

POLICY BRIEF

Securing gas for Europe (a follow up to the Policy Brief on *Capping the European price of gas*)

Highlights

- The imposition of a cap on the price of gas traded in the EU is increasingly the focus of policy debate in Europe. In a previous Policy Brief, we outlined a possible approach to contain the price of gas in the EU, while safeguarding security of supply as much as possible. The proposed mechanism combines measures to contain the price of the gas traded in the EU ('price cap') with auctions to procure any LNG volumes required to meet EU gas demand.
- In this Policy Brief we explore two aspects related to the mechanism outlined in the previous one: (i) How would the gas imported as LNG be allocated to the different TSOs/Member States? (ii) How would the additional costs of importing LNG with respect to the price cap for pipeline gas in the EU be recovered?
- In the proposed mechanism, the gas volumes to be procured through the LNG auctions would be determined by aggregating the requests of the different TSOs. Therefore, at least as a first approximation, the allocations of the procured LNG volumes to the different TSOs could be based on their respective requests. We also explore additional aspects which would need to be considered if we move beyond this first approximation.

Authors

Alberto Pototschnig, EUI; Ilaria Conti, EUI;



Issue 2022/51

October 2022

- We also propose that the additional costs of importing LNG with respect to the price cap for pipeline gas in the EU be recovered through an uplift charged on final consumption. We propose different approaches in terms of uplift levels and the base on which it is charged, and we compare them with respect to two criteria: revenue adequacy and the ability to provide the correct price signals to consumers to promote efficient demand reduction.

1. Introduction

The imposition of a cap on the price of gas traded in the EU is increasingly the focus of the policy debate in Europe. Since May 2022, the European Council has been calling for the European Commission to explore the feasibility of introducing temporary import price caps for gas. Lately, at the end of September 2022, in a letter to the European Commissioner for Energy, Kadri Simson, fifteen Member States stressed that *“the price cap [...] is the one measure that will help every member state to mitigate the inflationary pressure, manage expectations and provide a framework in case of potential supply disruptions, and limit the extra profits in the sector”*. and that *“this cap is the priority”*.

In a previous Policy Brief¹, we outlined a possible approach to contain the price of gas in the EU, while safeguarding security of supply as much as possible.

We proposed a two-part mechanism, based on the assumptions that the European gas market is composed of two segments - pipeline gas and LNG – and that there are limited opportunities for external exporters of pipeline gas to the EU to redirect that gas or liquefy it and sell it as LNG on the global market.

For the first segment (pipeline gas), we proposed: i) a regulatory intervention on the price of gas on organised market places, by using their technical

functionalities, such as the Interval Price Limits of the Intercontinental Exchange² and/or ii) to mandate TSOs to provide gas balancing services at a predefined price or price range, which would act as a driver for price convergence of the gas traded in the EU. In fact, these two measures might be adopted alongside each other, to increase the effectiveness of the proposed mechanism.

Setting a predefined price or price range (the ‘price cap’) for pipeline gas in the EU might lead external suppliers of pipeline gas to reduce the flows to Europe. This is clearly a significant risk, even though, as we claimed in the previous Policy Brief and again in Section 4 below, if the proposed mechanism were introduced as part of a credible commitment of European institutions to tackle the current energy crisis and the resulting sky-rocketing energy prices, the ‘missing gas’ volumes³ to be provided by the TSOs through the balancing mechanism could remain quite limited.

For the second segment (LNG), we propose the introduction of auctions for procuring any ‘missing gas’ volumes on the global LNG market. These auctions could be run by the TSOs or, more appropriately, by a Single Buyer entity along the lines of the proposed Joint Purchasing Platform⁴ included in the Commission’s REPowerEU plan.

In this Policy Brief we explore two aspects related to the measures outlined in the previous one. In particular:

- How would the gas imported as LNG by the TSOs or the Single Buyer entity be allocated to the different TSOs/Member States?
- How would the additional costs of importing LNG with respect to the predefined price or range for pipeline gas in the EU be recovered?

