

# **Brent Market Discussion Note**

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# The Problems with Brent

The international oil community uses an oil price benchmark, Brent, which sets the price of physical, forward, futures, swaps and options contracts throughout the world. Brent has been on a declining production trajectory for more than 20 years exposing it to potential price squeezes and manipulation, the impact of which is magnified by the number of contracts that are calculated using formulae that refer to one of more of the Brent price indices.

To shore up the number of physical cargoes available to inform the price-setting process the industry has added alternative grades of oil that can be delivered if Brent availability is squeezed so that its price exceeds its reasonable market value, as evidenced by the price of competing grades. Hence we now have a Brent basket—currently Brent, Forties, Oseberg and Ekofisk (BFOE)—to boost the number of cargoes that can be delivered into the 30-Day BFOE forward contract and to inform the physical, wet cargo Dated BFOE price discovery process.

There are a number of problems with this existing situation:

- The production content of the BFOE basket has continued to decline such that there is a prospect of the price again becoming open to manipulation. More production needs to be added to the basket to augment the deal evidence on which price assessments are based.
- As the existing BFOE basket demonstrates, the more dissimilar are the grades of crude oil added to the basket, the less keen are companies to trade the contract without some form of adjustment to compensate them when they have to give or receive delivery of Forties, Oseberg or Ekofisk, rather than Brent.
- Forties is much higher in sulphur than the other three grades that can be delivered into the 30-Day BFOE contract and therefore it usually has the lowest price. So if a trader buys a BFOE cargo it is likely to receive a Forties cargo. The forward contract provides that the trader will be compensated for the higher sulphur content of Forties compared with Brent, Oseberg or Ekofisk, in accordance with a sulphur de-escalator price adjustment formula set by Platts. There is no corresponding sulphur escalator applied if a Forties cargo with an unusually low sulphur content is supplied, for example when the high sulphur Buzzard field is shut in for maintenance or other reasons and does not therefore form part of the Forties Blend stream temporarily.
- Leaving aside the sulphur price de-escalator, Forties is still usually the cheapest grade in the basket of four and is therefore the grade that is normally delivered into the 30-Day BFOE contract. A rational supplier will always deliver the cheapest grade possible when it has the option to do so. But sometimes there is not enough Forties available to deliver because a number of refiners actually like to refine it and do not want to use it to supply 30-Day BFOE contracts. Unfortunately standard economics break down at this point and the price of Forties does not go up when Forties is in short supply. If the price of Forties went up in such circumstances Forties would no longer the cheapest grade in the basket. In which case, logically, Brent, Oseberg or Ekofisk would be delivered instead of Forties. But in the peculiar world of the BFOE basket an additional quality price premium has to be applied to Oseberg and Ekofisk to incentivise producers to supply those grades when there is no Forties available. This quality premium is set by Platts. In other words, when Forties is in short supply its price doesn't go up. So instead of market forces rationing the supply of cargoes in accordance with their price, Platts provides a quality premium assessment to restore the true difference in value between Forties and Oseberg and Forties and Ekofisk. This is one of the troubling flaws at the heart of the BFOE basket methodology.

• There is no equivalent quality premium applied to incentivise the delivery of Brent when there is no Forties available. This is explained away as Brent being the "label" on the contract, Brent is what was expected to be delivered absent any shortage of Brent Blend at Sullom Voe. The original plan was that Forties, Oseberg and Ekofisk would only be delivered if Brent was squeezed. The quality premia that actually apply in the 30-Day forward contract are quality premia set by reference to the cheapest grade in the basket, which is typically Forties, not Brent. This is a further flaw at the heart of the BFOE basket methodology.

These are the issues that are undermining the liquidity and the reliability of the Brent suite of contracts that have historically made Brent a benchmark grade of oil.

# Propping Up the Status Quo

Platts has initiated a consultation on the possibility of adding **Troll** to the Brent basket some time in 2017. Consilience is all for the introduction of Troll, now that it has been confirmed that its quality will not be downgraded by commingling with Johann Sverdrup, a future Norwegian giant field with considerably poorer quality than Troll or any of the BFOE grades. We expressed this opinion back in 2014 in our study entitled "The Brent Oil Price Marker: Future Prospects".

