

BRM's natural gas forward market service design

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1. Executive Summary

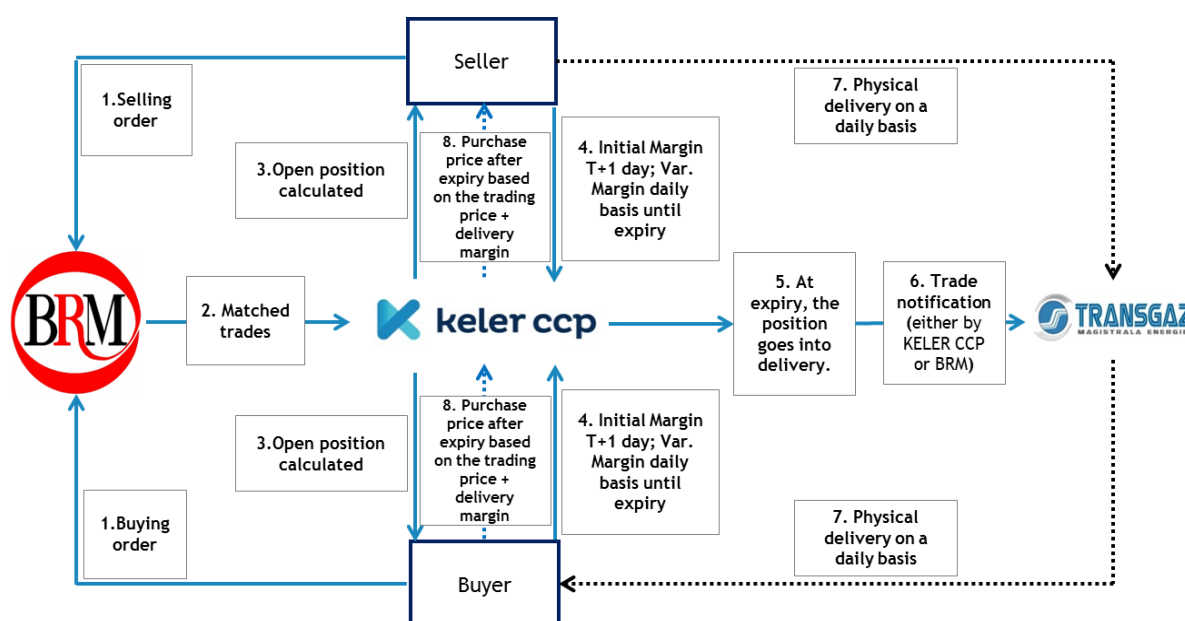
As of 13 of September 2016, KELER CCP and the Romanian Commodities Exchange (Bursa Romana de Marfuri, BRM) have signed an Agreement to provide central clearing services for clients trading on the BRM's natural gas forward market. The central clearing service will be launched in 2017 and as the cooperation between the two parties is in progress, KELER CCP would like to provide appropriate information about the central clearing service on the new market. This detailed description is intended to provide the most comprehensive view about how the trading, clearing, and settlement will be performed on the Romanian market, and at the same time will detail the risk and default management processes.

Besides the business process it is also crucial to have a common understanding on the IT structure supporting the successful cooperation between the parties, therefore the details of the IT system to be developed are also listed and explained in the document.

Though the document is fairly complete, certain elements of the procedures still need to be clarified by the involved parties, even third parties; hence these decisions will be made later. These cases are marked with footnote.

2. Description of the business process

In order to show the process of trading and the clearing, the following chart might serve as a backup to visualize the different phases:



The different stages of the process marked on the illustration will be explained in detail in the upcoming sections.

