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ARGUS RENEWABLE GAS AND POWER

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The most up-to-date *Argus Renewable Gas and Power* methodology is available on www.argusmedia.com

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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 markets for renewable gas and power, 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. 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.
- Transactions that are suspected to be a leg of another transaction or in some way contingent on an unknown transaction.
- Single deal volumes that significantly exceed the typical transaction volume for that market.
- Transaction details that are identified by other market participants as being for any reason potentially anomalous and perceived by Argus to be as such.

- Transaction details that are reported by one counterparty differently than the other counterparty.
- Any transaction details that appear to the reporter to be illogical or to stray from the norms of trading behaviour. This could include but is not limited to divergent specifications, unusual delivery location and counterparties not typically seen.
- Transactions that involve the same counterparties, the same price and delivery dates are checked to see that they are separate deals and not one deal duplicated in Argus records.

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 judgement 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 judgement 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 judgement 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 judgement 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 same commodity traded for a different delivery timing.
- 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 transaction 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 judgement.

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 judgement in the price assessment process.

Transparency

Argus values transparency in energy markets. As a result, where available, we publish lists of deals in our reports that include price, basis, 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 confidence 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

Argus renewable gas and power prices are published in the Argus Renewable Gas and Power report. Subsets of these prices appear in other Argus market reports and newsletters in various forms. The 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 historical database and available for purchase. Contact your local Argus office for information.

A publication schedule is available at www.argusmedia.com

Corrections to assessments

Argus will on occasion publish corrections to price assessments after the publication date. We will correct errors that arise from clerical 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 subscribers, 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 judgement 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 judgement
- Cross-training of staff between markets to ensure proper holiday 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 judgement for illiquid markets
- Editors are required to sign-off on all price assessments each day, thus ensuring the consistent application of judgement.

Review of methodology

The overriding objective of any methodology is to produce price assessments which are reliable and representative indicators of commodity 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 qualitative 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.

Argus Renewable Gas and Power

Argus Renewable Gas and Power is published weekly on Friday. A publication schedule is available at www.argusmedia.com. The latest daily price assessments are published in Friday's print report.

Daily and weekly prices are available via Argus Direct, data feeds and other digital channels.

International renewable energy certificates (I-RECs)

International renewable energy certificates (I-RECs) are a voluntary scheme under which certificates are issued to document the origin of electricity from specified sources as defined in The International Attribute Tracking Standard.

Price assessments are the fair value at the stated time for each of the listed technologies, countries and currencies.

Contract specifications and delivery timings

Delivery timing: the year of generation for which the I-REC applies

Minimum size: 1GWh

Contracts assessed: previous year and current year

I-REC assessments

Country	Technology	Currency/Unit	Assessment time
Brazil	wind, solar, hydro	R/MWh, \$/MWh	Wednesday, 4pm Sao Paolo time
Chile	wind, solar, hydro	Ps/MWh, \$/MWh	Wednesday, 4pm Sao Paolo time
Mexico	wind, solar, hydro	Ps/MWh, \$/MWh	Wednesday, 4pm Sao Paolo time
Turkey	wind, solar, hydro, biomass	TL/MWh, \$/MWh	Thursday, 5.30pm London time
India	wind, solar	Rs/MWh, \$/MWh	Thursday, 5pm Mumbai time
Malaysia	hydro, solar	\$/MWh	Thursday, 5pm Singapore time
Singapore	solar	\$/MWh	Thursday, 5pm Singapore time
Thailand	wind, solar, hydro	\$/MWh	Thursday, 5pm Singapore time
Vietnam	wind, solar, hydro	\$/MWh	Thursday, 5pm Singapore time
UAE	solar	Dh/MWh, \$/MWh	Thursday, 5pm Abu Dhabi time
South Africa	wind, solar	\$/MWh	Thursday, 5.30pm London time

Chinese Green Electricity Certificates (GECs)

Chinese Green Electricity Certificates (GECs) document the origin of electricity produced from specified sources as regulated in the Rules for the Issuance and Trading of Green Electricity Certificates for Renewable Energy (2024).