The downside of introducing Troll to the basket is that, because the large volume of Johann Sverdrup, which reaches landfall at Mongstad, (the port from which Troll is exported), will not be added to Troll Blend, Troll's contribution to the number of cargoes in the BFOE basket will be insufficient to provide a lasting solution to the problem of the dwindling cargo pool available to inform the benchmark price-setting process. It is just another band aid on a broken leg.

Platts is also teeing up Norwegian **Aasgard** and **Alvheim** to be the next generation of cargoes that might be added to the basket in future when production dwindles some more. It is doing this by beginning to publish oil price quotations for those two grades from 1<sup>st</sup> February 2017.

There is no harm in quoting another couple of grades in Platts' publications, except that it puts the cart before the horse. The reason we do not currently have standardised published price quotes for these grades is that they are not actively traded. And if they are not actively traded, why should we consider them as candidates for inclusion in the BFOE basket and the benchmark price formation process?

**Flotta Gold** (the old Flotta with Golden Eye commingled into the blend) is another obvious candidate for inclusion and it is surprising that it has not yet been added to the BFOE basket. Flotta used to be too heavy and too sour for inclusion in the light, sweet BFOE basket. But it's new, improved quality, combined with the ongoing deterioration of Forties Blend quality as Buzzard forms an increasing proportion of remaining production, makes Flotta Gold of not significantly worse quality than the current Forties Blend.

The stumbling block in adding Flotta Gold to the basket might be the significant shift in the balance of power in price setting amongst the larger oil and trading companies if Flotta were to replace Forties as the least valuable grade in the basket: the price of Dated Brent each day is set by the cheapest of the basket grades. Including Flotta Gold in the benchmark basket would catapult it straight into the regulatory limelight as it would be, de facto, the new Dated Brent. We have discussed long and hard in previous publications how many contracts around the world are influenced by the price of Dated Brent, so this would be a more significant step than it might at first appear.

Faute de mieux, as more and more increasingly disparate grades get added to the BFOE basket an accurate assessment of the size of the Forties sulphur de-escalator and of the Oseberg/Ekofisk quality premia will become increasingly important. This is particularly so for sulphur as the world will become increasingly short of desulphurisation capacity in the light of radically reduced limits on the sulphur content of marine fuel from 2020.

The stage is also being set for the inclusion of grades of crude oil that are delivered outside the North Sea into what has hitherto been a North Sea BFOE basket. This raises the spectre of more quality and freight adjustment factors being set and applied to grades from further afield when they are delivered into the 30-Day BFOE contract and used to assess the price of Dated Brent.

# Kicking Away the Crutches- the Consilience Suggested Brent Methodology

The addition of any of the four grades mentioned above —Troll, Aasgard, Alvheim and Flotta Gold- to the BFOE basket, if accepted by the market, would do no more than maintain the unsatisfactory status quo a bit longer.

What we need is a recognition that Brent, Forties, Oseberg and Ekofisk are all on a declining production profile and over time any new grades that are added will decline too. As replacement grades get added to the basket over time the question of proliferating quality premia, and possibly later, opaque freight adjustment factors will have to be addressed. So too will the question of to which base price these premia should be applied if Brent is gone and some grade other than the suspiciously rigidly-priced Forties is the least valuable grade in the basket.

This is not an ideal world, and there is no perfect solution, but here is an outline of a pricing system that could be made to work if vested interests were set aside, or in response to regulatory pressure.

- Set a reference quality for Brent system crude oil either from a widely publicised assay of
  typical production quality delivered FOB Sullom Voe Terminal or from a hypothetical Brent
  quality that would survive the cessation of actual Brent production (the Brent Standard).
  This would be the base quality represented by the Dated Brent price quotation and the base
  case Brent quality to be delivered in the 30-Day BFOE contract;
- Set quality limits for the alternative grades of crude oil that price reporting agencies (PRAs)
  can consult when assessing the price of Dated Brent or that can be delivered into the 30Day forward Brent contract;
- Set distance limits for the alternative grades of crude oil that PRAs can consult when assessing the price of Dated Brent or that can be delivered into the 30-Day forward Brent contract;
- Apply a price adjustment depending on how much the quality of the grade actually assessed or delivered diverges from the Brent Standard quality, within the permitted limits;
- Apply a price adjustment depending on how much the location of the grade actually
  assessed or delivered diverges from the Brent Standard location, i.e. Sullom Voe, relative to
  the centre at which it is refined. (This is explained in more detail later under the heading
  "Freight Adjustment".