2.1. Trading

BRM will provide the trading facility by the development of its existing trading platform. The traders will be able to place their buy or sell orders continuously on every trading day defined by the trading calendar. The trading calendar is prepared in line with the Hungarian business calendar, meaning that on Hungarian holidays trading is closed on BRM's platform. Additionally, the market will be closed on the Romanian holidays as well. The market will operate on a 5/8 basis meaning

that continuous trading will start at 9:00 a.m. CET (10:00 Bucharest time) every trading day and will close at 14:00 p.m. CET (15:00 Bucharest time) respectively. The trading platform will automatically match the incoming buying and selling orders which will be forwarded in real-time and batch form at the end of the day to KELER CCP.

In the beginning only proprietary trading will be available.

With regards to the tradable products, there will be weekly, monthly, quarterly and yearly products available as set in the Market Rules of BRM. For further information please see the related [appendix](#) where the characteristics and specification of the products are explained in detail. Moreover, quarterly and yearly products are subject to the process of cascading.

Before the expiry of a quarterly product, it cascades into three separate monthly products. The first month of the quarter will go into delivery, and the remaining two months are further tradable and can be closed as well. The same applies for yearly products as before expiry they cascade into four quarterly products. The first quarter is further cascaded into three months and the first month goes into delivery. The remaining two months are further tradable just as the remaining three quarters are.

2.2. Clearing

KELER CCP will receive the matched trades in real-time and in a batch form at the end of the day from BRM. At the time of receiving the trades, KELER CCP confirms their validity. At the time of confirmation KELER CCP as a central counterparty becomes the seller for the buyers and the buyer for the sellers on the market. This process is called novation.

The process of clearing can be defined as position management and calculation of the respective financial positions and the related collateral requirements. Positions of the clearing members are calculated each day based on their trading activity, showing their concluded trades and their resulting open positions of the certain products. Position management will be done on a gross basis, meaning that sell and buy trades are registered as well. The reason for this is that although trades of the same product at different prices are shown in one net open position, their purchase price will be separately calculated and settled. In order to illustrate how this goes, the following example is given: A clearing member buys 10 MWh gas for December 2016 on 14.11.2016 at an 85 RON price. The next day prices fall and the trader buys another 15 MWh gas for December 2016 at an 83 RON price. As a result the open position of the clearing member for December gas will be 25 MWh. However, when it comes to purchase price settlement, their purchase price can be calculated separately based on the trading price and thanks to the gross position management.

Until expiry or the closing of the positions, they are continued to be registered as an open position of a certain trader. Expiry means the last trading day when a certain product can be traded. Based on the Market Rules of BRM open positions may be closed before expiry by placing a counter order with the same quantity for the same product. In case the position remains open at expiry, the position goes into physical delivery and accordingly the clearing member will have a delivery position.

On every trading day KELER CCP calculates the positions and prepares the clearing reports in English only. On the clearing reports the open positions are shown in details, so that the clearing member can easily follow its activity. Additionally, margin requirements and delivery positions are also shown on separate clearing reports on a daily basis.

2.3. Risk management

In order to be able to trade, the partners must become a Clearing Member by passing certain requirements:

- RON 1,100,000 shareholders equity;
- licence from the relevant authority for gas trading activity;
- completion of the Know Your Customer Questionnaire.

After obtaining the Clearing Membership, the Clearing Member has the obligation to provide certain collaterals (margins). The following table will summarize the margin types and the acceptable collateral assets.

