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## The UK's downstream oil industry within the wider energy debate

**UK pia**  
Refining Britain's fuels



**For decades the downstream oil industry in the UK has enhanced the nation's security of energy supply through the reliable provision of a range of fuels and industrial feedstocks at competitive prices. During this time, it has also responded to changing fuel specifications and legislative requirements without impact upon consumers. However, the industry is now facing a number of challenges, the response to which will be critical in shaping its future.**

UKPIA and its members believe strongly that a healthy, robust oil refining and marketing industry is a vital element to the nation's future secure supply of competitively priced petroleum products, from transport fuels to chemical feedstocks and heating oils.

The challenge is to ensure that, in the coming decades, the UK continues to have access to affordable and secure supplies of the required oil products. This challenge will be best met with a strong domestic oil refining industry with close links to the European and global oil markets.

For this reason, and in order to generate increased awareness of the crucial issue of the UK's future sources of energy and the significant contribution that the nation's downstream oil sector will continue to make, UKPIA has produced a new

publication 'Fuelling the UK's future - the role of our refining and downstream oil industry'.

The key conclusions of the publication are:

- *Energy demand globally is growing and will continue to do so, especially in non-OECD countries*
- *UK energy demand is likely to show little growth or even decline in some sectors*
- *Meeting rapidly growing global energy demand poses considerable challenges requiring significant investment*
- *In all scenarios (Global and UK), oil will remain the major energy source for several decades*
- *Oil isn't running out yet but like many other raw materials is a finite resource, so greater emphasis on improving energy efficiency will be integral to underpinning future energy security while delivering cost-effectively emissions' reduction*
- *A whole range of fuels and technologies will be required as part of the future energy mix*
- *Moving to alternatives takes time and needs a consistent, clear policy framework based on sound science and cost effectiveness*
- *Since technology alone cannot deliver all the carbon savings required under legislative*

# WINTER

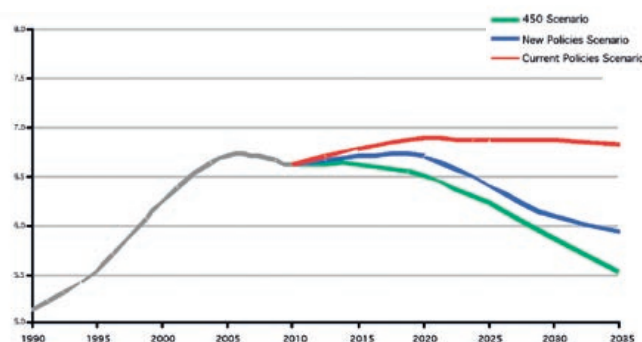
and other frameworks, major changes in consumer behaviour and lifestyle will be required to meet emissions' reductions; Government should strive for open debate of the costs to industry and consumers associated with meeting these targets, alongside the expected benefits

- The UK oil refining industry is a valuable asset making a significant contribution to the UK's economy with a long record as a reliable source of energy and industrial feedstocks, creating wealth, and supporting employment and skills
- The industry is facing major challenges; refining output needs to adapt to changing demand patterns and legislation but uncertainties about the impacts combined with a tough commercial climate make the investment case difficult
- In shaping its future energy strategy, the Government has to consider the UK's requirements for a robust and resilient energy sector and formulate policy that will help deliver this objective
- Oil refining will continue to be a vital part of the energy mix but without coherent policy direction, parts of the sector may be at risk resulting in unintended consequences for energy supply and resilience

