

In this issue...



▶ Fuels round-up



▶ Distribution and Marketing



▶ Process Safety update

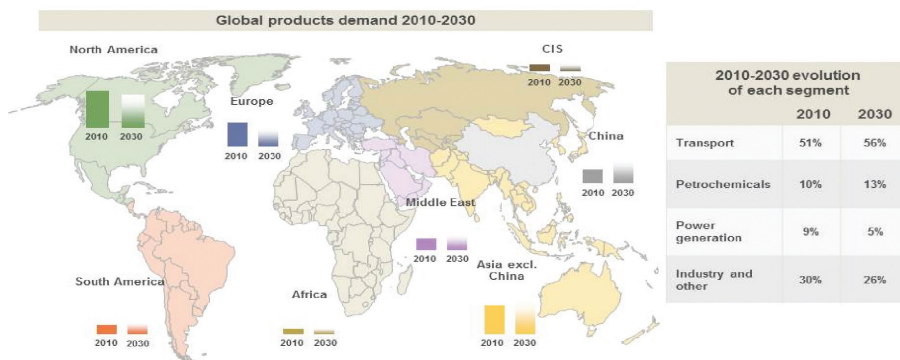
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Our downstream oil industry: a global challenge

UK pia
Refining Britain's fuels



According to the International Energy Agency, global energy demand is projected to rise, driven mostly by population and economic growth, by about 34% through to 2030, with fossil fuels continuing to provide the majority of the energy required. The IEA envisages that energy demand will increase by 54% in non-OECD countries during the same period. Equally, in 2012, Asia is set to dominate this growth in demand, with China alone accounting for about half of new demand. In Europe, oil is set to account for 85% of transport fuels in 2030 (IEA World Energy Outlook 2011), due mainly to an increase of 25% in demand for maritime and air transport.



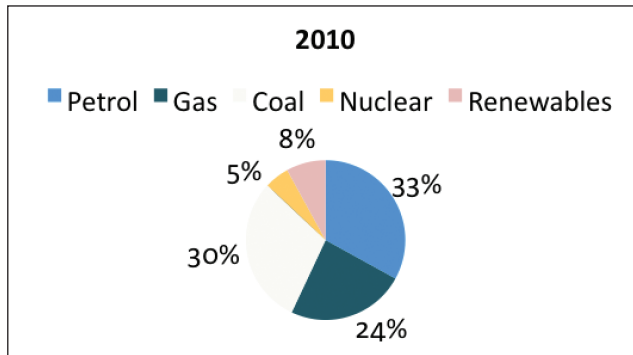
Source: Total

Although alternative energies will make an important contribution going forward, the global energy mix will still be dominated by

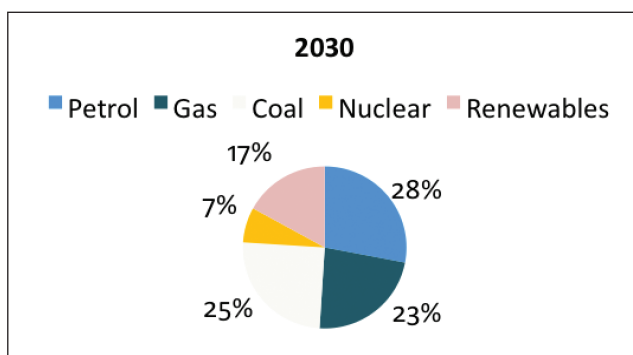
petrol (primary energy demand) even in the most aggressive scenarios. For instance, modern renewable energy - including wind,

SUMMER

solar, modern biomass, hydro, geothermal and marine – is estimated to meet only about 17% of total demand in 2030.



Source: BP Statistical Review of World energy 2011



Source: IEA World Energy Outlook 2011

In the UK, future total demand for petroleum products is likely to plateau. In 2011, demand amounted to just under 70 million tonnes - equivalent to about a third of the UK's total primary energy requirements. The vast majority (90%), was used as fuel (Source: DECC Energy Markets Outlook 2011 provisional data). Of this, road transport and aviation accounted for over 74% of demand. Although there was a reduction in overall transport fuel demand during the severe economic downturn between 2008 -2009, with little recovery since, petroleum products will continue to play a dominant role in meeting the UK's forecast future fuel requirements to 2030.