Collateral type	Description	Accepted collateral assets
Basic Financial Collateral	The Basic Financial Collateral is to be provided upon entry into the market. Its amount is fixed: 150,000 RON	Cash RON
Initial margin	The Initial margin is to cover risk arising from the daily price movements of forward open positions and positions in delivery. If the sold instrument goes into delivery both the seller and the buyer still has IM requirement until the end of the delivery period in accordance with the remaining positions in delivery (e.g. not yet delivered). The initial margin parameter is determined by instrument. The initial margin requirement to be met is calculated at portfolio level on the gross open positions with the use of SPAN software.	Cash RON
Variation margin	There is no variation margin settlement on a daily basis; the variation margin is collateralised, meaning it is part of the initial margin.	
Delivery margin	It is calculated for the physically delivered products in the delivery cycle. It is to manage the purchase price non-performance during delivery period. The buyer of the contract has to meet with the delivery margin requirement in line with the delivery period. Start date of the delivery margin is two clearing days before the delivery starts.	Cash RON
Default fund contribution	The size of the DF is calculated based on KELER CCP's stress tests and the contribution is calculated based on the initial margin requirement. The default fund is calculated at least on a monthly basis. Minimum amount of DF is RON 75,000.	Cash RON
Additional financial collateral	KELER CCP may call for additional collateral in line with its general business rules (reason for levying additional collateral is for example repeated defaults within 3 months)	Cash RON
Supplementary collateral	If the minimum capital requirement determined by KELER CCP for Clearing Members is not met, the supplementary collateral amount equals the amount required to meet the minimum capital requirement.	Cash RON

Though initial margin (IM) requirement is calculated on a daily basis, the IM parameter (e.g. IM per product) is determined on a regular (monthly) basis in line with EMIR, however KELER CCP may adjust the parameters on an ad-hoc basis in case of extreme market conditions. In case the IM

parameter is modified KELER CCP shall publish it one day prior to the introduction in an announcement.

Example for IM calculation

Published IM parameters (rough estimates, not real parameters):

Product	Expiration(s)	IM (in RON)
Weekly	all expiries	1,800
Monthly	all expiries	5,100
Quarterly	all expiries	13,600
Yearly	all expiries	35,700

Clearing Members' sample portfolio:

CMs	Product	Long	Short	Gross Open Position	IM per product in RON (IM × Open Position)	IM per CM in RON
A	Weekly	10	0	10	18,000	18,000
B	Weekly	0	5	5	9,000	60,000
	Monthly	10	0	10	51,000	
C	Weekly	0	5	5	9,000	60,000
	Monthly	0	10	10	51,000	

The Clearing right shall be obtained when all the required collaterals are provided, including margins and the DF contribution.

The margin requirements are calculated on a daily basis, the clearing members will receive a report at the end of clearing day. The deadline to meet the margin requirement is until the next clearing day 8:45 a.m. CET (9:45 Bucharest time). The default fund is calculated at least monthly (on the first clearing day of the month), the clearing members have to pay their contribution until 8:45 a.m. CET (9:45 Bucharest time) on the second clearing day after the determination of the actual contribution.

Additional/supplementary financial collateral may be imposed - as a sanctioning element - in the following cases:

- insufficient equity (not meeting capital requirement),
- failure in provision of audited annual report or other data provision obligations in general,
- failure in provision of KYC,
- breaching of limits applied (if applicable),
- failure in daily settlement obligations;
- repeated default,
- observed increase in individual participant's risk (e.g. based on market information, reports, change of positions, etc),
- insufficient size of the default fund.

2.4. Settlement

Financial settlement

KELER CCP as a central counterparty undertakes guarantee for the financial obligations of the Clearing Members. BCR as the nominated settlement bank will be responsible for the execution of financial transactions based on the instructions of KELER CCP. Financial settlement will be done in RON.

Financial settlement of the trades is done after the position has gone to delivery and the physical delivery is already conducted. The amount of purchase price to be settled is calculated based on the trading price (fix price) and the size of the contract. The calculated purchase prices altogether shall be paid on a weekly basis until 8:45 a.m. CET (9:45 Bucharest time) on the first clearing day followed by the delivery week. The place of financial settlement is the clearing member's own account held with BCR.

Settlement of margin requirements

In addition to the financial settlement of the purchase prices, the Clearing Members will have to provide their calculated margin requirements on a daily basis until 8:45 a.m. CET (9:45 Bucharest time). The place of margin requirement settlement is the Clearing Member's own account. Based on the calculations of KELER CCP, the Client accounts will be directly debited/credited against their segregated margin accounts held with BCR and dedicated to KELER CCP.

