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Methodology overview

Methodology rationale
Argus strives to construct methodologies that reflect the way the market trades. Argus aims to produce price assessments which are reliable and representative indicators of commodity market values and are free from distortion. As a result, the specific currencies, volume units, locations and other particulars of an assessment are determined by industry conventions.

In the Turkish energy markets, Argus publishes physical market prices in the open market as laid out in the specifications and methodology guide. Argus uses the trading period deemed by Argus to be most appropriate, in consultation with industry, to capture market liquidity.

In order to be included in the assessment process, deals must meet the minimum volume, delivery, timing and specification requirements in our methodology. In illiquid markets, and in other cases where deemed appropriate, Argus assesses the range within which product could have traded by applying a strict process outlined later in this methodology.

Survey process
Argus price assessments are informed by information received from a wide cross section of market participants, including producers, consumers and intermediaries. Argus reporters engage with the industry by proactively polling participants for market data. Argus will contact and accept market data from all credible market sources including front and back office of market participants and brokers. Argus will also receive market data from electronic trading platforms and directly from the back offices of market participants. Argus will accept market data by telephone, instant messenger, email or other means.

Argus encourages all sources of market data to submit all market data to which they are a party that falls within the Argus stated methodological criteria for the relevant assessment. Argus encourages all sources of market data to submit transaction data from back office functions.

Throughout all markets, Argus is constantly seeking to increase the number of companies willing to provide market data. Reporters are mentored and held accountable for expanding their pool of contacts. The number of entities providing market data can vary significantly from day to day based on market conditions.

For certain price assessments identified by local management, if more than 50pc of the market data involved in arriving at a price assessment is sourced from a single party the supervising editor will engage in an analysis of the market data with the primary reporter to ensure that the quality and integrity of the assessment has not been affected.

Market data usage
In each market, Argus uses the methodological approach deemed to be the most reliable and representative for that market. Argus will utilise various types of market data in its methodologies, to include:

- Transactions
- Bids and offers
- Other market information, to include spread values between grades, locations, timings, and many other data.

In many markets, the relevant methodology will assign a relatively higher importance to transactions over bids and offers, and a relatively higher importance to bids and offers over other market information. Certain markets however will exist for which such a hierarchy would produce unreliable and non-representative price assessments, and so the methodology must assign a different relative importance in order to ensure the quality and integrity of the price assessment. And even in markets for which the hierarchy normally applies, certain market situations will at times emerge for which the strict hierarchy would produce non-representative prices, requiring Argus to adapt in order to publish representative prices.

Verification of transaction data
Reporters carefully analyse all data submitted to the price assessment process. These data include transactions, bids, offers, volumes, counterparties, specifications and any other information that contributes materially to the determination of price. This high level of care described applies regardless of the methodology employed. Specific to transactions, bids, and offers, reporters seek to verify the price, the volume, the specifications, location basis, and counterparty. In some transactional average methodologies, reporters also examine the full array of transactions to match counterparties and arrive at a list of unique transactions. In some transactional average methodologies, full details of the transactions verified are published electronically and are accessible by subscribers. In those methodologies, the deals are also published in the daily report.

Several tests are applied by reporters in all markets to transactional data to determine if it should be subjected to further scrutiny. If a transaction has been identified as failing such a test, it will receive further scrutiny. For assessments used to settle derivatives and for many other assessments, Argus has established internal procedures that involve escalation of inquiry within the source’s company and escalating review within Argus management. Should this process determine that a transaction should be excluded from the price assessment process, the supervising editor will initiate approval and, if necessary, documentation procedures.

Primary tests applied by reporters

- Transactions not transacted at arm’s length, including deals between related parties or affiliates.
- Transaction prices that deviate significantly from the mean of all transactions submitted for that day.
- Transaction prices that fall outside of the generally observed lows and highs that operated throughout the trading day.
applying to gathering and validating transactions. The information in determining price assessments, a degree of care equal to that high degree of care in gathering and validating all market data used a broad array of factual market information. Reporters must use a assessment of market value by applying intelligent judgment based on or when Argus concludes that a transaction based methodology will When insufficient, inadequate, or no transaction information exists, Assessment guidelines

Secondary tests applied by editors for transactions identified for further scrutiny

Transaction tests
- The impact of linkage of the deal to possible other transactions such as contingent legs, exchanges, options, swaps, or other derivative instruments. This will include a review of transactions in markets that the reporter may not be covering.
- The nature of disagreement between counterparties on transactional details.
- The possibility that a deal is directly linked to an offsetting transaction that is not publicly known, for example a "wash trade" which has the purpose of influencing the published price.
- The impact of non-market factors on price or volume, including distressed delivery, credit issues, scheduling issues, demurrage, or containment.