This would put an end once and for all to any suggestion of a squeeze because, if there were to be any attempt to "corner the market", any grade of oil within the permitted quality and distance limits could be included when the PRAs are assessing the all-powerful Dated Brent price quotation and when short sellers of 30-Day Brent came to cover their positions. The PRAs could look at deals in any grade within the permitted quality and distance limits and adjust its price to a Brent Standard

equivalent using the recognised industry adjustment methodology contained in the Brent forward contract.

To make this concept workable some discussion of details is required.

#### An Important Principle

Any attempt to change the status quo will be met with howls of protest along the lines that the new version is not how "real traders actually trade" and the suggestion made above is no different.

The concept of the basket originally attempted to achieve a solution to Brent squeezes of the type that proliferated in the 1980s and 1990s. If Brent was squeezed its price went up and one of the three alternative grades would be cheaper to deliver, thereby breaking the squeeze. We should not lose sight of the fact that that is still what we are trying to achieve.

#### Quality Adjustment: the Current Problems

The grades of crude oil in the current BFOE basket are broadly similar, but not identical, in quality. They are sufficiently different that if a refiner were to buy Brent it would not be indifferent if Forties, Oseberg or Ekofisk were to be delivered. But the original BFOE contract assumed that a refiner would be indifferent to which of the four grades was actually delivered because there was originally no price differential applied if an alternative grade was delivered.

However, consider the circumstance where a refiner buys a 30-Day BFOE forward contract with a view to running Brent in its system to produce, say, lube oil. If the Brent forward contract was squeezed, perhaps Ekofisk might be delivered instead of Brent. It was *not* anticipated that the refiner would actually run Ekofisk, which is a predominantly gasoline crude, in its refining system. It was understood that the refiner would sell the physical Ekofisk cargo and buy either an unsqueezed *Dated* Brent cargo or a cargo of another lubes-approved grade entirely.

As indicated above, the forward contract was based on the assumption that sellers would act rationally and would not supply, say, Ekofisk unless Brent was subject to a squeeze that inflated its relative price artificially. So the lack of a price adjustment for alternative grade delivery initially was not deemed to be a stumbling block to the efficient operation of the contract.

This was fine up until 2007 when the high sulphur Buzzard field devalued Forties Blend and a Forties sulphur price de-escalator had to be introduced. Inevitably different refiners each have their own views on at what level the sulphur price de-escalator should be set: this will vary depending on how much desulphurisation capacity is available at each refinery.

Nevertheless players in the 30-Day BFOE market have been reconciled to allowing Platts, a PRA, to determine and announce the value of the sulphur price adjustment factor. Those who did not accept Platts' assessment of the sulphur de-escalator exited the 30-Day BFOE market.

Then, as indicated above, owners of Oseberg and Ekofisk cargoes stopped delivering those grades into the 30-Day BFOE contract, even when there was insufficient low quality Forties or scarce Brent around. The fundamental economic principle that when a commodity is in short supply its price goes up, does not happen to the 30-Day BFOE contract. Sellers require a further incentive not provided by free market forces to encourage them to deliver Oseberg or Ekofisk. This incentive is given in the form of a quality premium the extent of which is again set by the PRA, Platts.

Again different refiners each have their own views on at what level these quality premia should be set: this will vary depending on how much separation, treatment and upgrading capacity is available

at each refinery. Those who did not accept Platts' assessment of the quality premia again exited the 30-Day BFOE market.

If market forces were working perfectly it would be immediately obvious if Platts was setting the sulphur de-escalator or the quality premia too high or too low because there would be a rush to deliver over-valued elements and a dearth of deliveries of under-valued elements. But the market is imperfect and is not providing these clear signals. These imperfections will be exacerbated if more diverse grades are added to the basket.

