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ARGUS WEST AFRICA OIL

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LAST UPDATED: AUGUST 2019

The most up-to-date Argus West Africa Oil methodology is available on www.argusmedia.com

Introduction

Argus West Africa Oil is a market report that publishes daily prices for crude oil produced in west Africa and refined petroleum products delivered to west Africa, as well as weekly market commentary and regional news and analysis on Fridays.

The prices contained in Argus West Africa Oil are calculated according to methodologies that link each commodity through transparent steps to assessments from the most relevant liquid markets.

The crude oil prices in Argus West Africa Oil are fob loading terminal prices calculated based on the product yield of each grade relative to those of more actively traded regional grades assessed in the Argus Crude report.

The refined product markers in Argus West Africa Oil are derived from the active northwest European barge markets for gasoline, jet fuel and heating oil assessed in the Argus European Products report, by adding a barge/cargo differential if appropriate and the price of freight from northwest Europe to west Africa as assessed in the Argus Freight report.

All prices are based on those published by Argus on the previous UK working day.

Methodological principles

Argus assessments are based upon the structure of the market as established by market participants. So if market participants trade and price products in relation to certain benchmarks, then Argus will publish prices in relation to those benchmarks.

The Argus method includes trades from various platforms — close of market windows, e-commerce portals, third-party transactions and over-the-counter swaps — to reflect a daily consensus on the price of the day. The Argus methodology relies on a survey and analysis of market inputs. It often varies from “market on close” methodologies, which only recognise select transactions, bids or offers at a specific closing time of each day.

The Argus method considers inputs received throughout the entire day up until its daily timestamp. Argus price assessments in Argus West Africa Oil reflect standardised specifications under the general terms and conditions employed for standard contracts in common use.

Argus publishes prices that report and reflect prevailing levels for open-market arms length transactions (please see the [Argus Global Compliance Policy](#) for a detailed definition of arms length).

Price assessments

The assessments in Argus West Africa Oil are published as a service to the industry and are not in many cases supported by an open traded market. These price assessments will be constructed

by comparing price values from the liquid traded open markets adjusted for freight and any other appropriate costs. All assessments and formulas refer to the price of the commodity on the UK working day previous to that of the published report and are expressed in US dollars unless otherwise stated. The prices are for contracts under whatever general terms and conditions are accepted as standard and prevailing in that particular market. Price changes refer to the last published report.

On Fridays, Argus West Africa Oil provides an overview of the week’s crude and product market activity with regard to west Africa. The report allows readers to quickly understand the key market drivers as well as receive news and analysis of regional events and trends.

See the relevant sections of this methodology and those linked to for full details of each price assessment.

West African crude prices

Argus West Africa Oil contains prices for a range of crudes produced in Nigeria, Angola, Congo (Brazzaville), Cameroon, Gabon and Ghana. These crudes do not appear in spot markets regularly enough to produce a price assessment based on reported trade, so their value is calculated according to a methodology that takes into account the refinery gate value (RGV), or the prices of the refined products that can be produced from each grade minus the costs of refining, compared with the RGV of more actively traded regional grades of crude such as Nigerian Qua Iboe, Angolan Girassol, Angolan Dalia or Chadian Doba (the “basis crudes”) at a typical northwest European or Asia-Pacific complex refinery. The basis crude and refinery model are chosen according to each crude’s specific gravity and typical destination.

Argus calculates the RGVs using Aspen PIMS™ a linear programming model that simulates the operations of a refinery. The model calculates the optimal yield of products to maximise the refinery gate value, according to spot product prices and within the constraints of a refinery configuration and a crude assay. Details of the refinery modelling can be found in the [Argus Netback Model methodology](#).

The spread generated by comparing the RGV values of each grade with its relevant basis crude is then applied to the spot price of that basis crude. The calculated price of each grade is then published as an outright price and as a differential to Argus North Sea Dated. All crude prices are expressed in \$/bl.

The calculated west African crude prices published in Argus West Africa Oil do not take into account any specific market-derived premiums or discounts related to crude composition, shipping, logistics or other factors. Specifically, the Argus Ebok calculation does not take into account any discounts related to the crude’s water content or price adjustments resulting from varying cargo sizes.

North Sea Dated and Basis crudes

North Sea Dated

Argus North Sea Dated (hereafter referred to as Dated) is the crude oil price benchmark against which the west African grades are calculated in Argus West Africa Oil. The Dated assessment as published in Argus Crude on the previous UK working day is used as the basis for all west African crude prices assessed in the report. It is Argus' equivalent of Platts Dated Brent, and is calculated according to a methodology described in the [Argus Crude methodology](#).