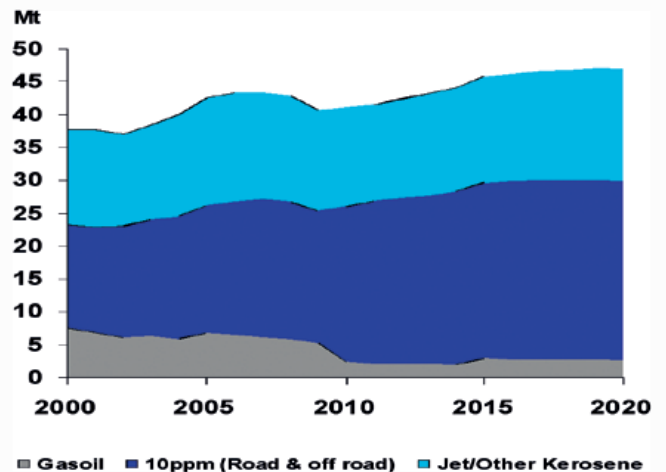
## Future demand for oil and its significance in meeting the UK's future energy needs

The industry recognises the Government's ambitions to reduce carbon emissions. However, the transition to a lower carbon environment whilst continuing to meet the future energy requirements of a diverse range of consumers, in a way that addresses security of supply, is a huge challenge. Not only does it require open debate about the various policy measures and actions expected to achieve these reduction targets, including impacts upon consumers in terms of costs and lifestyle changes, but also a clear appreciation of what energy security means for each sector of the economy. Ongoing engagement between government, industry and stakeholders will be necessary so that solutions adopted are kept under review in the light of technology developments and operational experience, to ensure they remain effective and that any unintended consequences are addressed.

The International Energy Agency's New Policies Scenario in the *World Economic Outlook 2010* envisages that in 2035, even with a range of measures to improve efficiency and reduce carbon emissions, oil will still be meeting around 82% of the EU's transport fuel requirements. In the UK, demand for road and air transport is also expected to grow by 2020 to 50 million tonnes, from the current 48 million tonnes [Source: DECC Oil statistics & Wood Mackenzie (DECC) forecast].



EU energy demand - transport sector under the three policy scenarios [Source: IEA World Economic Outlook, 2010]



UK demand forecast to 2020

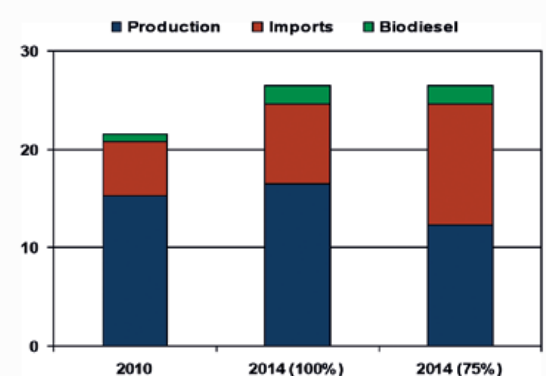
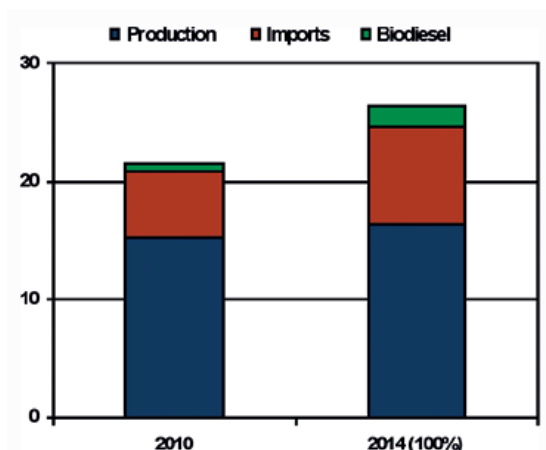
[Source: DECC Oil statistics & Wood Mackenzie (DECC) forecast]

Meeting the projected global energy demand increase is a major challenge. The IEA estimates that meeting this forecast will require around \$8 trillion of global investment in finding, producing, transporting and refining the oil required between 2009 and 2035. This investment includes US\$979 billion in global refining, of which \$81 billion is anticipated by the IEA to be made in the EU. However, this excludes investment to meet tighter fuel specifications, which has absorbed most of the refinery investment in Europe over the last two decades, averaging US\$6 billion per annum [Source: EUROPIA/Purvin & Gertz]. Investments of this magnitude require significant commitment on the part of refining companies. Given the volatile nature of earnings from the refining sector and the capital intensive nature of refinery upgrade projects, it is critical that investors have confidence in the policy and legislative frameworks in place in the EU and the UK.