Price assessments are published for wind and solar. Assessments are compiled weekly at 5pm Beijing time on Thursday and are an assessment of the fair value of a given product at the market close, as signalled by the cessation of trading in the over-the-counter (OTC) market.

Annual indexes

Running yearly averages of published daily wind and solar assessments for the current calendar year beginning each January, in line with the timing of the current-year vintage.

Contract specifications and delivery timings

Currency/unit: Yn/MWh, \$/MWh

Delivery timing: the year for which the GEC applies

Minimum size: 1GWh

Contracts assessed: previous year and current year

US renewable energy certificates (RECs)

US renewable energy certificates are defined by the year in which the electricity was generated. Prices are published weekly for:

- Green-e National (two vintage years)
- Green-e Texas (two vintage years)

See the [Argus Air Daily methodology](#).

Australian large-scale generation certificates

Large-scale generation certificates (LGCs) originate from eligible Australian renewable power stations, as regulated in the Renewable Energy (Electricity) Act 2000. Each LGC represents one megawatt-hour produced from an eligible power plant.

LGCs are used for compliance under the Renewable Energy Target (RET) set by the Australian government. Liable entities, such as electricity retailers, must surrender LGCs to meet their annual obligations. There is also a voluntary market for corporate climate ambition.

Entities can only surrender certificates produced in the reporting year they are surrendered against, or earlier — the “vintage rule”.

The deadline to surrender LGCs is 14 February each year for the previous calendar year, with contracts typically settling on the first day of February. Argus price assessments for each calendar year are published up to and including the first publication day of February of the following year. Argus publishes prices for LGCs originated in the current year and three forward years. Argus also publishes a spot price for LGCs generated during the current year and any previous year and delivered within a few days of trade.

End-of-day assessments are the fair value of a given product at 5pm Sydney time.

Specifications

Currency/unit: AUD/MWh

Minimum size: 1GWh

Contracts assessed: spot, current year, three forward years

Timestamp: 5pm Sydney time, daily

European electricity guarantee of origin (GOOs)

Guarantees of origin (GOOs) are a voluntary scheme under which certificates are issued to document the origin of electricity produced from specified sources as regulated in Article 15 of the European Directive 2009/28/EC. To be considered consumed or used by an electricity consumer or utility, a GOO must be cancelled in a national electronic certificate registry.

Spot trading involves buying and selling of GOOs generated at any point during the 12 months before the date of trade. Calendar year contracts specify the generation period.

Price assessments are published for:

- Nordic unsupported hydropower
- European unsupported or supported wind
- European unsupported or supported solar
- European unsupported or supported wind/solar/hydropower
- European unsupported any renewable

Nordic hydropower GOO price assessments are for GOOs issued for hydropower generation in Denmark, Sweden, Norway and Finland. European GOO price assessments are for GOOs issued for products generated in countries with European Energy Certificate System (EECS) certification.

End-of-day price assessments are compiled between 4.00pm and 5.30pm London time and are an assessment of the fair value of a given product at the market close, as signalled by the cessation of trading in the over-the-counter (OTC) market. End-of-day price assessments are published as a best buy and sell price (also referred to as the highest bid and lowest offer), the midpoint of which represents the assessment of the contract’s value at the market close.

Annual indexes

Running yearly averages of published daily assessments for the current calendar year beginning each January, in line with the timing of the current-year vintage.

Guarantee of origin annual indexes are published for

- Nordic hydropower
- European wind
- European solar
- European wind/solar/hydropower
- European any renewable

Monthly indexes

Running monthly averages of published daily assessments for the current calendar year beginning at the start of each month.

Guarantee of origin monthly indexes are published for

- Nordic hydropower
- European wind
- European solar
- European wind/solar/hydropower
- European any renewable

Contract specifications and delivery timings

Currency/unit: €/MWh

Delivery timing: the year of generation for which the GOO applies

Minimum size: 1GWh

Contracts assessed: previous year, current year and four years ahead.