West African basis crudes

Qua Iboe

The value of Qua Iboe, a Nigerian crude, is that published in Argus Crude on the previous UK working day. It is calculated by applying the market differential of Qua Iboe to the Dated value. The prevailing market differential is also published separately. Please see the [Argus Crude methodology](#) for further information.

Girassol

The value of Girassol, an Angolan crude, is that published in Argus Crude on the previous UK working day. It is calculated by applying the market differential of Girassol to the Dated value. The prevailing market differential is also published separately. Please see the [Argus Crude methodology](#) for further information.

Dalia

The value of Dalia, an Angolan crude, is that published in Argus Crude on the previous UK working day. It is calculated by applying the market differential of Dalia to the Dated value. The prevailing market differential is also published separately. Please see the [Argus Crude methodology](#) for further information.

Doba

The value of Doba, a Chadian crude, is that published in Argus Crude on the previous UK working day. It is calculated by applying the market differential of Doba to the Dated value. The prevailing market differential is also published separately. Please see the [Argus Crude methodology](#) for further information.

The Dalia/Doba average

The Dalia/Doba average is calculated by taking the mean of the market differentials of Dalia and Doba and applying the result to the Dated value. The prevailing market differential is also published separately.

Refined products markers

The refined products markers in Argus West Africa Oil are intended to reflect the cost of oil products delivered to west African ports from northwest Europe. They are based on prices discovered in the highly active Amsterdam-Rotterdam-Antwerp (ARA) barge markets for gasoline, diesel and jet fuel and published in the previous UK working day's Argus European Products, adjusted for the barge/cargo differential and the price of freight from northwest Europe to west Africa as published in the previous UK working day's Argus Freight.

Calculated west African crude price assessments

Crude	Basis crude	Refinery region
Nigeria		
Abo Blend	Qua Iboe	northwest Europe
Akpo	Qua Iboe	northwest Europe
Antan	Qua Iboe	northwest Europe
Asaramatoru	Qua Iboe	northwest Europe
EA Blend	Qua Iboe	northwest Europe
Ebok	Dalia/Doba	northwest Europe
Eremor	Dalia/Doba	northwest Europe
Ima	Qua Iboe	northwest Europe
Obe	Qua Iboe	northwest Europe
Okono Blend	Qua Iboe	northwest Europe
Okoro	Dalia/Doba	northwest Europe
Okwori	Qua Iboe	northwest Europe
Okwibome	Qua Iboe	northwest Europe
Oyo	Qua Iboe	northwest Europe
Pennington Light	Qua Iboe	northwest Europe
Ukpokiti	Qua Iboe	northwest Europe
Yoho Light	Qua Iboe	northwest Europe
Angola		
Mondo	Girassol	Asia-Pacific
Palanca	Girassol	Asia-Pacific
Pazflor	Dalia/Doba	Asia-Pacific
Plutonio	Girassol	Asia-Pacific
Saturno	Dalia/Doba	Asia-Pacific
Saxi-Batuque	Girassol	Asia-Pacific
Congo (Brazzaville)		
Djeno	Dalia/Doba	Asia-Pacific
N'Kossa	Girassol	Asia-Pacific
Cameroon		
Kole Marine	Girassol	Asia-Pacific
Gabon		
Rabi Light	Girassol	Asia-Pacific
Ghana		
TEN	Girassol	Asia-Pacific

The methodology behind the base assessments for each product can be viewed in the [Argus European Products methodology](#). The methodology for assessing freight rates can be viewed in the [Argus Freight methodology](#).

Products prices are expressed in \$/t and Nigerian naira/litre, except jet fuel, which is expressed in \$/t only.

Gasoline

The value of Argus Eurobob delivered west Africa is calculated by adding the previous day's Argus Eurobob oxy barge fob ARA price as published in Argus European Products to a barge/cargo differential and the price of clean products freight UKC-WAF for 37kt cargoes from northwest Europe to west Africa, as published in Argus Freight. The resulting price is expressed in \$/t and Nigerian naira/litre, using an Argus conversion factor whereby 1 tonne equals 1,330 litres.

Diesel

The value of gasoil diesel 1,000ppm delivered west Africa is calculated by adding the previous UK working day's Argus gasoil heating oil German NWE barge fob price as published in Argus European Products to the price of clean products freight UKC-WAF for 37kt cargoes from northwest Europe to West Africa, as published in the previous UK working day's Argus Freight. The resulting price is expressed in \$/t and Nigerian naira/litre, using an Argus conversion factor whereby 1 tonne equals 1,183 litres.

Jet

The value of jet/kerosine delivered west Africa is calculated by adding the previous UK working day's Argus jet/kerosine NWE barge fob price as published in Argus European Products to the price of clean products freight UKC-WAF for 37kt cargoes from northwest Europe to West Africa, as published in the previous UK working day's Argus Freight. The resulting price is expressed in \$/t.