Source tests
- The credibility of the explanation provided for the outlying nature of the transaction.
- The track record of the source. Sources will be deemed more credible if they
  - Regularly provide transaction data with few errors.
  - Provide data by Argus’ established deadline.
  - Quickly respond to queries from Argus reporters.
  - Have staff designated to respond to such queries.
- How close the information receipt is to the deadline for information, and the impact of that proximity on the validation process.

Assessment guidelines

When insufficient, inadequate, or no transaction information exists, or when Argus concludes that a transaction based methodology will not produce representative prices, Argus reporters will make an assessment of market value by applying intelligent judgment based on a broad array of factual market information. Reporters must use a high degree of care in gathering and validating all market data used in determining price assessments, a degree of care equal to that applying to gathering and validating transactions. The information used to form an assessment could include deals done, bids, offers, tenders, spread trades, exchange trades, fundamental supply and demand information and other inputs.

The assessment process employing judgment is rigorous, replicable, and uses widely accepted valuation metrics. These valuation metrics mirror the process used by physical commodity traders to internally assess value prior to entering the market with a bid or offer. Applying these valuation metrics along with sound judgment significantly narrows the band within which a commodity can be assessed, and greatly increases the accuracy and consistency of the price series. The application of judgment is conducted jointly with the supervising editor, in order to be sure that guidelines below are being followed. Valuation metrics include the following:

Relative value transactions
Frequently transactions occur which instead of being an outright purchase or sale of a single commodity, are instead exchanges of commodities. Such transactions allow reporters to value less liquid markets against more liquid ones and establish a strong basis for the exercise of judgment.

- Exchange one commodity for a different commodity in the same market at a negotiated value.
- Exchange delivery dates for the same commodity at a negotiated value.
- Exchange a commodity in one location for the same commodity at another location at a negotiated value.

Bids and offers

If a sufficient number of bids and offers populate the market, then in most cases the highest bid and the lowest offer can be assumed to define the boundaries between which a deal could be transacted.

Comparative metrics
The relative values between compared commodities are readily discussed in the market and can be discovered through dialogue with market participants. These discussions are the precursor to negotiation and conclusion of transactions.

- Comparison to the same commodity in another market centre.
- Comparison to a more actively traded but slightly different specification commodity in the same market centre.
- Comparison to the commodity’s primary feedstock or primary derived product(s).
- Comparison to trade in the same commodity but in a different modality (as in barge versus oceangoing vessel) or in a different total volume (as in full cargo load versus partial cargo load).

Volume minimums and transaction data thresholds
Argus typically does not establish thresholds strictly on the basis of a count of transactions, as this could lead to unreliable and non-representative assessments and because of the varying transportation infrastructure found in all commodity markets. Instead, minimum
volumes are typically established which may apply to each trans-
action accepted, to the aggregate of transactions, to transactions
which set a low or high assessment or to other volumetrically
relevant parameters.

For price assessments used to settle derivatives, Argus will seek to
establish minimum transaction data thresholds and when no such
threshold can be established Argus will explain the reasons. These
thresholds will often reflect the minimum volumes necessary to
produce a transaction-based methodology, but may also establish
minimum deal parameters for use by a methodology that is based
primarily on judgment.

Should no transaction threshold exist, or should submitted data fall
below this methodology’s stated transaction data threshold for any
reason, Argus will follow the procedures outlined elsewhere in this
document regarding the exercise of judgment in the price assess-
ment process.

Transparency
Argus values transparency in energy markets. As a result, where
available, we publish lists of deals in our reports that include price,
基础, counterparty and volume information. The deal tables allow
subscribers to cross check and verify the deals against the prices.
Argus feels transparency and openness is vital to developing confi-
dence in the price assessment process.

Swaps and forwards markets
Argus publishes forward assessments for numerous markets. These
include forward market contracts that can allow physical delivery
and swaps contracts that swap a fixed price for the average of a
floating published price. Argus looks at forward swaps to inform
physical assessments but places primary emphasis on the physical
markets.