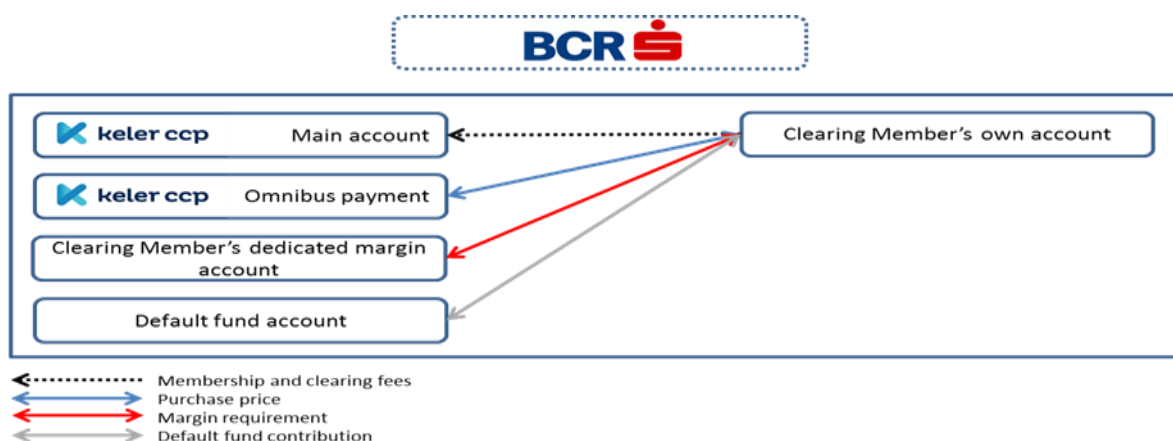
In case the Clearing Member applies a bank guarantee for the margin requirements, the calculated margin exceeding the value of the bank guarantee shall be provided in cash on its own account which will be debited in the prescribed way.

Account structure

Each clearing member will open an account held with BCR. The financial obligations resulting from the purchase price and margin obligations and even other payments such as fees shall be paid onto this account. KELER CCP as a central counterparty will open an omnibus payment account with BCR. The purchase prices will be transferred through this account meaning that buyers' accounts will be debited against this account and sellers' accounts will be credited against this account as well. As a result, at the end of the process the balance of this account will be zero.

Additionally, under KELER CCP's main account there will be a dedicated margin account opened for each clearing member. Dedicated account means that KELER CCP will have access to these accounts in order to manage a potential default or the release of margins. The amount of margin requirement will be debited from the clearing members' own accounts against these dedicated margin accounts.

Furthermore, KELER CCP will open a separate account for the default fund as well. The default fund contribution of the clearing members will be debited from their own accounts against this account. The following chart illustrates the movements between these accounts.



Physical settlement

The physical delivery is conducted by the transmission system operator, TRANSGAZ. TRANSGAZ will deliver the traded amount of gas in accordance with the nomination (trade notification) it receives. TRANSGAZ as the transmission system operator undertakes guarantee for physical delivery based on the received nomination (trade notification).¹ The nomination (trade notification) message contains the daily volumes to be delivered per Clearing Member per gas days.

Based on the result of the negotiations to be concluded with TRANSGAZ, the following options are possible in line with the guarantee of physical deliveries:

- TRANSGAZ takes full responsibility up to the complete remaining part of the non-delivered quantity (e.g. TRANSGAZ buys/sells the missing quantity itself directly on the market);
- TRANSGAZ takes responsibility up to 1-2 days, while the remaining part of the non-delivered quantity shall be bought/sold on the market directly by the Non-defaulting Clearing Member.

In each cases, the IM and other margins collected from the participants shall cover the replacing risk.