UK electricity guarantee of origin (Regos)

UK renewable energy guarantees of origin (Regos) are a voluntary scheme under which certificates are issued to document the origin of electricity produced from specified sources as regulated in the Electricity (Guarantees of Origin of Electricity Produced from Renewable Energy Sources) Regulations 2003 and the Electricity (Guarantees of Origin of Electricity Produced from Renewable Energy Sources) Regulations (Northern Ireland) 2003 (together, the “GOO Regulations”).

Regos are issued by compliance periods, which run from April to March, and can be traded up to and including 30 June in the same year in which the compliance period ends. Argus price assessments follow the same schedule.

Price assessments are compiled weekly between 4.00pm and 5.30pm London time on Thursday and are an assessment of the fair value of a given product at the market close, as signalled by the cessation of trading in the over-the-counter (OTC) market.

Annual indexes

Running yearly averages of published weekly assessments beginning each April, in line with the timing of the current compliance period.

Indexes are for the first forward compliance year from April to June and for the current compliance year from July to March.

UK guarantee of origin annual indexes are published for

- non-biomass
- biomass

Monthly indexes

Running monthly averages of published weekly assessments beginning at the start of each month.

Indexes are for the first forward compliance year from April to June and for the current compliance year from July to March.

UK guarantee of origin monthly indexes are published for

- non-biomass
- biomass

Contract specifications and delivery timings

Currency/unit: £/MWh

Delivery timing: the compliance period for which the Rego applies

Minimum size: 1GWh

Contracts assessed: current compliance period and four compliance periods ahead.

Renewable gas guarantees of origin

Renewable gas guarantees of origin (RGGOs) are issued to document the origin of network-injected biomethane produced from specified sources as defined and certified by national certification schemes. To be considered consumed or used by a consumer or utility, an RGGO must be retired by a national electronic certificate registry.

Danish RGGOs are regulated by Section 36 of the Gas Supply Act (Act No 126 of 6 February 2020 on the supply of natural gas with subsequent amendments) and Executive Order No 1216 of 7 June 2021 on guarantees of origin for electricity, gas, district heating and cooling from renewable energy sources.

Dutch RGGOs are issued by local issuing body Verticer for grid-injected biomethane. Supported RGGOs are subsidised under the sustainable energy SDE schemes as administered by the Netherlands Enterprise Agency.

French RGGOs are regulated by Book IV of the Energy Code and issued by EEX for grid-injected biomethane. Assessed French RGGOs are for thermal use and subject to a French tax.

German GEG RGGOs are for non-German, EU-origin biomethane that can be used in the heating sector meeting the Dena criteria for the German Building Energy Act (Gebäudeenergiegesetz, GEG) and in line with §22 and §71f of the GEG. The GEG is a law that sets re-

quirements for the energy efficiency of buildings, mandates the use of energy performance certificates, and promotes the use of renewable energy for heating to help meet climate protection goals.

A minimum 70pc greenhouse gas (GHG) savings in line with article 29 of the RED III and paragraph 8 of the Emissions Reporting Ordinance 2030 (Emissionsberichterstattungsverordnung 2030, EBeV 2030) is required. Certification must be transferred to the Dena Biogasregister.

UK RGGOs are issued under the Green Gas Certification Scheme (GGCS).

AIB RGGOs are issued for biomethane generated in countries in the Association of Issuing Bodies (AIB) under European Energy Certificate System (EECS) principles.

Calendar year vintages specify the generation period. Price assessments are published for crop-based, waste-based and any biomass-based biomethane.

Prices are assessed each Thursday — or on the last publishing day before, if Thursday is a holiday — and are an assessment of the fair value of a given product at the market close, as signalled by the cessation of trading in the over-the-counter (OTC) market. Market information about trades, bids or offers made after 16:30 UK time on the day of assessment may not be considered for inclusion in the assessment.