Publications and price data
Price data are available independent of the text-based report in
electronic files that can feed into various databases. These price
data are also supplied through various third-party data integrators.
The Argus website also provides access to prices, reports and news
with various web-based tools. All Argus prices are kept in a histori-
cal database and available for purchase. Contact your local Argus
office for information.

A publication schedule is available at www.argusmedia.com

Corrects to assessments
Argus will on occasion publish corrections to price assessments
after the publication date. We will correct errors that arise from cler-
ical mistakes, calculation errors, or a misapplication of our stated
methodology. Argus will not retroactively assess markets based on
new information learned after the assessments are published. We
make our best effort to assess markets based on the information we
gather during the trading day assessed.

Ethics and compliance
Argus operates according to the best practices in the publishing
field, and maintains thorough compliance procedures throughout
the firm. We want to be seen as a preferred provider by our sub-
scribers, who are held to equally high standards, while at the same
time maintaining our editorial integrity and independence. Argus
has a strict ethics policy that applies to all staff. The policy can be
found on our website at www.argusmedia.com. Included in this
policy are restrictions against staff trading in any energy commodity
or energy related stocks, and guidelines for accepting gifts. Argus
also has strict policies regarding central archiving of email and
instant messenger communication, maintenance and archiving of
notes, and archiving of spreadsheets and deal lists used in the price
assessment process. 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).

Consistency in the assessment process
Argus recognises the need to have judgment consistently applied
by reporters covering separate markets, and by reporters replacing
existing reporters in the assessment process. In order to ensure
this consistency, Argus has developed a programme of training and
oversight of reporters. This programme includes:

- A global price reporting manual describing among other
  things the guidelines for the exercise of judgment.
- Cross-training of staff between markets to ensure proper holi-
day and sick leave backup. Editors that float between markets
to monitor staff application of best practices.
- Experienced editors overseeing reporting teams are involved
  in daily mentoring and assisting in the application of judgment
  for illiquid markets.
- Editors are required to sign-off on all price assessments each
day, thus ensuring the consistent application of judgment.

Review of methodology
The overarching objective of any methodology is to produce price as-
seSSments which are reliable and representative indicators of com-
modity market values and are free from distortion. As a result, Argus
editors and reporters are regularly examining our methodologies
and are in regular dialogue with the industry in order to ensure that
the methodologies are representative of the market being assessed.
This process is integral with reporting on a given market. In addition
to this ongoing review of methodology, Argus conducts reviews of
all of its methodologies and methodology documents on at least an
annual basis.

Argus market report editors and management will periodically and
as merited initiate reviews of market coverage based on a qualita-
tive analysis that includes measurements of liquidity, visibility of
market data, consistency of market data, quality of market data and
industry usage of the assessments. Report editors will review:

- Appropriateness of the methodology of existing assessments
- Termination of existing assessments
- Initiation of new assessments
The report editor will initiate an informal process to examine viability. This process includes:

- Informal discussions with market participants
- Informal discussions with other stakeholders
- Internal review of market data

Should changes, terminations, or initiations be merited, the report editor will submit an internal proposal to management for review and approval. Should changes or terminations of existing assessments be approved, then formal procedures for external consultation are begun.

**Changes to methodology**

Formal proposals to change methodologies typically emerge out of the ongoing process of internal and external review of the methodologies. Formal procedures for external consultation regarding material changes to existing methodologies will be initiated with an announcement of the proposed change published in the relevant Argus report. This announcement will include:

- Details on the proposed change and the rationale
- Method for submitting comments with a deadline for submissions
- For prices used in derivatives, notice that all formal comments will be published after the given consultation period unless submitter requests confidentiality

Argus will provide sufficient opportunity for stakeholders to analyse and comment on changes, but will not allow the time needed to follow these procedures to create a situation wherein unrepresentative or false prices are published, markets are disrupted, or market participants are put at unnecessary risk. Argus will engage with industry throughout this process in order to gain acceptance of proposed changes to methodology. Argus cannot however guarantee universal acceptance and will act for the good order of the market and ensure the continued integrity of its price assessments as an overriding objective.

Following the consultation period, Argus management will commence an internal review and decide on the methodology change. This will be followed by an announcement of the decision, which will be published in the relevant Argus report and include a date for implementation. For prices used in derivatives, publication of stakeholders’ formal comments that are not subject to confidentiality and Argus’ response to those comments will also take place.