1 Alberto Pototschnig and Ilaria Conti, *Capping the European price of gas*, FSR Policy Brief, Issue 2022/49, September 2022

2 The IPL functionality, and similar devices used in other trading platforms, acts as a temporary circuit breaker on these platforms, to diminish the likelihood and extent of short-term price spikes or aberrant market moves. While it is designed to be in force throughout each trading day, the protection that these functionalities provide are likely to be triggered only in the case of extreme price moves over very short periods of time. The proposed mechanism would give a more continuous role to these functionalities.

3 These are the net volumes which the market would require from the balancing mechanism at the predefined price or range.

4 However, while the Joint Purchasing Mechanism is generally considered as voluntary, the Single Buyer entity would be most effective if it were mandatory for the procurement of the balancing gas required by the TSOs.

2. Directing gas to meet demand

In the proposed mechanism, the gas volumes to be procured through the LNG auctions would be determined by aggregating the requests of the different TSOs. Therefore, at least as a first approximation, the allocations of the procured volumes to the different TSOs could be based on their respective requests. This, however, can only be a first approximation, since there might not be sufficient capacity in the European gas network to move gas from the LNG terminals to the TSOs which have requested it.

Two considerations are relevant here. First, the available capacity of LNG terminals in the EU and at some interconnection points in the EU gas network might limit the extent to which LNG could be imported and reach some distant requesting TSOs. This is, however, a constraint which will likely need to be addressed in the future anyway, to the extent that LNG is expected to replace some of the gas which is, or used to be, imported through pipelines, and therefore might not be specific to the proposed mechanism. Secondly, if the network constraints are binding, the LNG auctions might need to be run separately for different regions, so as to attract the LNG closer to where the gas is needed. However, the use of regionally-differentiated auctions might not be sufficient to solve all network congestions. Regionally differentiated auctions might also result in different premia for LNG in different regions, an aspect to which we will return further below.

There is also a time dimension to be considered when defining the allocation of the LNG procured through the auctions to the requesting TSOs. In fact, the need for gas balancing volumes would typically emerge during or at the end of the gas day, while auctions would need to be run well in advance of the time when the LNG is needed. Therefore, if the proposed mechanism were to be implemented, TSOs would be required to provide a forward estimate of the volumes of balancing gas which they might require 'on the day', so that such volumes could be procured in good time through the auctions. The LNG would then be stored, as such or as gas, to be used by the TSOs to balance the system on a daily basis.

In the previous Policy Brief and again here we propose the intervention of a Single Buyer entity in procuring the 'missing gas' volumes from the LNG market. We see benefits in this, compared

with a situation in which TSOs would procure these volumes independently. In particular, the intervention of a Single Buyer entity would:

- Overcome the possible shortage of expertise within TSOs on running gas auctions. In the absence of a Single Buyer entity, TSOs would need directly to run auctions and therefore acquire the necessary expertise, which is different from that required to operate the gas network and system;
- Ensure that the EU has the maximum possible bargaining power in the global LNG market. To achieve the same result in the absence of a Single Buyer entity, TSOs would have to coordinate these auctions in order not to compete against each other on the global LNG market.
- Possibly absorb the premia paid on LNG volumes procured through the auctions and recover the respective costs from consumers through an administratively-set uplift, as further detailed in the next Section.

3. Recovering the cost of LNG imports

The mechanism proposed in the previous Policy Brief envisages that any 'missing gas' volumes be procured on the global LNG market through auctions. These auctions are likely to result in premia being paid on the LNG with respect to the predefined price or range at which pipeline gas would be traded in the EU as a result of the proposed mechanism.

In the design of the auctions, at least at a general conceptual level, two alternative pricing approaches are possible: i) the so-called 'pay-as-bid' approach, in which each external supplier is paid, for the LNG that it supplies, the price that it has offered in the auction; and ii) the so-called 'pay-as-cleared' approach, in which all LNG suppliers are paid according to the price offered for the most expensive LNG volume accepted in the auction.