The downstream oil industry has undergone significant change in recent years. In particular, between 2008 and 2012, 30% of EU refining capacity has either changed hands, been converted to storage or closed down. A similar restructuring has taken place in the US where, within the last decade, over 20% of refineries have closed down. Energy analysts forecast that this trend will continue given the weak outlook for the sector and the legislative background in the EU.

The UK has the 3rd largest refining capacity in the Western Europe and provides a resilient and flexible infrastructure system. Though, it has not been immune to the structural changes affecting the EU and global refining landscape, mainly driven by weak local markets and uncertain future perspectives. Indeed, a weaker demand for oil products coupled with volatile market conditions, a stringent UK and EU environmental and

carbon legislative background and increased competition from large and efficient export refineries, particularly in Asia, have seen the industry facing a number of challenges. In order to adapt and compete in this increasingly competitive market, UK and EU refineries would require substantial long-term investments, particularly geared towards upgrading capacity to meet the growing demand for 'middle distillates' – diesel and jet fuel/kerosene. In contrast, refiners in emerging markets enjoy substantial competitive advantages over UK and EU refineries, ranging from strong growth in domestic oil demand to less stringent environmental requirements.

Meeting future energy demand

To meet the projected global energy demand increase is a major challenge. The IEA estimates that, for oil, the associated additional investment along the supply chain between 2010 and 2030 is \$8 trillion. Most of this investment (85%) is anticipated to be geared towards oil and gas exploration and production, whilst the global downstream oil sector accounts for a modest proportion estimated at \$979 billion. Most of the downstream investment is expected to take place largely in non-OECD countries where increased demand for oil products will be focused.

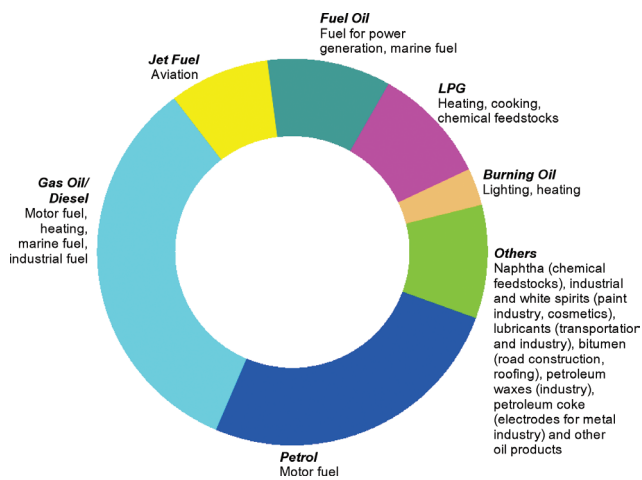
As key players in the supply chain, refineries will be at the heart of this challenge. Refineries have already successfully undergone a number of changes, adapting successfully to changes aimed at meeting, for instance, ever more stringent environmental standards, tighter fuel specifications and enhanced process safety. This has required significant investment at a refinery level. Yet, this investment has not significantly increased refining capacity or improved profitability of UK refineries relative to EU and non-EU competition. **As highlighted within UKPIA's recent study on the role of the refining industry in fuelling the UK's future, the response to this challenge will be critical in shaping the refining sector's future direction and its capability to be a secure and resilient source of energy for the UK. An example of the pressures facing the industry was the recent filing for insolvency of Petroplus Holdings and the subsequent administration of Petroplus's Coryton Refinery. UKPIA hopes that a buyer will be found for the facility. As energy analysts forecast that the difficult commercial climate for refineries is likely to continue in the coming years, the right policy environment, which does not place our domestic industry at a disadvantage with EU and non-EU competitors, will be key in ensuring that the UK refining and downstream oil sector can continue to play a pivotal role in the future as a reliable, resilient and secure source of transport fuels and other vital industrial feedstocks.**

.....the downstream oil industry is a lot more than keeping people and goods moving

The downstream oil industry in the UK is an extremely valuable asset: it provides about 34% of primary energy needs and supplies around 90% of national demand for petroleum