End-of-day price assessments are published as a best buy and sell price (also referred to as the highest bid and lowest offer), the midpoint of which represents the assessment of the contract's value at the market close.

Prices are published in €/MWh for Denmark, France, Germany, the Netherlands and AIB RGGOs, and in £/MWh for the UK.

Contract specifications and delivery timings

Delivery timing: the year of production (vintage) for which the RGGO applies

Minimum size: 1MWh

Contracts assessed: previous year, current year and one year ahead (current year and year-ahead for Germany)

Feedstocks assessed: crop-based; waste-based; any biomass-based

RGGO-EU ETS spread

The spread between the named RGGO price and an average of the corresponding EU emissions trading system (ETS) allowance price. Prices are published for the previous year, current year and one year forward and are calculated weekly on Thursday, using annual vintage RGGO and corresponding December delivery EU ETS assessments.

Prices are published for

- Danish subsidised certified waste
- French subsidised certified, ETS-eligible any feedstock

Currency/unit: Euro/MWh

Conversion and averaging: EU ETS prices are converted to Euro/MWh using an emissions factor of 0.202 t/MWh and are an average of Monday-Thursday assessments

Assessment time: Thursday 4:30pm London time.

Biomethane RGGO assessments				
Country	Support	Certification*	Feedstock	CI score (g CO ₂ e/MJ)
Denmark	Subsidised	Uncertified	Crop	18-35
	Subsidised	Certified	Waste	0-21
	Subsidised	Certified***	Manure	minus 90-100
France	Subsidised**	Certified	Waste	0-21
	Subsidised**	Certified	Any	Unspecified
	Subsidised	Uncertified	Any	Unspecified
German GEG	Subsidised	Uncertified	Any	<21.6
Netherlands	Subsidised	Uncertified	Crop	18-35
	Subsidised	Certified	Waste	0-21
	Unsubsidised	Certified	Waste	0-21
	Subsidised	Certified***	Manure	minus 90-100
UK	Unsubsidised	Certified***	Manure	minus 90-100
	Subsidised	Uncertified	Crop	18-35
	Subsidised	Uncertified	Waste	0-21
	Subsidised	Certified	Waste	0-21
AIB	Unsubsidised	Certified	Waste	0-21
	Unsubsidised	Certified	Manure	minus 100

*Certification refers to RED-compliant certification issued by a European Commission-approved auditing body **ETS-eligible ***Certification refers to RED-compliant certification for the full chain of custody up to the point of consumption issued only by a European Commission-approved auditing body

Biomethane

GEG biomethane Germany

Unsubsidised, gaseous biomethane for use in the heating sector meeting the Dena criteria for the German Building Energy Act (Gebäudeenergiegesetz, GEG) and in line with §22 and §71f of the GEG. The GEG is a law that sets requirements for the energy efficiency of buildings, mandates the use of energy performance certificates, and promotes the use of renewable energy for heating to help meet climate protection goals.

Feedstock: any biomass as specified in the federal biomass regulation

Currency/unit: Euro/MWh

Timing: prices are assessed for delivery in the current and following compliance year. A compliance year ends and the respective assessment ceases on 31 December. The biomethane can be generated any time before the end of the compliance year.

Origin: Germany

Size: minimum 1GWh

Certification: material must be accompanied with RED-compliant certification issued by a European Commission-approved auditing body and registered in Germany's biomass web application system Nabisy to be considered exempt from the German Fuel Emissions Trading Act (BEHG) and traded via the Dena Biogasregister

Carbon intensity: 21.6 grCO₂e/MJ or lower

GHG savings: minimum 70pc greenhouse gas (GHG) savings in line with article 29 of the RED III and paragraph 8 of the Emissions Reporting Ordinance 2030 (Emissionsberichterstattungsverordnung 2030, EBeV 2030)

Assessment time: 4:30pm London time on Thursdays

RED biomethane Germany waste

Unsubsidised, gaseous biomethane meeting EN 16723-2 specifications and produced in line with requirements laid out in the Biomasseverordnung and Biokraftstoff- Nachhaltigkeitsverordnung delivered into the German transport sector.