The pros and cons of these two pricing approaches have been lively debated recently in connection with the design of the electricity day-ahead market, where the 'pay-as-cleared' pricing mechanism is currently used and proposals have been put forward to replace it with the 'pay-as-bid' approach. These proposals were based on the misconception that the

in which it were applied to the full consumption. In particular, revenue adequacy would be ensured if the uplift level were set equal to the average premium paid on LNG imports multiplied by a factor reflecting the ratio between the share of LNG imports over total consumption and the share of the consumption in excess to the reference level over total consumption.

(2)
$$\text{Uplift}_i = \text{Avg LNG Premium} * (\text{LNG imports} / \text{Total consumption}_i) / (1 - (\text{Reference consumption}_i / \text{Total consumption}_i))$$

Note that, in formula (2), the quantities with a subscript 'i' could be considered either at the level of the individual consumer or for all consumers taken together. In case formula (2) were applied at the level of the individual consumer and the ratio of reference consumption to total consumption varied between consumers, formula (2) would result in different levels of the uplift for different consumers. While this is a possible approach, it seems unpractical. If the level of reference consumption were set, for all consumers, equal to a share of their total consumption where the share is the complement to one of the ratio between LNG imports and total consumption, i.e.

(3) Reference consumption_i = Total consumption * (1 – LNG Imports/Total Consumption) formula (2) would be reduced to⁸:

(4)
$$\text{Uplift}_i = \text{Avg LNG Premium}$$
 and the uplift would be equal to the average LNG premium.

However, even an uplift equal to the average LNG premium would not convey the correct price signal to consumers, regarding the cost of the marginal LNG volumes procured through the auctions. This is the correct price signal which would induce an efficient behaviour, in terms of energy savings, by consumers. Conveying the correct price signals to consumers would require the uplift to be equal to the marginal LNG premium. However, if this uplift were applied to the consumption in excess of the

reference level as determined in formula (3), the revenues collected from the application of the uplift would exceed the overall cost of the premia paid on LNG imports^{9,10}. Such additional revenues could clearly be used for other policy purposes. Moreover, in order for the uplift to convey the correct price signal, the reference consumption level would need to be determined independently of actual current consumption, for example reflecting a share of historic consumption. This would however create some uncertainty on the total revenues delivered by the implementation of the uplift. The fact that the application of an uplift equal to the marginal LNG premium tends to deliver higher revenues than those required for revenue adequacy implies that, even in the presence of some uncertainty, such an adequacy is likely to be achieved.

Moreover, as indicated in Section 2 above, constraints in the EU gas network could require LNG auctions to be run separately for different regions, so as to ensure that the LNG is delivered in a way which is consistent with the capability of such a network. If the premia resulting from the LNG auctions run for the different regions turned out to be different, the resulting uplifts might also not be the same across the EU. The differences would signal the value of removing the constraints on the internal gas network.

In any case, with respect to what consumers would pay in the absence of any intervention to contain the price of gas in the EU, total gas bills would be reduced with all three uplift levels. In fact, if no measures were implemented, it could be expected that the price of gas in the EU would be determined by LNG imports, or be even higher, reflecting scarcity within the EU. And the total gas bills for consumers would continue to reflect that price level for the commodity part. Instead, in the uplift scenarios outlined above, the marginal price of gas would only apply, at most, to consumption in excess of the reference level (when the uplift is equal to the marginal LNG premium).

8
$$\text{Uplift}_i = \text{Avg LNG Premium} * (\text{LNG imports} / (\text{Total consumption}_i * (1 - (\text{Reference consumption}_i / \text{Total consumption}_i)))) = \text{Avg LNG Premium} * (\text{LNG imports} / (\text{Total consumption}_i * (1 - (\text{Reference consumption}_i / \text{Total consumption}_i)))) = \text{Avg LNG Premium} * (\text{LNG imports} / (\text{Total consumption}_i * (1 - (\text{Total consumption} * (1 - \text{LNG Imports} / \text{Total Consumption}) / \text{Total consumption})))) = \text{Avg LNG Premium}.$$

9 The extent to which, in this case, revenues from the implementation of the uplift would exceed the overall costs of the premia paid for LNG imports through the auctions would depend on the distribution of prices of the accepted offers in the auctions. If these prices were very similar to each other, the excess revenues would be limited.