## Refined product demand: the UK's middle distillate 'challenge'

Although long-term demand growth for petroleum is expected to be relatively modest, changing demand trends illustrate a notable shift. Of particular note is the continuing growth in demand of middle distillates for transport - diesel and jet fuel - and a decline in demand for gasoline and heating oils. With demand for middle distillates projected to grow in both the UK and Europe, net imports of these are expected to increase further. Currently, EU imports of diesel, mainly from Russia, are equivalent to 30 million tonnes a year, or about 15% of total consumption. Net imports of jet fuel averaged 5 million tonnes in the UK for the last two years, mainly from the Middle East. Imports of middle distillates from India and the rest of Asia have also increased, particularly since 2008. [Source: Purvin & Gertz for DECC 'Developments in the International Downstream Oil Markets and their Drivers: Implications for the Refining Sector', 2011].

Even though the UK is a large net exporter of heavy fuel oil and, along with the rest of the EU, a net exporter of gasoline, particularly to the US, the challenge for the UK oil industry is to be able to maintain and develop infrastructure to deliver the required volumes of fuel to the market whilst meeting biofuel targets.



Note 1: **Indicative graphs**

Note 2: All 10ppm sulphur (includes Non Road Mobile Machinery)  
100% is based on historic refinery production,  
75% reduced refinery production.

**Please note these are averages - not all refineries are the same**  
(Source: DECC and HRMC 2010 data)

In order to do so, UK refineries will need to operate on a level playing field with EU and non-EU competitors, and attract the crucial investment needed to compete at a global level whilst meeting stringent legislation and associated additional costs (e.g. Renewable Energy Directive; Fuel Quality Directive; EU Emissions Trading Scheme Phase III; Carbon

Reduction Commitment; Energy Efficiency Scheme; Industrial Emissions Directive and increasing obligation for Compulsory Stocks).

Indeed, these requirements require substantial investments, probably continuing around historical levels of about \$600m / year, within a sector that has been under enormous pressure and exposed to significant risk of 'carbon leakage'. Therefore, confidence in future policy direction and stability in the way it is applied is paramount. This will ensure that we can meet the energy needs of the future, with a healthy and robust downstream oil industry continuing to play an essential part in keeping the nation's wheels turning and in supporting key economic activity.

## Conclusions and policy recommendations

To help achieve these objectives, UKPIA seeks a legislative environment that:

- is based on constructive open dialogue to help reach solutions that meet policy objectives
- is realistic and practical
- is based on sound science and cost effectiveness
- provides a level playing field throughout EU member states and avoids placing UK refineries at a competitive disadvantage in relation to its EU and non-EU competitors
- is flexible and developed on a timescale that engenders investor confidence
- is reviewed periodically in the light of technical and scientific developments

and

- is allied to a policy vision that helps maintain security of energy supply and resilience, to support the UK economy

For a copy of UKPIA's new publication visit [www.ukpia.com/publications](http://www.ukpia.com/publications)

## Fuels round-up - Renewable Energy Directive (RED)

The European Commission's Renewable Energy Directive (RED) mandates a target of 10% by energy in transport fuels from renewable sources by 2020, along with mandatory carbon and sustainability requirements for any biofuels used.

The UK has transposed the RED by an amendment to the Renewable Transport Fuels Obligation (RTFO) Order, which commenced in April 2008. Initially this amendment mandates that all fuel passing a duty point will have to meet the RED's carbon and sustainability criteria, whilst volume targets for adding biofuels to road transport fuels remain unchanged from the existing RTFO. The RED has been approved by Parliament and became effective from 15th December 2011.