However, both cases the participants (TRANSGAZ or the Non-defaulting Clearing Member) take every effort in order to sell/buy the missing quantity, based on the actual market conditions it is realistic that physical delivery finally cannot be executed. In this case, Non-defaulting Clearing Member shall be compensated for its loss suffered by collecting default fee from the defaulting Clearing Member (amount to be determined later).

2.5. Default management

In case of the BRM forward market there can be two types of default:

- financial default,
- default in the physical delivery.

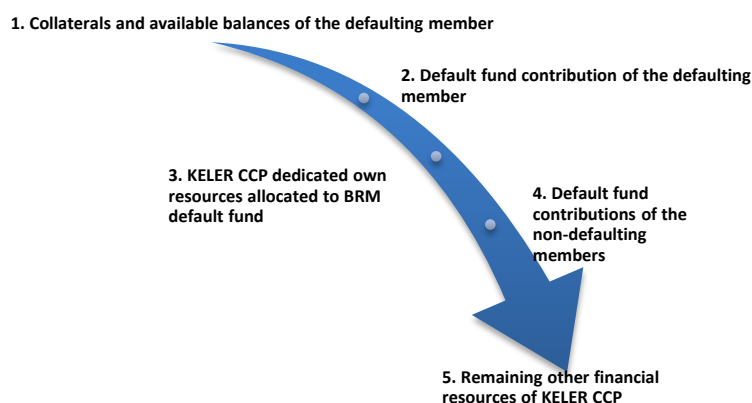
Financial default occurs if the clearing member fails to meet by the applicable deadline the margin, default fund contribution or the purchase price settlement requirement. Once default is established KELER CCP takes steps without delay to suspend the clearing right (i.e. closed from trading) of the defaulting clearing member and starts to take the available collaterals in line with the default waterfall stated in KELER CCP's General Business Rules. Once default is closed KELER CCP calculates

¹⁻² The role of TRANSGAZ is still under consideration at the time of making and signing the present document.

and collects the default fees. Upon request KELER CCP will restore the clearing right of the clearing member only after the member met with its obligations.

Physical default occurs if the clearing member fails to deliver the sold natural gas by the applicable deadline. KELER CCP does not undertake guarantee for the physical delivery of the natural gas. However KELER CCP collects initial margin from the seller in the delivery period in order to manage the so called replacement risk of the not delivered natural gas. TRANSGAZ is responsible for the balance in the pipelines and shall guarantee the physical delivery of the traded contract.²

KELER CCP applies an EMIR compliant guarantee system and will use its elements in case of a member's default as follows:



During default management KELER CCP will use the defaulter's collateral assets at first, if there is still unpaid obligation KELER CCP will use its own dedicated financial resources and if they do not cover the financial position, KELER CCP will use the default fund (contributions of the non-defaulters) and if it is still not enough then KELER CCP's other remaining financial resources shall cover the financial position. If the default fund is exhausted KELER CCP will call for replenishment from the members, the deadline for the replenishment is 10 clearing days calculated from the decision of KELER CCP's CEO. The clearing member is obliged to replenish the default fund upon KELER CCP's request.

2.6. Fees (commissions) and purchase price (supply invoice)

KELER CCP charges membership fee and volume-based clearing fee to the Clearing Members regarding the Romanian natural gas market. Clearing Members will receive their fee invoices on a monthly basis and issued on the first clearing day after the subject month. Fees shall be quoted in RON, hence the related fee invoices will be issued and collected in RON as well, in line with trading and settlement currency.

The gas market trades with physical delivery are subject to purchase price (supply invoice) invoicing. As part of the central invoicing regime (self-billing invoice) KELER CCP issues all invoices in the name of the sellers, based on the mandate stated in the applicable agreement on invoicing. The invoices contain all the trades concluded during the invoicing period. The purchase prices will be calculated based on the original trading price and the contract volume.

Off-setting of the purchase price invoices applied, therefore only the resulting netted purchase price amounts will be settled via direct debit / credit from / to the Clearing Member's own accounts held with BCR based on the compensation letter issued.