10 In this case, revenue adequacy could be achieved by applying the uplift even to a lower share of consumption than that in excess of the reference level. However, as the revenue excess would be difficult to forecast, this would be a risky strategy.

Therefore, a trade-off emerges between the possible levels of the uplift, in terms of the impact on the gas bills for final consumers¹¹, the revenues resulting from the application of the uplift and the price signals which the uplift would convey to consumers. The following table compares the three levels of uplift singled out above along these three dimensions. We provide both a qualitative assessment and a quantitative assessment. The latter is based on the following assumptions:

- Level of the predefined price (price cap): 90€/MWh
- Level of the marginal LNG price premium: 110€/MWh
- Level of the average LNG price premium: 80€/MWh
- Share of LNG imports over final consumption: 30%
- Reference consumption as a share of consumption: 70%

We stress that these assumptions are made for illustration purpose only and they do not represent a proposal for the levels of the different prices, premia and parameters.

Moreover, for simplicity, we assume an inelastic demand, but clearly part of the overall strategy to deal with the current energy crisis is to promote energy saving, through price and non-price instruments, and the merit of a price signal reflecting marginal gas costs is exactly to provide the correct price signal for efficient energy saving.

4. Further considerations

In the previous Policy Brief, we highlighted a number of potentially tricky issues which would need to be addressed for the implementation of the proposed mechanism. In this Policy Brief we address the two fundamental ones, but other implementation issues would still have to be considered (e.g. on how best to set the Single Buyer entity up).

Approach to the implementation of the Uplift	Impact on the commodity component of gas bills for end-consumers	Revenue adequacy	Price signal conveyed
Uplift applied to full consumption (ensuring revenue adequacy)	Reduction in the energy component of gas bills (by 43%)	Revenues from the uplift to cover total LNG premium	Commodity component of gas prices significantly lower than marginal LNG costs (114 vs 200 €/MWh)
Uplift equal to average LNG premium applied to consumption in excess to the reference level	Reduction in the energy component of gas bills (by 43%)	Revenues from the uplift to cover total LNG premium	Commodity component of gas prices on consumption in excess of the reference level lower than marginal LNG costs (170 vs 200 €/MWh)
Uplift equal to the marginal LNG premium applied to consumption in excess of the reference level	Reduction in the energy component of gas bills (by 38.5%)	Revenues from the uplift to exceed total LNG premium (by approx. 8%)	Commodity component of gas prices on consumption in excess of the reference level to reflect marginal LNG costs (200 €/MWh)

¹¹ With respect to a prevailing price determined by the LNG price in the global market. As indicated in the text, in the absence of any intervention on the EU gas price, the prevailing level might even be above the LNG price in the global market, as it would be determined by the need to reduce demand to the level of available supply.

Since the previous Policy Brief was published, a number of observations were offered regarding the role for TSOs that the proposed mechanism envisages and whether TSOs are equipped for it. Indeed, it might be possible that the implementation of the proposed mechanism results in large volumes of ‘missing gas’. However, this is neither automatic, nor inevitable. In fact, if the mechanisms were part of a credible commitment of European institutions to tackle the current energy crisis and the resulting sky-rocketing energy prices, it could well be possible that external suppliers of pipeline gas would be available still to sell gas to Europe at the predefined price or range, especially if these were remunerative with respect to both extraction and transportation costs and to the levels of prices prevailing in the period before the crisis erupted¹². In this case, external suppliers of pipeline gas to the EU, who have limited alternative destinations for such gas, would be faced with the choice of either continuing to sell it to Europe, or stopping extraction – not always possible – or flaring it. Selling to the EU at a price which is below the current abnormally high levels, but still remunerative and possibly very favourable with respect to historic levels, might appear, in this situation, an attractive proposition.

Clearly, this is a best-case scenario and there is also an alternative one in which external suppliers of pipeline gas to the EU refuse to sell gas at the predefined price or range or significantly reduce the flows of gas to the EU as a result of the introduction of the new mechanism. In this case, the volumes to be procured through the auctions would balloon and EU consumers might not necessarily be better off. This is something that policymakers would need to keep in mind. This is where the international outreach and energy diplomacy advocated by the Commission¹³ could play a role, by explaining the sense of the mechanism and the opportunities which it still offers to external pipeline exporters to the EU.