The solution suggested here is to adopt a more mechanistic approach to setting grade differentials amongst a wider range of grades that qualify for inclusion in the basket using a Value Adjustment Mechanism/Quality Bank methodology explained below. But which mechanism to choose?

### Compensation for Quality Variations: Precedents and Off-the-Shelf Solutions

There would be no need to re-invent the wheel to achieve an acceptable price adjustment mechanism to compensate for differences between the quality of the Brent Standard and the quality of an alternative grade that is actually delivered: most blended grades of crude oil are subject to some form of value adjustment mechanism (VAM) that compensates or penalises companies inputting crude oil to a pipeline for any change in quality between the crude input at the start of the pipeline and the blended crude re-delivered at the other end of the pipeline.

Some VAMs compensate by adjusting the number of barrels attributed to a party, giving more to companies whose oil quality has been degraded and less to companies whose oil quality has been improved. In other VAMs, typically called Quality Banks, the compensation can be achieved with cash rather than in kind. The Quality Bank methodology is more prevalent in the USA, but cash compensation is more likely to prove workable than a volume adjustment for the type of alternative grade delivery mechanism under discussion here.

In the existing Brent pipeline the VAM is called the BOLS system; in Forties it is the Genesis system, but there are numerous other examples around the world. This type of methodology could be adapted to fit a new 30-Day Brent Standard forward contract that accepted delivery of a wider range of crude oils than the existing four dwindling grades, but still within acceptable limits.

If the oil industry is prepared to accept that a VAM or Quality Bank can re-distribute value amongst a wide range of commingled fields in a blend, it is but a short step to accept that a VAM or Quality Bank can re-distribute value when delivering alternative blends of crude oil.

When it comes to quality compensation, there are also proprietary, independent models already in existence that could provide an off-the-shelf solution. For example, the Haverly H/Comet model<sup>1</sup> is one with which Consilience is familiar, although doubtless others exist.

One of the general uses to which models such as Haverly can be put is to work out the Gross Product Worth<sup>2</sup> (GPW) of any grade of crude oil, A, and compare it with the GPW of a benchmark grade, B, for which a market price quotation exists. The Market Price of grade "A" (MP<sub>A</sub>) can then be estimated as follows:

<sup>&</sup>lt;sup>1</sup> https://www.haverly.com/main-products/13-products/11-hcomet

<sup>&</sup>lt;sup>2</sup> GPW<sub>crude</sub>=  $\Sigma$  ((Yield of Refined Product 1 X Price of Refined Product 1) + (Yield of Refined Product 2 X Price of Refined Product 2) + ((Yield of Refined Product 3 X Price of Refined Product 3) etc.)

 $MP_A = MP_B + / - (GPW_B - GPW_A)$ .

In the case of the expansion of the BFOE basket to include more disparate grades, such a model could be applied to replace the existing unsatisfactory Forties sulphur de-escalator and the existing Oseberg and Ekofisk quality premia. Instead, a quality premium *or discount*, as appropriate, could be established based on the difference between the GPW of each substitute grade<sup>3</sup>, (currently only Forties, Oseberg or Ekofisk, but in time a much wider pool of deliverable grades) and the GPW of the reference grade, the Brent Standard<sup>4</sup>.

There will be much debate over which product price set should be used in cranking out GPW differentials from a VAM or a proprietary system like Haverly. For example should the GPW calculations be based on product prices CIF ARA? Rotterdam barges? Med prices? Singapore prices? Refined product price benchmarks published by PRAs have their own imperfections and inconsistencies and it requires a practised eye to ensure that, in the pursuit of a mechanism for establishing crude oil differentials there is consistency in the product price set used to compare two crudes and that the product price set is relevant to where the crude oil is being refined, not where it is produced.

Similarly there will be debate over the assumed level of sophistication of the VAM or refinery model used to calculate the GPW differential between two grades of crude oil. Should it be primary distillation only? Hydroskimming? Cracking? Coking? Again the assumed level of sophistication ought to be relevant to the region where the crude oil is being refined, not where it is produced.