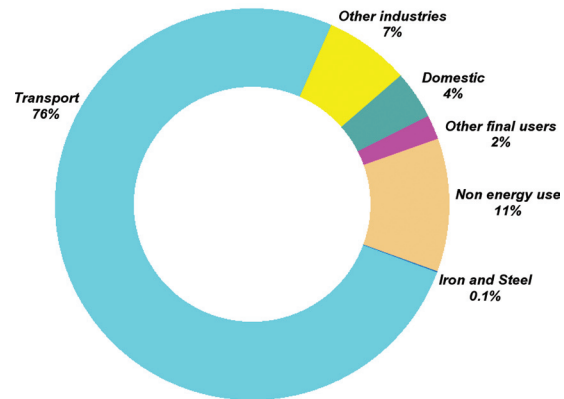
products. The industry is also a close partner to other industries, greatly contributing to the national economy by ensuring a stable and reliable supply of a number of feedstocks, such as petrochemicals for everyday items, lubricants and greases, heating fuels, solvents and so on. Furthermore, currently the UK has the 3rd largest refining capacity in Western Europe, comprising of 8 operational refineries, 50 major distribution terminals and 8,706 service stations. The market for transport fuels in the UK amounts to about 53 million tonnes per year, equivalent to about 49 billion litres or an average of 66 million litres of petrol and 70 million litre of diesel per day. The sector also supports 150,000 jobs across the UK, directly and indirectly. Indeed, the downstream oil industry is an important employer for chemical and engineering graduates and supports a number of a related vocational trainings and apprenticeships across the UK. The downstream oil industry also works in close partnership with research and academic institutions on a number of projects from safety to technology and skills.

Products and their use



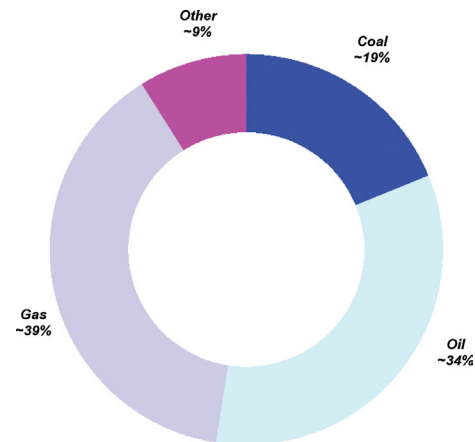
Data Source: DECC (DUKES), 2011 provisional data

Main uses of oil produce



Data Source: DECC (DUKES), 2011 provisional data

Oil accounts for 34% of the UK's energy needs



Data Source: DECC (Dukes) 2011 provisional data

For a copy of *Fuelling the UK's Future – the role of our refining and downstream oil industry*, visit www.ukpia.com/publications.aspx



House of Commons Energy and Climate Change Committee - 12th Report: Consumption-Based Emissions Reporting, Volume I

The Energy and Climate Change Committee's report on consumption-based emissions reporting, published on 18 April 2012, warns that:

- UK's record on cutting greenhouse gases is not as good as the Department for Energy and Climate Change's (DECC) figures suggest
- Carbon dioxide emissions from imported goods consumed in the UK are going up faster than Government is cutting CO₂ at home
- Government figures on consumption-based emissions - from imported goods - show that carbon dioxide emissions in 2009 were 20% higher than in 1990.

DECC's official CO₂ figures - that count territorial emissions from power stations and transport, etc., within UK borders - show nearly 20% reduction between 1990–2009. But research commissioned by the Department for the Environment Food and Rural Affairs (DEFRA) reveals that CO₂ emissions were 20% higher in 2009 if consumption based emissions - from imported goods - are included.

The fall in territorial emissions was not mainly the consequence of the Government's climate policy, according to the report. Rather, it was the result of the shift in manufacturing industries away from the UK and the switch from coal to gas-fired electricity generation that began in the early 1990s. Since 1990 carbon dioxide emissions from imports have almost doubled (from

166 million tonnes (Mt) CO₂ to 331 Mt CO₂ in 2009). If the UK wishes to encourage emissions reductions in countries that manufacture and export goods to the UK, the MPs say that the Government should recognise the growth in the UK's consumption-based emissions. Acknowledging that UK consumption is driving up territorial emissions in other countries could increase the UK's leverage over those emissions and help to secure a binding global agreement on carbon cuts.

The report concludes that the Department for Energy and Climate Change should no longer rely exclusively on territorial emissions as its primary policy driver. It adds that there is sufficiently robust data available to develop new policy options and identify carbon-intensive behaviours that are overlooked by concentrating on territorial emissions alone. Ministers should explore the options for incorporating consumption-based emissions data in to the policy making process and setting emissions targets on a consumption-basis at the national level.

