A fully integrated company in the 21st century – where next?
Graham van’t Hoff, Executive Vice President, Shell Chemicals
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Definitions & cautionary note

(Your excellencies), distinguished guests, ladies and gentlemen, Good morning!

It is great to be back in the Gulf and I’m delighted to be speaking to you at this prestigious event.

All of us in this room recognise that the global energy system is in transition. A growing global population will need much more energy, and from cleaner sources, to lower carbon emissions and reduce the impact on the environment.
4. Here in the Middle East the reality is clear. Already one of the world’s most water-scarce and dry areas, conditions could become hotter and drier. Many communities live in flood-prone coastal areas which are vulnerable to rising sea levels.

5. Global demand for energy will grow. By 2040 demand could rise by over a third compared to 2014, according to the International Energy Agency’s new policies scenario.

6. Today, oil, gas and coal account for over 80 per cent of primary energy supply world-wide. In the IEA’s scenario, oil and gas are expected to provide about 50 per cent of primary energy in 2040.

7. The future is uncertain but scenarios show that more gas and less oil will be used in the global energy mix in the future.

8. At the same time, we expect dramatic changes in the types of energy consumed over the decades ahead.

9. Renewable energy technologies have an indispensable role to play in enabling a cleaner energy future, but they are going to need some help along the way.
10. This transition will require a combination of hydrocarbons and renewables to meet all types of energy needs.

11. The world around us is always changing. The financial crisis of 2007-8 had a detrimental global economic impact.

12. More recently, oil and natural gas prices have fallen significantly. Brent crude oil prices have more than halved, from over USD 100 US dollars in mid-2014.

13. Alternative energies are becoming increasingly competitive. Solar energy has come a long way with total average cost per megawatt hour coming down from over 300 US dollars in 2009 to around 60 US dollars in 2015.

14. These challenges are having an impact on the Middle East and its petrochemicals industry.

15. As an integrated energy company it poses questions about where to participate in the energy system of the future.

16. Our response is in areas where we have leadership in technology, integration, or portfolios.

17. For example, the use of more natural gas, in particular as a replacement for coal, or carbon capture and storage technology to reduce CO2 emissions from industrial sectors.
18. Petrochemicals can play an important role in tackling some of the global challenges ahead.

19. And for the longer term, Shell’s new energies business is actively exploring opportunities where the commercial value is clear.

20. Despite uncertainties about the energy transition and the global economy, in the global chemicals industry, we expect to see sustained long-term growth. Petrochemicals is the fastest growing sector for hydrocarbon demand with annual growth of 3.7 per cent over the last 15 years.

21. We see a similar picture with global ethylene demand. That is expected to increase by a total of 30 million tonnes per year to around 200 million tonnes by 2025.

22. Inevitably, the global petrochemicals industry is seeing significant change too. We have seen transformations in the global feedstock mix and rising competition from US petrochemicals producers.

23. So questions rise about where to compete in petrochemicals in the future, from low-price gas or naphtha settings, to bio-based chemicals.
24. Here in the Middle East, the petrochemical industry has seen substantial growth over the past 30 years.

25. Since the early 1980s, the GCC petrochemicals industry has expanded rapidly. In 2015, annual production hit 145 million tonnes, more than double its level in 2005.

26. By 2015 export revenues generated by the GCC reached almost 50 billion US dollars annually. I think you’ll agree this represents a great achievement.

27. Saudi Arabia continues to be the biggest contributor, accounting for some 60 per cent of the region’s chemicals production in the same year.

28. And countries like Iraq and Iran have future potential.

29. At the same time, the low oil price puts pressure on the industry’s operating rates and capital spending. Domestic gas production is expected to fall in many countries in the region over the next few years.

30. The region is adding new capacity for export with most of it going to Asia. Compare this to projects in China which run on significantly lower capital and fixed costs and seek self-sufficiency.

31. Going forward, these projects will set the pricing structure for most petrochemical expansions around the world.
32. The industry will need to respond to the changing global environment through greater efficiency, stronger integration, diversification of feedstock sources and products. The development of skilled staff and an emphasis on scientific and technological research are other priority areas.

33. Since 1980, Shell has played an important role in the regional growth story through SADAF, Saudi Petrochemical Company, our joint chemicals venture in Saudi Arabia. We believe, our strong partnership with SABIC has helped SADAF become a leading player on the global market.

34. And we continue to focus on select growth opportunities in chemicals in the Middle East.

35. In 2015, Shell signed a Heads of Agreement with the Government of Iraq for the development of an integrated petrochemicals complex in the south of the country.

36. And last month we signed a Letter of Intent with the National Petrochemical Company in Iran to explore potential areas of cooperation there.

37. As part of Shell’s recent strategy refresh, Chemicals became one of the company’s areas for major growth, together with deepwater operations.
38. In Chemicals, Shell has had a solid financial performance over the last 5 years. And we continue to see strong market fundamentals in chemicals.

39. Shell Chemicals strategy seeks to link investment to Shell’s competitive advantage, along with advanced technology, portfolio robustness, and diversity of product market exposures.

40. We do not believe investment in undifferentiated positions will be rewarded in the long term.

41. Since the start of the millennium, we have streamlined our integrated portfolio from 133 facilities to just 16 and focused on building on our core competences and advantaged feedstocks.