A further question would be: should the most sophisticated refinery in a region be selected or something closer to an average of the distillation, treatment and upgrading capacity of the region in question? Consilience would suggest the latter since the objective is to compensate a buyer of 30-Day Brent for receiving some grade other than Brent in satisfaction of a 30-Day Brent Standard contract: the methodology is not setting the absolute market price of the two grades in question.

#### Freight Adjustment: A New Factor

The further afield is the new grade of crude oil that is added to the BFOE basket the more relevant becomes the freight differential between Brent and the alternative grade of crude oil. The freight differential in question is not the freight differential between Sullom Voe, the port at which Brent is loaded, and the port at which the alternative grade in the basket is loaded. It is the differential between the freight from Sullom Voe to the refining location in question and the freight from port at which the alternative grade loads and the refining location in question. (See Chart One.) The relevant freight differential from a refiner's perspective is represented broadly as X-Y in Chart One.

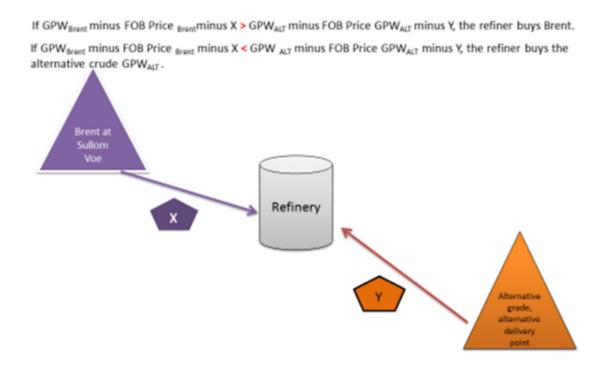
In the case of the *existing* BFOE basket it is assumed for simplicity that X-Y=0. This is because, as mentioned above, the delivery points of the four existing deliverable grades, Sullom Voe, Hound Point, Sturre and Tees-side, are all in the same region. Furthermore the location of the refinery is not defined. In reality X≠Y, irrespective of the refinery location and this is one of the flaws at the heart of the existing 30-Day BFOE contract and Dated Brent pricing methodology. The wider the range of

<sup>3</sup> The higher sulphur content of Forties would be taken into account in the higher sulphur product prices that would have to be used in calculating the Forties GPW.

<sup>&</sup>lt;sup>4</sup> Models such as Haverly typically do not adjust for differences in the total acid number (TAN) so either high acid grades may have to be excluded from the expanded basket.

grades that get added to the BFOE basket the more the values of X and Y will diverge and this imperfection will take on a wider significance.

Chart One: The Refiner's Decision-Making when Choosing between Two Grades of Oil



In the existing BFOE basket, a trader might historically have bought 4 cargoes of Brent using the 30-Day BFOE contract with the intention of filling a VLCC with 2-2.5 million bbls to ship to the US Gulf Coast (a less regular gambit now that the US is a crude exporter). By the operation of 30-Day BFOE cargo nomination process the trader could, theoretically, be supplied with, say, one Brent, one Forties, one Oseberg and one Ekofisk under its 30-Day BFOE contracts. Despite the fact that the four ports at which these grades are delivered – Sullom Voe, Hound Point, Sturre and Tees-side- are in the same region it would be very difficult and inefficient financially to load one VLCC from four different ports. The trader instead might sell, say, the Brent, Forties and Oseberg and buy three cargoes of Ekofisk to fill up its VLCC with four Ekofisk cargoes.

Now, for illustrative purposes, let's say an alternative African grade is added to the basket of deliverable grades under the 30-Day Brent Standard forward contract. From the perspective of a buyer, X clearly is no longer equal to Y even on an approximate basis. The size of the difference between X and Y depends on the location of the *refinery* as well as the port from which the crude oil is exported. X-Y will have a very different answer if the refinery is in Rotterdam, the Mediterranean, the US Gulf Coast, Singapore or China.

For the avoidance of doubt the one calculation that has no relevance whatsoever in this analysis is the cost of freight to deliver alternative grades to Sullom Voe, as has been suggested in the past. Alternative grades of oil will never be delivered to Sullom Voe during the normal course of business

unless someone builds a refinery in the Shetlands or, less far-fetched, converts the existing terminal facilities into a commercial tank farm and blending depot.