Feedstock: RED-compliant Annex IX Part A waste feedstocks as listed in Annex 1 of the 38th enactment of the Bundes-Immissionsschutzgesetz

Currency/unit: euros/MWh

Timing: prices are assessed for the current compliance year and may also be assessed for forward compliance years for which Argus has determined that sufficient market liquidity exists to produce a robust assessment.

A compliance year ends and the respective assessment ceases on 31 December. Argus begins assessing a forward compliance year no later than 1 October of the current compliance year. For example, Argus will begin publishing a 2024 compliance year assessment no later than 1 October 2023.

Origin: Germany

Size: minimum 1GWh

Certification: material must be accompanied with RED-compliant certification issued by a European Commission-approved auditing body and validated against Germany's biomass web application system Nabisy

Carbon intensity: 10grCO₂e/MJ

GHG savings: minimum 89.4pc greenhouse gas (GHG) savings based on a fossil fuel comparator of 94g CO₂ equivalent/MJ

Assessment time: 4:30pm London time on Thursdays

RED biomethane Germany manure

Unsubsidised, gaseous biomethane meeting EN 16723-2 specifications and produced in line with requirements laid out in the Biomasseverordnung and Biokraftstoff- Nachhaltigkeitsverordnung

Feedstock: RED-compliant Annex IX Part A manure feedstocks as listed in Annex 1 of the 38th enactment of the Bundes-Immissionsschutzgesetz

Currency/unit: euros/MWh

Timing: prices are assessed for the current compliance year and may also be assessed for forward compliance years for which Argus has determined that sufficient market liquidity exists to produce a robust assessment.

A compliance year ends and the respective assessment ceases on 31 December. Argus begins assessing a forward compliance year no later than 1 October of the current compliance year. For example, Argus will begin publishing a 2024 compliance year assessment no later than 1 October 2023.

Origin: Germany

Size: minimum 1GWh

Certification: material must be accompanied with RED-compliant certification issued by a European Commission-approved auditing body and validated against Germany's biomass web application system Nabisy

Carbon intensity: -100grCO₂e/MJ

GHG savings: minimum 206.4pc greenhouse gas (GHG) savings based on a fossil fuel comparator of 94g CO₂ equivalent/MJ

Assessment time: 4:30pm London time on Thursdays

RED biomethane Germany gas differentials

The calculated difference between the biomethane price and the day-ahead German Trading Hub Europe (THE) natural gas price. Versions are calculated with and without the cost of EU ETS emissions allowances, which assume 0.202t of CO₂/MWh of natural gas.

- RED biomethane waste - Trading Hub Europe (THE) gas
- RED biomethane waste - Trading Hub Europe (THE) gas and EU ETS
- RED biomethane manure - Trading Hub Europe (THE) gas
- RED biomethane manure - Trading Hub Europe (THE) gas and EU ETS

EEG 2012 biomethane Germany

Gaseous biomethane used for electricity generation supported through the German Renewable Energy Sources Act 2012 (Erneuerbare Energien Gesetz, EEG 2012), in line with §§ 27–27c and Annex 1 EEG 2012 and meeting the Dena criteria for the EEG 2012.

The EEG 2012 establishes a support scheme for electricity generated from renewable sources, including biomethane, through fixed feed in tariffs and applicable bonuses under Annex 1 EEG 2012, to promote renewable electricity generation and greenhouse gas mitigation.

Feedstock: any biomass as specified in the federal biomass regulation, provided that the proportion of maize used for the production does not exceed 60 percent by mass (§27 EEG 2012)

Currency/unit: Euro/MWh

Timing: prices are assessed for delivery in the current EEG remuneration year as well as for the following year. Biomethane can be produced at any time prior to or during the respective remuneration year, provided it is contractually allocated to an EEG-eligible electricity generation plant

Origin: Germany

Size: minimum 1GWh

Certification: material must comply with the sustainability and mass balance requirements of the federal biomass regulation.