It is also important that, as stressed in the previous Policy Brief, any mechanism to contain the price of (pipeline) gas in the EU is accompanied by effective policies to promote, or enforce, a reduction in the demand for gas in the EU. It would also be

imperative that the EU gets ready to implement rationing of the supply of gas to final consumers if available gas volumes, imported through pipelines and as LNG, turned out to be insufficient to meet demand. The Security of Gas Supply Regulation¹⁴ provides a framework for this scenario and a reflection is probably necessary to consider whether its provisions are still adequate in the event of a reduction in the supply of gas which is much more severe than that considered when such a Regulation was adopted. This reflection goes well beyond the scope of this Policy Brief.

Therefore, it is possible that the gas volumes dealt in the balancing market might somewhat increase with respect to historic levels and to those implied by the residual role of TSOs envisaged in the current legislation (e.g. the Gas Balancing Network Code). In this respect, it is to be stressed that the current legislation does not fix a quantitative limit to the volumes of gas dealt through the balancing mechanism. Thus, strictly speaking, the possible larger role for TSOs which might result from the implementation of the proposed mechanism would not be in contrast with the letter of current legislation. It would be indeed in contrast with the intended roles of TSOs.

But, as mentioned in the introduction of the previous Policy Brief, these are not normal times and might require extraordinary policy interventions. A separate issue is whether the TSOs are well equipped to act as suppliers of last resort of unlimited quantities of gas through the balancing mechanism. As already indicated in Section 2 above, the establishment of a Single Buyer entity, proposed in the previous Policy Brief aims at overcoming any possible competence gap which the TSOs might encounter. The Single Buyer entity may also manage the payments of the premia to external LNG providers and the recovery of the associated costs through the implementation of the uplift. This entity would have to be adequately endowed with sufficient financial resources to play this role. Member States might provide the necessary financial resource.

12 In the four years before summer 2021, when the upward trend started, price spikes at TTF hardly reached 30 €/MWh and gas prices were never above 20 €/MWh since February 2019 until January 2021 (Source: TradingEconomics.com).

13 For example, in May the Commission set up a EU Energy Platform Task Force to secure alternative supplies.

14 Regulation (EU) 2017/1938 of the European Parliament and of the Council of 25 October 2017 concerning measures to safeguard the security of gas supply and repealing Regulation (EU) No 994/2010.

5. Conclusions

The current energy crisis calls for measures both in the short term and in the longer run. So far, Member States have intervened mostly to protect final consumers from sky-rocketing energy bills, through measures which often have resulted in a reduction in the retail prices, and to collect part of the resources to finance these measures by clawing back some of the extraordinary profits earned by intra-marginal producers in the electricity market. A recently adopted Council Regulation also moves in this direction¹⁵. However, as the root cause of this crisis is to be found in the gas market, an intervention to contain gas prices in the EU would also have beneficial effect on the prices in the electricity market. In our previous Policy Brief¹⁶, we outlined a mechanism to contain the price of gas in the EU. As clarified there, we do not claim that it is the only possible mechanism, but we believe that it has some advantages with respect to other approaches which have been proposed, including an intervention limited to the price of Russian gas.

We believe that none of the possible measures currently being discussed are without drawbacks and all involve a degree of risk. The challenge is to find the one which minimise these drawback and risks. As indicated in the previous Policy Brief, we are generally not in favour of price caps, but we are currently experiencing a war situation, following the unjustified and unlawful invasion of Ukraine by the Russian Federation army, and this war is more and more spreading also to become an energy war, in which the Russian Federation is weaponising its gas supplies to Europe. In this situation, a strong intervention on the functioning of the gas market in the EU might well be merited.