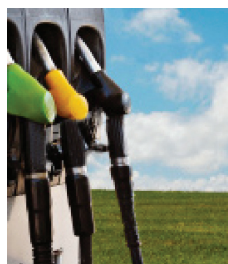
The independent Committee on Climate Change has also told MPs that it would welcome the opportunity to explore the implications that consumption-based emissions accounting might have for the UK's carbon budgets, and that it could undertake such work after it publishes its 4th progress report on the carbon budget in June 2012.

For a copy of the report, visit the publications page of the UK Parliament's website.

Fuels round-up

RTFO/RED

The Renewable Energy Directive (RED, 2009/28/EC) requires that the share of energy from renewable sources in all forms of transport in 2020 is at least 10% of the final consumption of energy in transport in that Member State.



Renewable Transport Fuel Obligation (RTFO) order was amended in December 2011 to reflect the carbon and sustainability criteria as defined in the RED. It also allowed double counting of biofuels derived from wastes, residues and from advanced sources. The volume targets for adding biofuels to road transport fuels remain unchanged from the existing RTFO at 4.5% volume for 2012/13 and 5% for 2013/14. The trajectory after 2014 through to 2020 has not yet been established.

The Fuel Quality Directive (FQD)

The European Commission's White Paper on Transport, published in March 2011, proposed a reduction of at least 60% of GHGs by 2050 with respect to 1990 (or 70% versus 2008 levels) from the transport sector. By 2030, the goal for transport will be to reduce GHG emissions to around 20% below their 2008 level.

The Fuels Quality Directive (FQD, 2009/30/EC) requires suppliers to reduce as gradually as possible the lifecycle greenhouse gas 'intensity' of transport fuel by 6% by 31st December 2020 compared with a 2010 baseline. The 6% reduction can be achieved through the use of biofuels, renewable electricity and a reduction in the flaring and venting of gases at the extraction stage of fossil fuel feedstocks. The FQD is not yet transposed into UK law and the DfT have indicated they will consult with stakeholders on its transposition during the summer.

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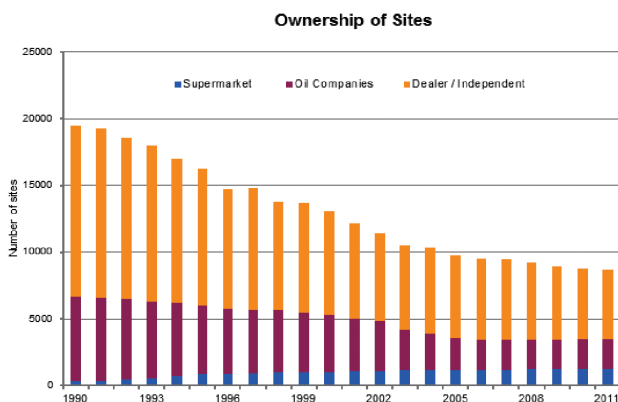
The downstream oil industry in the UK: distribution and marketing

Until the mid-1980s, the downstream oil sector was characterised by vertically integrated firms, which encompassed all oil related business activities, from crude exploration and production to refining, distribution and marketing.

For instance, at its formation in 1979, UKPIA had 13 members, which included several companies that, due to merger or acquisition, do not exist in the same form today, such as Amoco, Burmah, Elf, Gulf Oil, Mobil, Petrofina and Phillips Petroleum.

UKPIA now has 9 members, several of whom have no crude exploration and production, whilst others are engaged in refining and wholesaling only - yet others have no direct involvement with the operation of petrol filling stations.

The downstream oil sector saw fairly dramatic changes during the 1980s and 1990s. A key driver was supermarkets starting to offer road fuels at their bigger stores during the early '80s, now commanding about 40% of total UK petrol and diesel sales.