# Interview - Peter Davidson

## Process safety in the downstream oil industry

Nunzia Florio interviews Peter Davidson, UKPIA's Director, Safety, Commercial and Projects. Peter's responsibilities encompass oversight of all UKPIA's safety and commercial roles, including the Retail Policy Working Group and the Petrol Retailers National Safety Group, who manage the Forecourt Contractor Safety Passport.

Peter joined UKPIA in January 2009 as Process Safety Programme Manager, having previously worked for ABB, and has extensive experience of safety management and certification in a number of industries including pharmaceutical, chemical and nuclear. He was appointed Director of Safety, Commercial and Projects on 2nd September 2011.

**UKPIA and its members are working on a number of initiatives aimed at promoting and delivering excellence in process safety.**

Yes, we are strongly committed to improving process safety in the downstream oil industry and to promoting and working on the development of standards, procedures and specifications that cover all segments of the industry. The initiatives we are focusing on at present are but a few examples of this commitment.

**UKPIA is a member of the Process Safety Forum. How is the Forum structured and what are its main focus areas?**

The Process Safety Forum, of which UKPIA is a member, was established in 2009 to provide a platform where initiatives, best practice, incident learnings and process safety strategy could be evaluated and shared across industry sectors.

The Forum's membership encompasses the upstream oil and gas, downstream oil, tank storage, chemicals, nuclear, rail, engineering and construction and energy networks sectors.

One of its key focuses is to review independent reports of significant incidents with the aim of highlighting areas that may warrant further investigation.

Most recently, the pan-industry forum reviewed the Nimrod XV-230 incident report principally in relation to the area of competency assurance of third parties and, more specifically, looked at the competency of procurement departments that engage third parties. The review resulted in a joint project between the UK Sector Skills Council (COGENT) and UKPIA aimed at producing guidance into the key elements of good competency management systems. This guideline was released in June 2011 and can be found on [www.cogent-ssc.com](http://www.cogent-ssc.com).

**UKPIA has also been working on Safety Alerts. Can you tell us more?**

Yes. Another key element of the Process Safety Forum's work is the review of high level learnings, which are collected and published as *Safety Alerts*. *Safety Alerts* are available on UKPIA's website ([www.ukpia.com](http://www.ukpia.com)) and provide valuable insights into represented industry sectors' common issues, such as tank over-pressurisation, dealing with elevated levels of mercury in crude oil and **storage and handling of self-reactive energetic substances**.

**Can you give us an example of the work carried out by the downstream industry on high level learnings?**

One of the safety alerts on the impact of valve seal compatibility with Gasoline/5% Ethanol mix (E5) on terminal fuel loading racks, resulted in the formation of a working group, comprising of industry, regulator and union representatives (through the Chemical and Downstream Oil Industry Forum - CDOIF). The working group examined good practice on architectures of overfill protection systems at terminal loading gantries and hazard awareness during tanker filling operations. The guidance developed by the group was published in May 2011 and is now widely referenced by both industry and regulator when reviewing existing and designing new loading rack systems and work procedures. All CDOIF guidance is available from the UK Health and Safety Executive's website - [www.hse.gov.uk](http://www.hse.gov.uk).

**We strive to achieve excellence in process safety. What processes are in place to target specific areas of process safety?**

UKPIA's commitment to process safety also includes the development of so-called *Self-Assessment Modules* which target very specific areas of process safety. These modules are not aimed at assessing against current good practice, but represent the sector's goal to achieve excellence in process safety. Each *module* is developed with the direct involvement of members companies' personnel, encouraging support for the process at individual members' sites.

To date, self assessment modules have been produced for Management of Change, Corrosion under Insulation, Successful Leadership and Tank Inspection. These are also available on UKPIA's website [www.ukpia.com](http://www.ukpia.com).



### How does self-assessment work?

All comparative data from assessments is anonymous and collated into confidential reports, indicating overall performance levels. This information may be then used to target specific improvement programmes, with assessments repeated periodically to establish improvement over time.

