESS CYCLES ON THE LONG TERMS STEADY FUNDING REQUIREMENTS OF R&D EFFORTS
• MANAGING AND MOTIVATING RESEARCHERS – FREEDOM TO INNOVATE, RIGIDITY OF RESEARCH PLANNING
The management of R&D effort is a challenging task. “It will be difficult to reduce this failure rate by better management of innovation or project selection and control techniques, except for adaptive and imitative types of projects.”

This uncertainty did not deter the chemicals industry from pursuing basic research as part of its research portfolio although it constituted a smaller but a significant portion of the R&D expenditure.

The associated risks with the other two classes of R&D (i.e. applied research and development) are somewhat lower, although not negligible.

The level of expenditure for the latter classes of R&D is much higher than basic research which makes the consequences of failure much bigger.

Technological Uncertainty
TECHNOLOGICAL UNCERTAINTY – HISTORY LESSONS

1885

THIS “TELEPHONE” HAS TOO MANY SHORTCOMINGS TO BE SERIOUSLY CONSIDERED AS A MEANS OF COMMUNICATIONS
- WESTERN UNION INTERNAL MEMO

1895

“HEAVIER-THAN-AIR FLYING MACHINES ARE IMPOSSIBLE”
- LORD KELVIN, PRESIDENT, ROYAL SOCIETY

1899

“EVERYTHING THAT CAN BE INVENTED HAS BEEN INVENTED”
CHARLES DUELL, COMMISSIONER OF THE US OFFICE OF PATENTS

1943

“I THINK THERE IS A WORLD MARKET MAYBE FOR FIVE COMPUTERS”
- THOMAS WATSON, CHAIRMAN OF IBM

1949

“COMPUTERS IN THE FUTURE MAY WEIGH NO MORE THAN 1.5 TONS”
- POPULAR MECHANICS

1977

“THERE IS NO REASON ANY ONE WOULD WANT A COMPUTER IN THEIR HOME”
- KEN OLSON, PRESIDENT, CHAIRMAN AND FOUNDER OF DIGITAL EQUIPMENT

1981

“640K OUGHT TO BE ENOUGH COMPUTER MEMORY FOR ANY ONE”
- BILL GATES, CHAIRMAN OF MICROSOFT

MANAGING R&D DURING DIFFICULT TIMES: CREATING GLOBAL COMPETITIVENESS
WHAT’S NEW AT THE 2016 GPCA R&I SUMMIT

• A DISTINGUISHED LINE-UP OF SPEAKERS FROM THE WORLD AND THE GULF:
  ✓ EXPERTS FROM LEADING CHEMICAL COMPANIES AND TECHNOLOGY DEVELOPERS WILL OUTLINE THEIR EXPERIENCES, CHALLENGES AND SUCCESSES
  ✓ LEADERS FROM THE GULF WILL SHARE THEIR EXPERIENCES IN THE DEVELOPMENT OF NEW TECHNOLOGIES IN COOPERATION WITH ACADEMIA & GLOBAL COMPETITORS
  ✓ BEST LESSONS FROM STUDIES BY WORLD-LEADING CONSULTANTS ON HOW TO MANAGE AND BENEFIT FROM INNOVATIONS
  ✓ LEADING PETROCHEMICAL COMPANIES WILL PRESENT THE ELEMENTS OF THEIR INNOVATION AND RESEARCH STRATEGIES

• AN IMPORTANT SURVEY ON “OPEN INNOVATION” IN THE GULF WHICH IS A VERY IMPORTANT ELEMENT FOR TECHNOLOGICAL DEVELOPMENT AS OUR INDUSTRY IS MOVING AWAY FROM “NOT INVENTED HERE” SYNDROME
INNOVATION IS A CULTURE, NOT A DEPARTMENT!