Source: Experian Catalist 2006-2011 – El Retail Marketing Survey 1990-2005

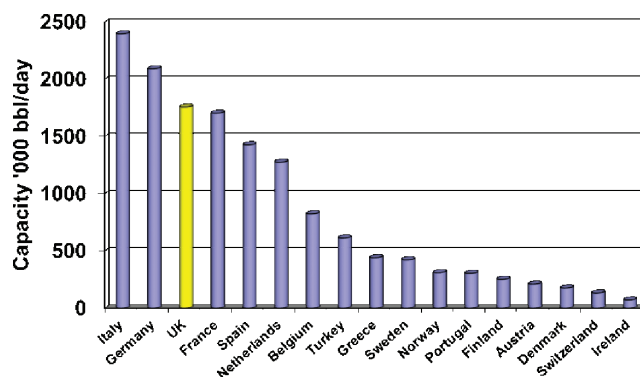
The strong competition, over the last three decades, and lower return on capital employed on downstream refining and marketing activities have resulted in several company mergers and acquisitions as undertakings seek critical mass. This has inevitably resulted in a significant downsizing in oil company downstream organisations – far fewer staff and overheads, and closure/consolidation of assets such as oil storage terminals. The distribution of road transport fuels has been part of these structural changes, with delivery of fuel to service stations and commercial customers moving from oil company fleets to provision by specialist logistics companies, such as DHL, Wincanton, Hoyer, Suckling, Turners, Suttons and TDG.

Although several global oil companies still operate as vertically integrated businesses, the oil industry is now, more than ever, a multifaceted sector where the emergence of specialised independents, operating in all segments of the

business, well reflects the increasingly competitive structure of the market in which they operate.

Downstream oil refining and marketing

Currently, the UK has the 3rd largest refining capacity in the Western Europe and provides a resilient and flexible infrastructure system comprising of 8 operational refineries, extensive private and government pipelines carrying 30 million tonnes of fuel each year, 50 distribution terminals and 8,706 service stations.



Source: BP Statistical Review 2010

However, UK oil refining and marketing remain a high volume/low margin, capital intensive business with below average returns on capital. Refineries operate between two international and liquid commodity markets: crude oil and the refined products. As each of these product streams has its own short term dynamics, with prices formed in international markets, the resultant spread between crude and petroleum product prices (which has to cover all associated costs of running a refinery and marketing business), is highly volatile and has traditionally translated in consistently low returns.

At a time when considerable levels of investment are required, this has added to the challenge of continuing to meet fuel demand in a safe, secure and affordable way, whilst conforming to ever more stringent environmental legislation.

These economic pressures have also been reflected in the high street, with the number of filling stations in the UK reducing dramatically from over 26,000 in 1979 to 8,706 at the end of 2011. Recently, around 450 filling stations on average have been closing each year and several oil majors have exited the retail market.



Future challenges

The UK Downstream oil industry has undergone significant changes over the past three decades. These changes have been driven by strong competition that has delivered pre-tax pump prices that have been consistently the lowest amongst major EU countries.

UKPIA and its members believe strongly that a healthy, robust oil refining and marketing industry is a vital element of the nation's future security of supply and of competitively priced petroleum products (transport fuels, chemical feedstocks, heating oils, etc.). They wish to continue working

with the Government and all stakeholders to deliver this.

The challenge is to ensure that in the coming decades the UK continues to have access to affordable, secure supplies of the required oil products, as both sources of crude oil and consumer demand change. This can be achieved by importing more products (jet fuel and diesel) to meet demand, and exporting surplus products (petrol and fuel oil), so long as those markets remain available, or preferably by investing in UK refineries. UKPIA and its member companies believe that the challenges ahead will be best met with a strong domestic oil refining industry with close links to the European and global oil markets.

Tanker drivers' dispute

The Unite trade union that represents tanker drivers who work for haulage companies delivering fuel to many of the UK's filling stations, announced in late March that a ballot of members indicated support for strike action over working conditions, including issues relating to safety.

With Easter around the corner and the possible risk of disruption to fuel supply, motorists hardly needed much prompting to do the obvious, even without added encouragement from a Cabinet Minister.

In the chaotic panic buying that followed, UKPIA's members worked hard behind the scenes to try and catch up with the huge sudden increase in demand and UKPIA liaised with DECC on the response to the problem. There is an emergency plan for the downstream sector- the National Emergency Plan Fuel - which has been developed over the years by DECC in close collaboration with the industry. Like all such plans, it is designed for emergencies so doesn't necessarily guarantee 'life as normal' but by having some degree of



advance planning in place, it aims to ensure that essential fuel supplies and a proportion of supplies for motorists can be maintained.