Membership and clearing related fees (for information purposes only*)

Membership related fee

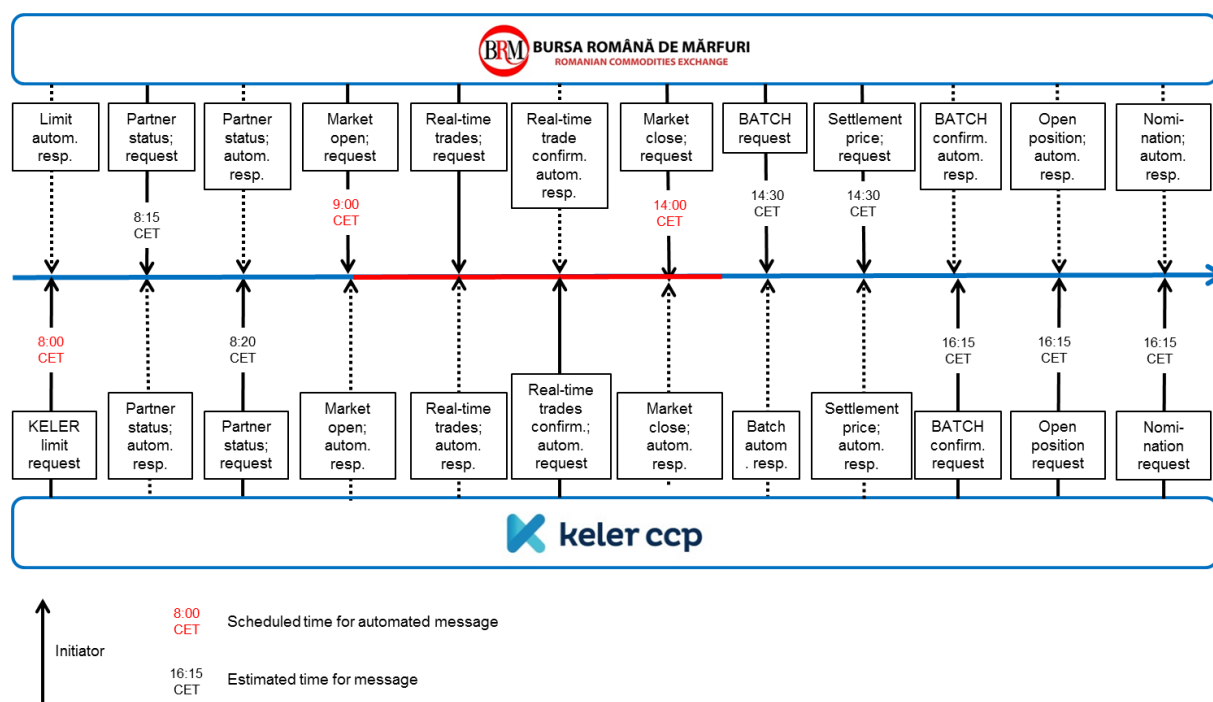
- RON 2,850 / month / Clearing member

Volume based fee

- RON 0.011 / MWh / Futures transactions
- RON 0.044 / MWh / Delivery of futures transactions

3. IT system process description

The following illustration presents the messages communicated between BRM and KELER CCP during the daily operation.