15 <https://www.consilium.europa.eu/media/59318/st12999-en22.pdf>, see in particular art.13 on *Support to final energy customers through a mandatory temporary solidarity contribution*

16 See Footnote 1

The Florence School of Regulation

The Florence School of Regulation (FSR) was founded in 2004 as a partnership between the Council of the European Energy Regulators (CEER) and the European University Institute (EUI), and it works closely with the European Commission. The Florence School of Regulation, dealing with the main network industries, has developed a strong core of general regulatory topics and concepts as well as inter-sectoral discussion of regulatory practices and policies.

Complete information on our activities can be found online at: fsr.eui.eu

Robert Schuman Centre for Advanced Studies

The Robert Schuman Centre for Advanced Studies (RSCAS), created in 1992 and directed by Professor Erik Jones, aims to develop inter-disciplinary and comparative research on the major issues facing the process of European integration, European societies and Europe's place in 21st century global politics. The Centre is home to a large post-doctoral programme and hosts major research programmes, projects and data sets, in addition to a range of working groups and ad hoc initiatives. The research agenda is organised around a set of core themes and is continuously evolving, reflecting the changing agenda of European integration, the expanding membership of the European Union, developments in Europe's neighbourhood and the wider world.

www.eui/rsc



Co-funded by the
Erasmus+ Programme
of the European Union

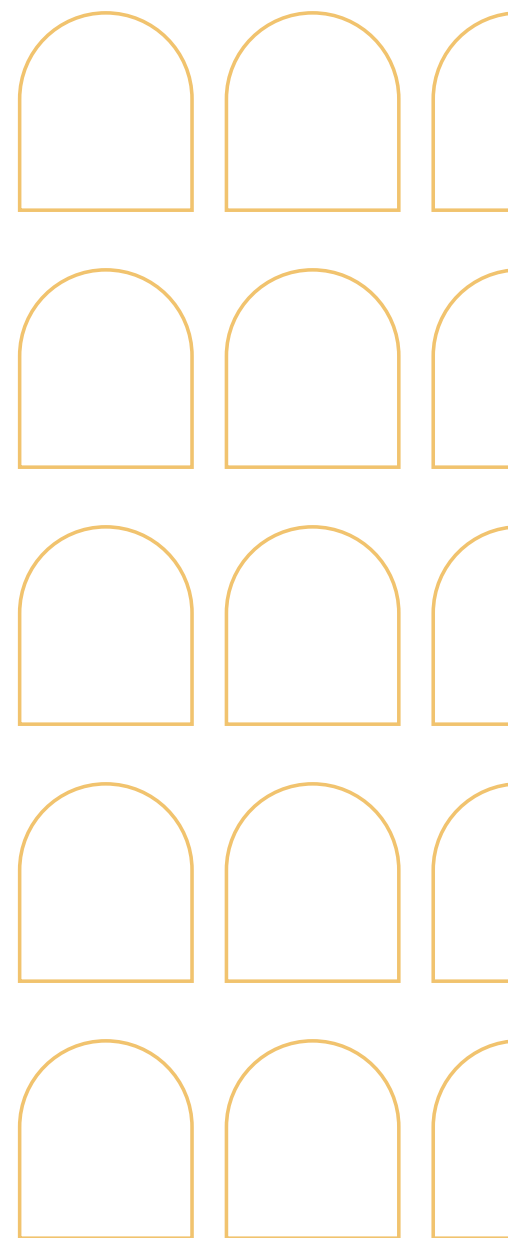
© European University Institute, 2022

Editorial matter and selection © Alberto Pototschnig and Ilaria Conti, 2022

This work is licensed under the [Creative Commons Attribution 4.0 \(CC-BY 4.0\) International license](https://creativecommons.org/licenses/by/4.0/) which governs the terms of access and reuse for this work. If cited or quoted, reference should be made to the full name of the author(s), editor(s), the title, the series and number, the year and the publisher.

Views expressed in this publication reflect the opinion of individual authors and not those of the European University Institute.

Published by
European University Institute (EUI)
Via dei Roccettini 9, I-50014
San Domenico di Fiesole (FI)
Italy



doi:10.2870/256547
ISBN:978-92-9466-249-1
ISSN:2467-4540
QM-AX-22-051-EN-N