Compared with a decade or more ago, there is clearly less resilience in our fuel supply infrastructure not just because of fewer filling stations, distribution depots and refineries; cost impacts such as high value product and duty have resulted in a more 'just in time' approach to managing stocks and deliveries. That the system is unable to cope with full-on panic buying is no great surprise given that the fuel tank capacity of the UK's vehicle fleet when fully topped up is roughly twice that of filling stations. Vehicles may be much more fuel efficient these days but it makes very little short-term difference once they are running around with a full

tank. To have some chance of working, the plan requires collaboration across the industry and with a number of government agencies. It also requires some patience and forbearance from motorists which is rather more difficult to manage.

There will be some actions arising from this episode not least the fact that the industry must feel able to communicate in confidence with DECC officials and others.

After lengthy negotiations for several weeks between the parties at ACAS, it was very disappointing news at the end of April that Unite had recommended that drivers vote to reject settlement proposals in a ballot. However, in the ballot result announced on Friday 11th May Unite members, working for seven major oil distribution firms, voted by 51% overall on a turnout of 69% to accept the proposals. The prospect of strike action would have had the potential to cause serious disruption to the UK economy and moreover comes at a time when parts of the downstream oil industry are already facing serious challenges.

Process Safety update: exceeding good practice

Safety, management of risk and striving for operational excellence in process safety are key priorities for UKPIA members.

In its response to the Buncefield Major Incident Investigation Board (MIIB) recommendations, the Process Safety Leadership Group (PSLG) provided guidance relating to high reliability organisations and delivering high performance through culture and leadership. These address the 'softer' issues surrounding the methods used by major accident hazard sites to manage process safety. The PSLG published its 'Principles of Process Safety Leadership' to help industry tackle these challenges. These principles set out a strategy for how risks can be reduced through greater understanding, co-operation and learning between industry sectors and represent a new methodology for sector level process safety management. UKPIA members address these principles through the implementation of the Commitment to Process Safety.



As well as being at the heart of a number of joint industry/regulator and cross sector initiatives, such as the Process Safety Forum and the Chemical and Downstream Oil Industry Forum, UKPIA's commitment also includes the development of self-assessment modules - targeting specific areas of process safety which help the sector work toward excellence - and the analysis of sector level process safety performance through indicators which help to identify early signs of potential weakness and can influence the development of self-assessment modules, or the development of sector level guidance.

For more information on self-assessment modules, please visit <http://www.ukpia.com/process-safety/tools/self-assessment-tools.aspx>

For more information on sector level indicators, please visit <http://www.ukpia.com/process-safety/tools/other-tools.aspx>

For a copy of 'Principles of Process Safety Leadership', visit www.hse.gov.uk/comah/buncefield/pslgprinciples.pdf

EVENTS

Conferences

UKPIA's Director General, Chris Hunt, presented at **StocExpo** in Rotterdam on 13th March, on refiners' perspective on global tank storage demand, and at the **13th Annual European Fuels Conference** in Paris on 14th March on Alternative Fuel Vehicles: *What are the issues? What is the consumer's problem?*. Chris Hunt also addressed the **Platts Bunker Fuel Conference** in Amsterdam on 26th March, presenting on middle distillates. The Director General also chaired the **6th Annual Global Refining Summit** in Barcelona, 21/23 May.

UKPIA's Communications Director, Nick Vandervell spoke at the **Forecourt Live Show** in Birmingham in March on *Fuelling the UK's future – the role of our refining and downstream industry*.

Peter Davidson, UKPIA's Director Safety, Commercial & Projects, presented a paper on *Developing Guidelines for Competency Management Systems* at the **HazardEx 2012** conference on 28th February. Peter Davidson also presented at the **India Oil Leadership Conclave** in New Delhi in February 2012 on sector level process safety management.

For a copy of the presentations, write to info@ukpia.com

Gary Haywood, CEO of the PetroChina-INEOS Refining JV, was appointed President of the UK Petroleum Industry Association in January. Gary has over 30 years' experience in the oil industry, primarily within the Refining business, but also including roles in the Chemicals and Upstream segments. Gary began his career with BP in Australia and held a variety of technical, commercial and operational roles in Australia and the UK over his 26 years with BP.

In 2006, Gary joined INEOS Refining as the Refining Commercial Director, based at the Grangemouth complex.

He succeeds the outgoing President **Brian Worrall** of Valero, who retired at the end of March. The UKPIA team thanks Brian for his invaluable work as President of the Association.

We also welcome our new Council members **Eric Waugh** of Essar Oil (UK) and **Roger Hunter** of Shell.