42. Our global portfolio now offers a strategic regional spread, a balanced exposure to both gas and liquids and the opportunity to capture a range of different value chains. This allows us to create stable margins in what can be volatile market environments.

43. We also draw strength from being part of an integrated energy company, with shared infrastructure and access to a variety of feedstocks, alongside extensive manufacturing, processing, trading and marketing expertise, and our reputation as a strong partner.

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**Market-leading process technologies**

- OMEGA (Only MEG Advantaged)
- SMPO (Styrene Monomer/Propylene Oxide)
- cEOR (Chemicals Enhanced Oil Recovery)
- DPC (Diphenyl carbonate)
44. At Shell we strive to improve the industry. We develop technologies, processes and catalysts that enable us and our joint ventures to compete strongly in the market place.

45. Take, Shell’s OMEGA technology, the world’s first entirely catalytic process for production of ethylene glycol. This innovative process achieves a conversion efficiency of over 99 per cent, compared to around 90 per cent for conventional processes.

46. It delivers the lowest use of ethylene per tonne of glycol in the industry, using some 20 per cent less steam and producing 30 per cent less wastewater than a traditional plant.

47. Another example is Shell’s leading SMPO technology which we employ at our own sites and joint ventures. It co-produces styrene monomer and propylene oxide at 20 to 30 per cent higher energy efficiency, compared to conventional methods.

48. We also use Shell’s advanced higher olefins process to manufacture high quality linear alpha and internal olefins. This process allows us to produce a broad range of products, and Shell’s innovative catalyst system gives us a competitive advantage. These are important advances.

49. We continue to focus on improving process technologies in order to produce high quality products at lower cost, using less feedstock and energy.

50. And we are piloting several next generation processes that will be commercially available soon. This is helping to ensure our ongoing technological advantage.

51. For example, at our site in Singapore we are operating a 500-tonne per year demonstration unit to manufacture the chemical intermediate diphenyl carbonate. With this innovation, we have demonstrated a significant reduction in energy usage, while achieving excellent purity levels.
52. In Qatar we have developed Pearl GTL, Shell’s fully-integrated upstream-downstream joint venture with Qatar Petroleum. It is the world’s largest gas-to-liquids plant.

53. Pearl products have also enabled us to create gas-based, high-purity paraffinic fluids and solvents for customers across the world. The GTL solvents contain low amounts of impurities and they reduce environmental impact due to their low aromatic and naphthenic content.

54. Better energy efficiency plays another important role. It can be achieved by improving our equipment, updating technology and catalysts, advanced process control or by installing more energy-efficient components.
In recent years, feedstock sources and products have become more valuable in areas where we didn’t expect it before. That is why we have been working hard on new opportunities to diversify our portfolio.

Recently, we started construction of our expansion project at our chemicals manufacturing site in Geismar, Louisiana, making it the largest Alpha Olefins producer in the world. The new capacity brings total production to 1.3 million tonnes per year. We are well placed to respond to increased global customer demand for linear alpha olefins.

Together with our partner CNOOC, we are expanding our existing petrochemical complex in China. It will become the largest petrochemicals complex for Shell globally. The project will more than double the combined capacity of our joint venture to around 6 million tonnes per year.

Over 70 per cent of the construction work is complete and we expect start up around the fourth quarter next year.

And in June this year we also announced the construction of a petrochemical facility in Pennsylvania in the USA. Main construction will start in about 12 months, and commercial production is expected to begin early in the next decade.
60. The facility will be fed by ethane from the lowest-cost shale gas basin in North America to produce 1.6 million tonnes per year of polyethylene.

61. We are the only International Energy Company in this ideal location. More than 70 per cent of North American polyethylene customers are within a 700-mile radius of Pittsburgh. As a result, the complex and its customers will benefit from shorter supply chains, compared to the Gulf Coast.

62. We are proud to be at the forefront of developing advanced chemical facilities around the world. These are projects with a competitive edge, underpinned by a low-cost structure, increased efficiency and proprietary Shell technology.

63. Ladies and gentleman, the world around us is changing and so is the energy system. Whilst we cannot predict future trends, Shell is responding to the changing environment, how we tackle the energy and climate challenges, and how we refresh our chemicals portfolio.

64. We believe several components are required for future success. These are advanced technologies, integration, diverse portfolios, and strong operational safety.

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**Working with partners**

[Images of SADAF, PCS/TPC, Infineum, Nanhai]
65. Strong partnerships with other oil and gas companies and resource holders, suppliers and customers will help society to meet demand in more sustainable ways.

66. The chemical industry’s growth story at a global level will continue, and the Middle East’s chemical industry will remain a significant player but it will need to diversify given the challenges ahead.

67. At Shell, we will continue investing in our existing assets, to increase their capacity and efficiency. And we will pursue options to invest in building new large-scale facilities to capitalise on our expertise in technology and building mega projects.

68. The future of our industry depends on all of these things, but strong performance in health, safety and environment is vital. We all have the responsibility to make sure no one gets hurt in the course of their work, and that we minimise our impact on the environment and communities in which we operate.

69. Thank you.