Self-assessments provide an important mechanism by which industry can critically assess itself against key process safety procedures, identify areas of potential improvement and measure improvements over time.

### UKPIA has been working with the American Petroleum Institute on performance indicators. Can you tell us more?

First of all, indicators are extremely valuable in driving improved performance of process safety in the refining, oil storage and petrochemical industries.

UKPIA members have adopted the American Institute of

Petroleum (API) standard RP 754 - Process Safety Performance Indicators for sector level reporting of UK Refining and Petrochemical Industries. This standard provides an agreed methodology for sector level reporting and is based around four tiers of information:

- Tier 1 - a loss of primary containment with the greatest consequence
- Tier 2 - a loss of primary containment with a lesser consequence
- Tier 3 - a challenge to a safety system that progressed along the path to harm, but stopped short of a tier 1 or tier 2 event
- Tier 4 - performance of individual components of a safety management system

We are currently collecting data for Tier 1, 2 and 3 events.

A small number of potential Tier 4 indicators for the sector are being reviewed.

**For more information visit [www.ukpia.com/process-safety](http://www.ukpia.com/process-safety)**

## House of Commons Debate on Road Fuel Prices

In advance of the House of Commons debate on 15th November 2011 to consider the impact of high fuel prices, the role of fuel duty and measures that might be taken to alleviate the impact of fluctuations in pump prices, UKPIA published a briefing paper explaining the numerous factors that affect the price of fuel at the pump.

- In 2010, on average, 64% of the major brand pump price of petrol in the UK was made up by excise duty and VAT. During the period January to July 2011 the average was 61% (Source data: *Wood Mackenzie*)
- Fuel retailing in the UK remains a high volume, low margin business due to strong competition
- Major brand pump prices in the UK, excluding duty and tax, have been consistently amongst the lowest in Europe over the last 8 years
- Aside from duty and VAT, the major influences upon pump prices are:
  - the cost of crude oil on the international market
  - the cost of refined products sourced from refineries in the UK and internationally
  - the US dollar/sterling exchange rate
- Independent data shows a strong correlation between changes in pump prices, both up and down, and movements in the international market prices of crude oil and refined products, and the \$/£ exchange rate
- There has been increasing demand and tighter supply for diesel and middle distillates in the UK and globally (Source: *DECC Statistics*)
- At the end of Q1 2011 there were 8,767 filling stations in the UK, of which close to 2,200 were owned by UKPIA members, 1,266 by supermarkets and 5,301 by independent retailers. Supermarkets accounted for 40% of the retail fuel market in 2010. (Source: *Experian Catalist*)
- The UK refining sector remains under severe pressure. Data from *Wood Mackenzie* indicates that gross refining margins\* declined rapidly in 2010 and have been close to negative in 2011
 

\* (the difference between the cost of Brent blend crude oil and the value of refined products produced)

For more information and a copy of the briefing visit [www.ukpia.com/publications](http://www.ukpia.com/publications)



# EVENTS

## UKPIA highlights the vital contribution of the oil refining industry in Wales at launch of new publication

On 2nd November 2011, UKPIA launched its new publication on the contribution of the refining industry in Wales and the UK, at a reception at the Wales Millennium Centre, kindly hosted by Mr. Paul Davies AM, Assembly Member for Preseli Pembrokeshire. The event, which also marked the opening of UKPIA's representative office in Cardiff, was addressed by Mr. Paul Davies AM, the Rt. Hon Carwyn Jones, First Minister of Wales and Chris Hunt, UKPIA's Director General.

Marking the launch, the First Minister said: *"The petroleum industry plays a key role in the Welsh economy and I am delighted to see UKPIA continues to be committed to Wales. In Wales we have two UKPIA members which, between them, provide high value employment at a time when we are all weathering the choppy waters of the world-wide economic downturn. I am pleased that Valero Energy and Murco Petroleum have been meeting as a group in Wales to consider industry issues with particular emphasis on the industry in Pembrokeshire. I wish the sector every success"*.