Appendix I. - Product specification

ROMANIAN FORWARD PRODUCT (RON)	
Product name	BRM Romanian Gas Week-ahead Baseload Forward BRM Romanian Gas Month Baseload Forward BRM Romanian Gas Quarter Baseload Forward BRM Romanian Gas Year Baseload Forward
Subject of the contract	Delivery of natural gas with a constant rate of 1 MW during the time from 06:00 (CET) on the first delivery day until 06:00 (CET) on the calendar day following the last delivery day during the delivery period. Delivery point is the Romanian virtual trading point managed by TRANSGAZ S.A. The delivery days are all the calendar days in the delivery month. The products are traded on "Romanian Natural Gas Forward Market" operated by BRM.
Trading days	Trading days for BRM Romanian Gas Baseload Forwards will be determined by the exchange.
Clearing days	KELER CCP publishes clearing days on its website. Cash settlement, margin calculation and trade notification of BRM Romanian Gas Forwards takes place on these days.
Minimum lot size	1 contract or multiples thereof.
Delivery periods	The following delivery periods are currently set up in the KELER CCP Clearing System: - the respective next 5 weeks (BRM Romanian Gas Week-ahead Baseload Forward), - the respective next 3 months (BRM Romanian Gas Month Baseload Forward), - the respective next 4 full quarters (BRM Romanian Gas Quarter Baseload Forward), - the respective next 3 full calendar years (BRM Romanian Gas Year Baseload Forward). The exact number of the cleared delivery periods is established between the management of KELER CCP and the exchange. The management of KELER CCP and the exchange can establish further delivery periods and launch them for clearing.
Contract volume	The contract volume is calculated from the factors of number of delivery days in the delivery period and the quantity of natural gas to be delivered daily. This quantity amounts usually to 24 MWh, on the day of the switch from winter time to summer time it amounts to 23 MWh, whereas on the day of the switch from summer time to winter time it amounts to 25 MWh. For example, the contract volume for a month forward with 30 delivery days amounts to 720 MWh, for a quarter forward with 91 delivery days it amounts to 2,184 MWh and for a year forward with 365 delivery days it amounts to 8,760 MWh.
Contract volume during the delivery period	Delivery period of BRM Romanian Gas Week-ahead Baseload Forward starts from 06:00 (CET) on the first calendar day of the subject week until next week 06:00 (CET) on every calendar day of the respective contract specified under "Delivery periods". Delivery period of BRM Romanian Gas Month Baseload Forward starts from 06:00 (CET) on the first calendar day of the subject week until next week 06:00 (CET) or until first day 06:00 (CET) of the next calendar month on every calendar day of the respective contract specified under "Delivery periods".
Pricing of transactions	In RON/MWh with two decimal places after the point.
Minimum price fluctuation	RON 0.01 per MWh
Cascading	Each open position of a BRM Romanian Gas Year Baseload Forward is replaced with equal positions of the three BRM Romanian Gas Month Baseload Forward for the delivery months from January through to March and three BRM Romanian Gas Quarter Baseload Forward for the second through to the fourth delivery quarter whose delivery periods taken together correspond to the delivery year on the last trading day. Each open position of a BRM Romanian Gas Quarter Baseload Forward is replaced with equal positions in the three BRM Romanian Gas Month Baseload Forward whose delivery periods taken together correspond to the delivery quarter on the last trading day.
Last trading day	The last trading day for BRM Romanian Gas Baseload Forward will be determined by BRM.
First settlement day of the delivery	The cash settlement day of BRM Romanian Gas Week-ahead Baseload Forward is on the first business day after the end of the delivery period. The first cash settlement day of BRM Romanian Gas Month Baseload Forward is on the first business day after the end of the delivery period.
Last settlement day of the delivery	The last cash settlement day of BRM Romanian Gas Month Baseload Forward is on the first business day after the last delivery day of the delivery month. This is the day after the expiry day of BRM Romanian Gas Month Baseload Forward in the KELER CCP Clearing System.
Fulfilment	Only that part of the contract is settled physically by which the contract volume was reduced after the end of each business week during the delivery month. The quantity to be delivered contains those delivery days that are described under "Contract volume during the delivery period". The settlement price for all deliveries in the entire delivery period is the trade price. The buyer is obliged to purchase the quantity on the delivery period and to pay the purchase price plus tax payable on said amount on the first business day after the delivery period. The seller is obliged to deliver the quantity of natural gas agreed on with the constant rate and the duration on the delivery period.