The time may be coming when we have to change the delivery point of the 30-Day BFOE contract from being FOB the port where the producers store production and accumulate cargoes, to CIF a range of delivery points where refiners run the oil instead. Already the PRAs assess a number of prices on a CIF basis: it is not beyond the realms of possibility to calculate and publish price assessments for an extended range of crude oils that are within the quality and distance limits permitted by the 30-Day Brent Standard contract, delivered to each of the relevant refining centres.

For example, the delivery point for a new 30-Day Brent Standard contract may be CIF Rotterdam, i.e. the contract base case. Initially the contract may provide for delivery of Forties, Oseberg or Ekofisk again CIF Rotterdam. There would be a freight adjustment to reflect the difference between Brent CIF Rotterdam and Forties CIF Rotterdam. That freight difference, X-Y, would the difference in the cost of freight between Sullom Voe and Rotterdam and the cost of freight between Hound Point and Rotterdam. In that case X-Y<0 because Hound Point is closer to Rotterdam than Sullom Voe, so the freight adjustment would be in favour of the cargo seller.

As grades from further afield get added to the basket alternative delivery points may be introduced. For example alternative grades could be delivered in the Mediterranean, say, CIF Lavera or CIF Augusta. The freight difference, X-Y, would the difference in the cost of freight between Sullom Voe and Rotterdam and the cost of freight between the Mediterranean port and Rotterdam. In that case X-Y>0 because Sullom Voe is closer to Rotterdam than is any Mediterranean port, so the freight adjustment would be in favour of the cargo buyer.

In view of the fact that the base case in the contract is a cargo of 600,000 bbls of Brent CIF Rotterdam it is likely that the tanker size most relevant to the calculation would be an Aframax. So when comparing freight from an alternative delivery point to Rotterdam any freight adjustment required should most logically also be based on an Aframax freight rates.

The data already exists to make such a freight adjustment to the price to compensate for the cost of delivering an alternative grade to Rotterdam instead of delivering Brent to Rotterdam. Because the purpose of the exercise is to adjust for the *relative* cost of freight, arguably, the difference in the Worldscale flat rates for a voyage from Sullom Voe to Rotterdam and a voyage from the Mediterranean to Rotterdam could be used for calculating the freight differential. Worldscale flat rates are fixed for calendar years.

It would also be possible to be more flexible and adjust for the difference in the fluctuating *absolute* cost of freight by applying a tanker market index to the relevant Worldscale flat rates for the base voyage from Sullom Voe to Rotterdam and from the alternative delivery location in the Mediterranean to Rotterdam. The Baltic Exchange, which was taken over by SGX in November 2016, already produces the daily dirty tanker rate assessments that would be necessary to compare absolute freight rates.

# What Might a New 30-Day Brent Contract Look Like?

In summary, a new 30-Day Brent contract may be put together as follows:

• The contract would be for 600,000 bbls of Brent Blend crude oil CIF Rotterdam for delivery in a calendar month at a fixed price.

- An accepted range of alternative grades of crude oil delivered to an accepted number of
  alternative delivery locations in refining centres could be approved for delivery into the
  contract giving thirty days' notice, the same notice period as the existing contract.
- If a grade with a higher GPW than the Brent Standard is delivered, the buyer compensates the seller with a quality premium calculated as the difference between the GPW of the alterative grade and the GPW of the Brent Standard.
- If a grade with a lower GPW than Brent is delivered, the seller compensates the buyer with a quality premium calculated as the difference between the GPW of the alterative grade and the GPW of Brent.
- If the delivery point is other than Rotterdam the buyer compensates the seller if the delivery location is closer to Rotterdam than is Sullom Voe. The seller compensates the buyer if the delivery location is further from Rotterdam than is Sullom Voe. That freight difference, X-Y, would the difference in the cost of freight between Sullom Voe and Rotterdam and the cost of freight between the alternative delivery location and Rotterdam.