Assessment time: 4:30pm London time on Thursdays

European bundled biomethane

Bundled biomethane are the combined value of natural gas and renewable attributes. Prices are calculated as the sum of Argus assessments of the relevant natural gas and biomethane guarantee of origin contracts.

Prices are published for all RGGO specifications in the UK, French, Dutch and Danish market as described above.

Monthly bundled biomethane spot indexes are calculated using monthly averages of everyday gas prices and current-year vintage RGGOs. Front-month and front-quarter prices are weekly snapshots, calculated each Thursday using the relevant forward gas price assessments and corresponding vintage RGGOs.

See the [Argus European Natural Gas methodology](#) for more information about the natural gas component of the calculations.

California

The total calculated value of gas sold into California for use as a transportation fuel, differentiated by gas source. Published daily in \$/mn Btu for the specified year.

- Landfill biomethane - SoCal Citygates
- Dairy biomethane - SoCal Citygates
- Fossil natural gas - SoCal Citygates
- Landfill biomethane - PG&E Citygates
- Dairy biomethane - PG&E Citygates
- Fossil natural gas - PG&E Citygates

See the [Argus Air Daily methodology](#).

Oregon

The total calculated value of gas sold into Oregon for use as a transportation fuel, differentiated by gas source. Published daily in \$/mn Btu for the specified year.

- Landfill biomethane
- Dairy biomethane
- Fossil natural gas

See the [Argus Air Daily methodology](#).

US Renewable Thermal Certificate (RTC)

The price in \$/mn Btu of a certificate for the generation of 1mn Btu of common carrier pipeline-injected renewable natural gas. Assessments are published for the two previous, current and two forward half-year vintages. Published weekly on Thursdays.

See the [Argus Air Daily methodology](#).

Brazil biomethane

The price of biomethane, including its renewable attributes.

- fob Brazil – published weekly on Thursdays in R/m³.
 - Sao Paulo north network price
 - Sao Paulo south network price
 - Rio de Janeiro network price
- Published daily in R/m³.

See the [Argus Brazil Gas Markets methodology](#).

Greenhouse gas reduction

Greenhouse gas reduction quota assessments are defined by country and by the category of fuel.

German biofuel quota (Treibhausgasminderungsquote)

- Conventional GHG quota
- Advanced GHG quota
- Advanced GHG sub quota
- Other GHG quota

Prices are assessed for the current compliance year and are published weekly on Wednesdays. See the [Argus O.M.R. Fuels methodology](#).

Netherlands renewable fuel units (ERE)

- LRE-Advanced (LRE-G)
- LRE-Conventional (LRE-C)
- ZRE-Advanced (ZRE-G)

Prices are assessed for the current year obligation period and are published weekly on Wednesdays. See the [Argus Biofuels methodology](#).

UK RTFO

- UK Crop-based RTFC reduction
- UK Other RTFC reduction

Prices are assessed for the current year obligation period and published monthly on 25th of each month. See the [Argus Biofuels methodology](#).

Bio-LNG bunker fuel

The calculated spot price of delivered-on-board bio-LNG bunker fuel.

- dob northwest Europe subsidised waste
- dob northwest Europe unsubsidised waste
- dob northwest Europe subsidised manure
- dob northwest Europe unsubsidised manure
- dob west Mediterranean subsidised waste
- dob west Mediterranean unsubsidised waste
- dob west Mediterranean subsidised manure
- dob west Mediterranean unsubsidised manure

Prices are published weekly on Thursdays. See the [Argus LNG Daily methodology](#).

Argus Global Compliance Carbon Index

The Argus Global Compliance Carbon Index (AGCCI) is a daily average of Argus price assessments for compliance carbon markets, weighted by regional CO2 emissions.

See the [Argus Air Daily methodology](#).

Argus Global Green Power Index

The Argus global green power index is a daily average of Argus price assessments for energy attribute certificates for renewable electricity weighted by regional renewable electricity generation.

See the [Argus Air Daily methodology](#).