*"I am delighted to be hosting this event to highlight the importance of the oil refining industry to not only Pembrokeshire, but Wales and indeed the United Kingdom. The two refineries in Pembrokeshire employ a total of 930 full time employees with a similar number of contract employees. The value of the oil industry to the economy of Wales is estimated at £90 million per year in terms of salaries and business rates. This highlights the huge significance of the oil refining industry in Pembrokeshire, and its importance to the Welsh economy",* said Paul Davies AM.

UKPIA's Director General, Chris Hunt, remarked: *"The opening of our new representative office in Cardiff is a welcome opportunity to highlight the contribution of oil refining in Wales. For around 40 years, the south-west corner of Wales has played a pivotal role in the oil industry in Europe and this important occasion is a testament to this valuable contribution not only in terms of energy security and resilience, but also employment, skills and wider contribution to the economy. We thank Paul Davies AM and the First Minister for helping us mark this momentous event"*.



Paul Davies AM, Assembly Member for Preseli Pembrokeshire



The Rt. Hon Carwyn Jones, First Minister of Wales



Chris Hunt, UKPIA Director General

# Party Conferences

UKPIA attended all three national party conferences in September and October. Party conferences represent an important opportunity to engage with MPs and provide a valuable forum for discussion on the major contributions of our industry in the UK.

## House of Commons Reception



*L to R: Stephen Crabb, MP for Preseli Pembroke and Brian Worrall, UKPIA President*

UKPIA held its annual House of Commons Reception on 21st June, kindly hosted and addressed by Stephen Crabb, MP for Preseli Pembroke. The reception, attended by MPs, Lords, industry representatives and academics, also marked the launch of UKPIA's annual Statistics Review. The reception, also addressed by UKPIA's President Brian Worrall, highlighted the importance of the downstream oil industry in the UK, in terms of employment and skills, security of supply and investment and contribution to the UK economy.

**For a copy of UKPIA's Statistics Review 2011 visit [www.ukpia.com/publications](http://www.ukpia.com/publications)**

## Conferences

On 14th and 15th March, UKPIA's Director General, Chris Hunt, presented at the **CONCAWE** conference in Brussels. The conference provided a platform for discussion on key developments in the UK's downstream oil industry, along with the key contribution the industry makes and will continue in the future. Chris Hunt also addressed industry representatives at the **Refining Summit** in Bremen on 12th and 13th December.

UKPIA's Communications Director, Nick Vandervell, spoke at the **PetroTrend 2011** conference in Warsaw in March, highlighting the challenges facing the UK's refining industry.

On 19th and 20th April, Peter Davidson, UKPIA's Process Safety Programme Manager spoke at the **Chemical Safety Board and High Reliability Conference** in Washington outlining the UK's downstream oil industry crucial work in process safety and high level learnings.

On 3rd and 4th November, UKPIA's Technical Director, Hugh Tucker, presented at the **Platts** conference in Hamburg on the UK's middle distillates 'challenge'.

**For more information on presentations, write to [info@ukpia.com](mailto:info@ukpia.com)**

# PEOPLE

On 2nd September UKPIA appointed **Peter Davidson** as Director, Safety, Commercial and Projects. Peter's responsibilities will encompass oversight of all UKPIA's safety and commercial roles, including the Retail Policy Working Group and the Petrol Retailers National Safety Group, who manage the Forecourt Contractor Safety Passport. Peter joined UKPIA in January 2009 as Process Safety Programme Manager, having previously worked for ABB, and has extensive experience of safety management and certification in a number of industries including pharmaceutical, chemical and nuclear.

On 5th August, UKPIA welcomed two new members: **Essar Oil (UK)** and **Valero Energy** following Essar's purchase of Shell's Stanlow refinery and Valero's acquisition of Chevron Limited, which includes Pembroke refinery and extensive marketing and logistics assets in the UK and Ireland. UKPIA welcomes its two new members.

We also welcome **Frank Willsdon** as Council representative for Essar Oil (UK).