# There is more to Price Differentials than Quality and Freight

There is much more to the market price differential between two grades of crude oil than differences in their quality and freight economics<sup>5</sup>. Other "non-quality" factors that have an impact on the market price differential between two grades might be, for example:

- o jetty restrictions at the loading port that force the buyer to suffer sub-optimal freight economics; or,
- o delays in issuing cargo documentation that rack up demurrage costs for the buyer; or,
- metering problems at the load port that lead to persistent volume losses; or,
- a difficult terminal operator that makes changes to cargo dates or volumes difficult or expensive; or,
- any other factor that give a particular grade of crude oil a bad name in the marketplace.

So any new mechanism that is adopted by the industry to establish price differentials amongst a range of grades of crude oil that are included in the Dated Brent price formation process or in the 30-Day BFOE basket has to be sufficiently flexible to allow disciplined, but subjective, adjustment to the mechanism in the light of changing or unusual market circumstances.

#### Who Owns the Brent Issue?

This suggests that some form of over-sight panel may be required to ensure that all stakeholder voices are heard in establishing and amending the 30-Day forward Brent contract and the methodology for calculating premia and discounts to the standard Brent price. This may be something along the lines of the London Bullion Market Association (LBMA) Gold Price Oversight Committee, which is responsible for governance and administration of the international gold price benchmark.<sup>6</sup>

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<sup>&</sup>lt;sup>5</sup> See also "Trading Crude Oil: The Consilience Guide" Chapter 5 http://ceag.org/shop/uncategorized/trading-hooks/

<sup>6</sup> http://www.lbma.org.uk/

Constructive oversight of Brent requires some authoritative ownership of the issues surrounding the benchmark price. New rules introduced in 2016 to prevent manipulation of financial benchmarks <sup>7</sup> and the UK Energy Act of 2016 implemented by the Oil and Gas Authority fall short of placing responsibility for regulation of the Brent benchmark clearly into the hands of any one authority.

For example, one of the biggest issues influencing the future of the Brent benchmark price is uncertainty about when the Brent/Ninian, Forties, Oseberg and Ekofisk pipelines are likely to shut down. The UKCS voluntary Infrastructure Code of Practice does not require pipeline owners/operators to publicise the tipping point when the pipelines they own and/or operate will cease to be economically viable.

This is particularly relevant in the case of the Brent System where the pipeline is owned by the joint venture partners in the fields that put their crude through the transportation and storage facilities at Sullom Voe. Ownership of infrastructure brings with it liability for decommissioning and abandonment costs<sup>8</sup>. Hence new or re-developed fields are not rushing to enter into transportation agreements with Sullom Voe and are either opting for floating production and storage operations (FPSOs) or, in the case of Schiehallion, are shuttling crude straight to Rotterdam. Hence Sullom Voe may cease to be economically viable long before old age forces retirement of the physical infrastructure.

This type of information is of crucial importance to the planning of the future Brent basket and will have financial consequences for the Brent benchmark and the physical, forward, futures and derivative contracts that refer to Brent. But stakeholders with a financial interest in the Brent basket do not have access to this information by statute and it is unreasonable to expect a PRA to be responsible for acquiring it from producers who are often bound by confidentiality undertakings.

Ultimately it is traders who decide how they will actually trade and many producers of Brent, Forties, Oseberg and Ekofisk cargoes will continue to sell them FOB the relevant load port. Any changes to the 30-Day BFOE contract will only take effect if the larger oil companies and trading houses are prepared to buy these grades FOB, arrange the shipping and sell them CIF Rotterdam in a new look 30-Day BFOE CIF Rotterdam contract.

The missing link is the granting of a clear mandate to an authoritative body that can put together industry working group to agree the details of a new contract and then oversee its continued routine functioning over time with little need for intervention except in unusual circumstances.

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<sup>&</sup>lt;sup>7</sup> Regulation (EU) 2016/1011 of the European Parliament and of the Council of 8 June 2016

<sup>&</sup>lt;sup>8</sup> This contrasts with Forties where the pipeline is owned by Forties Pipeline System, a subsidiary of BP, and third parties contracting to use transportation capacity are not automatically liable for abandonment and decommissioning costs. liable