In 2014 we are celebrating the 100th anniversary of the founding of the oldest of the Energy Institute’s predecessor organisations. We have been publishing throughout the year interviews with eminent figures from the world of energy, reflecting on how the past can inform the future. This month, Glen Cayley writes from an oil and gas perspective with Shell UK.

Glen Cayley is the Upstream Director for Shell UK and Ireland based in Aberdeen. His responsibility includes Shell interests in more than 50 fields, involving more than 30 platform installations, 30 subsea installations and two floating production, storage and offloading (FPSO) vessels.

He is also a member of the Board of Shell UK and the Vice Co-Chair of Oil and Gas UK. Prior to his current role, Cayley was Vice President Technical for Shell’s upstream business in Europe. He has also held the roles of Royal Dutch Shell’s Chief Petroleum Engineer and Vice President Development (Front-End Studies) for Europe, Africa, the Middle East and Russia. Cayley joined Shell in 2006 as Vice President Global Exploration, responsible for appraisal and resource maturation. Prior to this he worked for ExxonMobil for over 25 years.

A keen supporter of geology, Glen is married and has two children, and four grandchildren.

From your own perspective, how would you characterise the key challenges facing the energy industry and society today?

The demand for energy across the world continues to grow at a relentless pace. This, coupled with a growing awareness of the link between effective and sustainable energy infrastructure and successful social and economic development, is a driver for change in the supply and demand picture the energy industry faces.

Sadly, in the world today there continues to be an energy imbalance, most significantly impacting those around and below the poverty line. As Hans Rosling has often been cited before, five billion people are still heating water and scrubbing their clothes by hand while the richest one billion of the planet’s population lives above the ‘airline’ (so named because they make enough for airplane travel), using half of the world’s energy.

Society, with the support of the energy industry, has the imperative to redress this disparity and meet this growing demand. It is our task to deploy the right technologies in the right locations across the globe, to deliver a sustainable energy mix.

Focusing closer to home, in the North Sea investment has been at a record high at a time of depressed production levels, reflecting upward cost pressures and the realities of working with ageing infrastructure. But this investment level from operators will not be sustained into the coming decades unless we are able to mature new developments quickly in a competitive fiscal environment.

The implementation of the Wood Review, coupled with the outcomes of the ongoing Fiscal Review, challenge the industry to enter a new era which can build on the achievements of nearly 50 years of North Sea engineering excellence and enable the basin to continue to play a vital role in meeting the UK’s energy needs.

How can the industry use the experience of the past to plot the future?

With some 41bn barrels of oil and gas equivalent (boe) produced
to date, and with some £310bn invested over the last 35 years, you don’t have to look far to see why oil and gas has such a significant footprint in the UK’s past and present. And there are many reasons to be optimistic about the future.

Shell’s longevity in oil and gas, both globally and here in the UK, reflects this history and its long-term future. Recent decades have seen phenomenal innovation, as realised in the development of Brent in the 1970s through to the more complex high pressure, high temperature (HPHT) fields such as Shearwater here today.

Coupled with this technology, people have always been central to success in the industry: from the geologists who diligently identify and quantify our prospects, to the engineers and technicians who ensure the safe exploration and delivery of our product. Talented, creative people are the reason for a very proud record of achievement in the North Sea and will be the foundation of its future plans. As a country we need to invest in the talent pipeline which supports our science, technical and engineering industries.

What are the main factors to solving the energy policy ‘trilemma’ of balancing supply security, affordability and sustainability?

Nationally, regionally and globally we are faced with the challenge to find the right energy mix to balance supply and demand affordably and sustainably. Again, I can look to my own company, which has been part of the story of developing stranded oil and gas reserves and linking them to areas of demand using various technologies including floating production, storage and offloading vessels (FPSOs), floating liquid natural gas (FLNG) solutions and deepwater platforms.

Here in the UK, ensuring the country’s energy security is a top national priority. Balancing this priority against meeting carbon reduction commitments is difficult, but we have a known resource available to us: the use of gas to meet the supply challenges in the energy system is the best chance the UK has to make immediate and substantial progress towards cleaner, lower carbon energy supply.

Gas can help with all three of the UK’s energy objectives – providing affordable, secure and low carbon energy. It can help the UK meets its carbon reduction targets by playing a role in decarbonising the electricity sector in the short-term by replacing coal, and in the long-term coupled with carbon capture and storage (CCS).

Do you think the balance is achievable? What are the major constraints?

We are in a period of relative uncertainty in the basin as low production rates and cost inflation continue to test the resilience of UK operators working with ever-ageing infrastructure.

The fact that new exploration activity is not where it should be is also a cause for concern, as this means that the foundations for future production are not being put in place.

In order to tackle the basin’s current exploration shortfall, I see a need to increase the application of novel imaging technologies, such as azimuth rich seismic and enhanced seabed surveys which can be deployed to remove uncertainty and revitalise the hit rate.

The decreasing availability of a talent pool across a range of disciplines is becoming an area of real concern for the energy industry. We need to work diligently and collaboratively with schools and universities to inspire the next generation of scientists and engineers to consider energy as a career path.

What can – and should – governments, regulators and the energy industry itself do to meet the challenges?

Innovation, resource-sharing and knowledge-sharing will continue to be vital factors for success as we explore ways of sustaining production whilst purposefully tackling supply chain challenges around skills and costs. Technological challenges including HPHT wells, complex gas production and heavier oils require innovation and new players with fresh talent and ideas.

Clearly, industry needs to work together to maintain and enhance production and deliver standardised lower cost developments. UK Continental Shelf operators are now actively developing leaner operating models to extend field life and ultimate recovery.

I am, however, encouraged by the recent government focus on the industry, specifically the Wood and Fiscal reviews. A more positive fiscal environment is needed to build confidence and future investment. What is important now is that collaboration is sustained through the implementation phase and sets the industry up for long-term success.

How could professional bodies contribute?

Professional bodies continue to play an important role in promoting industries and career opportunities, and can very much help to sustain the talent pool. Professional bodies are perhaps the most obvious and recognisable avenue for those who wish to pursue continuing professional development (CPD) opportunities.

Industry fora and the opportunities to network and exchange ideas and experiences are, and will continue to be, an important part of a shared learning journey. Some of the biggest advances in technology and safety performance in the North Sea have come through collaborative efforts facilitated by strong professional bodies and trade associations.

Are you optimistic overall, about prospects for the future?

Very much so. This is an industry which has been defined by a spirit of endeavour and that spirit will help the industry take on the challenges that lie ahead in the 21st century.

The industry has come together before and has overcome numerous challenges in the past, including the oil price crashes of the mid-eighties and late 1990s. The future will see new opportunities such as the onset of a global decommissioning market with UK operators and supply companies working at the leading edge.

CCS could offer a new future for depleted reservoirs, and I’m pleased to see the UKCS playing a role here. Shell is working with a strategic partner, the Scottish power provider SSE, on an integrated CCS project taking carbon from the Peterhead gas-fired power station to the offshore Goldeneye depleted gas reservoir. If the project gets the go-ahead, this will be an industry first for the UK.

Undoubtedly the oil and gas sector will continue to face technology and cost challenges as we seek to lower our carbon footprint and compete with the range of energy sources being developed. Novel technology application in areas such as subsurface imaging is helping to revitalise future exploration prospects, and I’m delighted to be a part of changing the uncertainty of today into a strong foundation for success for tomorrow.