**Price assessments**

Price assessments reproduced in Argus Turkish Energy Markets are published in one of a number of Argus market reports. Detailed methodologies are published for each Argus market report, and can be found at [www.argusmedia.com/Methodology-and-Reference](http://www.argusmedia.com/Methodology-and-Reference)

Price assessments and indexes are taken from the Argus European Electricity, Argus European Natural Gas, Argus LNG Daily, Argus Crude, Argus Coal Daily International and Energy Argus Petroleum Coke reports.

**Turkish Electricity**

**Base load**
- Week ahead
- Three forward months
- Four forward quarters
- Year ahead
- Rolling 52-week base load

Assessed daily in Argus European Electricity, see methodology

**Southeast European Electricity**

**Romania base load**
- Three forward months
- Two forward quarters
- Year ahead

Assessed daily in Argus European Electricity, see methodology

**Bulgaria base load**
- One forward month

Assessed weekly on Thursdays in Argus European Electricity, see methodology

**Greece base load**
- One forward month

Assessed weekly on Thursdays in Argus European Electricity, see methodology

**Turkish Gas**

**Day-ahead**

Assessed daily in Argus European Natural Gas, see methodology

**LNG**

**Two forward half-months**

Assessed daily in Argus LNG Daily, see methodology

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**Introduction**

Argus Turkish Energy Markets (ATEM) is a daily publication covering electricity, natural gas, LNG, coal, petroleum coke, crude oil and refined products that relate to the Turkish market. It also includes coverage of the southeast European power market. The report includes price assessments and indexes, market commentary, news, fundamentals data, generation economics, cross-border electricity price spreads and weather forecasts.
Crude
Basrah Light fob Sidi Kerir
Kirkuk
Urals Med 80,000t
Assessed daily in Argus Crude, see methodology
Oil prices are published once a week on Thursdays

Coal
Turkey mini bulk 6,000 kcal/kg NAR
One forward month

Turkey supra plus 6,000 kcal NAR
Two forward months
Assessed weekly on Fridays in Coal Daily International, see methodology

Petcoke
Delivered Turkey (spot) 4.5% sulphur 70HGI delivery in 90 days
Delivered Turkey (spot) 6.5% sulphur 40HGI delivery in 90 days
Assessed weekly on Wednesdays in Energy Argus Petroleum Coke, see methodology

Other included prices

Electricity
Turkish electricity futures traded on Borsa Istanbul (VIOP)
Day-ahead EPIAS prices
Day-ahead Bulgarian IBEX prices
Day-ahead Greek SMP prices
Day-ahead Romanian Opcom prices.
Regional front-month OTC power price spreads are published, showing cross-border price differentials.

Gas
The monthly balancing gas price posted by the state-owned crude oil and gas pipeline and trading company Botas on its electronic bulletin board. The price excludes VAT and the special consumption tax.

OTC power and gas indexes
The report includes two price indexes:

- Argus Turkish base load month-ahead electricity index
- Argus Turkish day-ahead natural gas index

Each index is the running average of daily month-ahead power, and day-ahead gas prices published in Argus European Electricity and Argus European Natural Gas.

In the final publication of the month of trade, the Argus indexes will show the final value of month-ahead power and day-ahead gas markets over the whole of that month.

Generation economics
Spark and dark spreads are measures of the implied gross generating margin, excluding tax, operating and other non-fuel costs for a range of power plant efficiencies and fuel types.

Spark and dark spreads are shown for a range of power plant efficiencies and fuel types.

Spark and dark spreads are calculated based using the most recent prices published in Argus European Electricity, Argus European Natural Gas, Argus Coal Daily International and Argus LNG Daily.

The day-ahead Turkish spark spread is based on the day-ahead EPIAS settlement and the Argus assessed day-ahead gas price for the same day.

The front-month spark spread is based on the Argus front month power price assessment and uses state-owned gas company Botas’ regulated tariff for industrial consumers.

The LNG spark spread uses the Argus front-month power price assessment and the Argus assessment of the price of LNG delivered to Turkey during the first forward half month.

The front-month dark spread is based on the Argus front-month power price assessment and the Turkey supra plus coal price assessment, published in Argus Coal Daily International.

Exchange rates
Currency conversions use spot exchange rates as of the day of publication.