Study supporting the Impact Assessment concerning Rules on Harmonised Transmission Tariff Structures for Gas and Allocation of New Gas Transmission Capacity

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1. INTRODUCTION

Europe is facing increasing competition from rapidly growing economies around the globe. Competitive energy prices for European companies will be crucial in keeping advantages reached so far. Achieving a full functioning and competitive European gas market could achieve welfare gains. On a European aggregated basis, the total potential annual gas wholesale gross welfare losses due to the current lack of market integration amounted up-to 1.5 billion euros in 2013[1]. The European Union (EU) has committed itself to completing the internal market in electricity and gas building an integrated and interconnected markets allowing all market players to compete on a level playing field while creating the framework for security of supply.

In February 2015, the European Commission presented its energy policy strategy for the next five years: "A Framework Strategy for a Resilient Energy Union" to the European Parliament, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank. With this new framework, the European Commission aims at achieving "an integrated continent-wide energy system where energy flows freely across borders, based on competition, best possible use of resources while introducing effective regulation of energy markets at EU level where necessary"[2].

In Europe, gas is today used as primary fuel in almost all Member States covering ~25% of primary energy consumption.

In this context, the price paid by European gas consumers does not only cover the commodity cost of gas, but takes into account also the infrastructures used to deliver the gas. In particular, the transmission tariffs to cover infrastructure costs are charged when gas flows into and out of each country across Europe and when gas is delivered to end-consumers. There are noticeable variations in the level of infrastructure charges at different border points, which also reflect variation in the cost related to transportation.

Given the diminishing indigenous production of natural gas in the EU, access to sources outside the EU becomes more important and the interdependence between Member States in terms of gas supplies is growing. The cooperation between national regulatory bodies is thus increasing, in particular in the area of third party access tariffs to the transmission infrastructures. As tariffs set in one country can have an impact on access regimes in adjacent countries, tariff structures need to be considered in the context of the gas markets integration across the EU. Therefore, an effective design of transmission tariffs is a key step for the development of liquid gas markets.

Several steps have already been taken towards the improvement of the EU gas market system ensuring that gas is transported and consumed as efficiently as possible, avoiding losses along the value chain. The Gas Target Model (s) (GTM) and Network Codes (NC) already adopted, focus on improving cross-border networks and internal market integration.

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[1] *ACER/CEER Annual Report on the Results of Monitoring the Internal Electricity and Natural Gas Markets in 2013*

[2] *Gas medium-term market report 2015, market analysis and forecasts to 2020, IEA*

In particular, the bundled allocation of Interconnection Point capacities (CAM), the synchronised implementation of Congestion Management Procedure (CMP) mechanisms and the implementation of balancing provision (BAL) have been addressed by specific Network Codes[3]. Addressing the issues of transmission tariff structures (TAR) for gas across EU Member States and the allocation of incremental capacity (INCR) are the next important steps in setting harmonised gas network access rules.

In the process of developing the harmonised rules on transmission tariff structures for gas (TAR), there have been numerous and extensive consultations, workshops and studies, aimed at better understanding the nature and the extent of the problem and the possible benefits and drawbacks of the various options which could be considered to improve the current situation. Since June 2012 an intensive study and a set of consultations have been conducted by the European Commission (EC), the Agency for the Cooperation of Energy Regulators (ACER) and the European Network of Transmission System Operators for Gas (ENTSOG).

[3] *Commission Regulation (EU) No 984/2013 of 14 October 2013 establishing a Network Code on Capacity Allocation Mechanisms in Gas Transmission Systems; Commission Decision of 24 August 2012 on amending Annex I to Regulation (EC) No 715/2009 of the European Parliament and of the Council on conditions for access to the natural gas transmission networks (Congestion Management Procedures); Commission Regulation (EU) No 312/2014 of 26 March 2014 establishing a Network Code on Gas Balancing of Transmission Networks*

2. PROCEDURAL ISSUES

2.1 Identification

1) Lead DG: DG ENER
2) Agenda planning/WP reference: ENER/B2/2014-762

2.2 Organization and timing

2.2.1 Drafting the process

This impact assessment analyses the effect of the new measures as proposed in the European Network Code (NC) on harmonized transmission tariff structures for gas (TAR) to improve existing rules in the EU gas transmission networks including those related to provision of incremental capacity.

European-wide Network Codes are introduced by the Third Energy Package, with the objective to set, in specific areas, detailed rules on the coordinated technical or commercial operation of gas and electricity transmission networks.

The Network Code on harmonised transmission tariff structures for gas (TAR) has been developed following the rules of Regulation (EC) No. 715/2009 ("The Gas Regulation")[4]. The Network Code has been drafted by ENTSOG, based on non-binding Framework Guidelines developed by ACER following the process laid down in the Gas Regulation. On the other hand, no specific network code has been proposed for incremental capacity (INCR) but it is included in other Network Codes, CAM and TAR.

Given the highly technical nature of the topic, the Network Code has been drafted by different stakeholders at different stages in the establishment process foreseen in the Gas Regulation.[5] In nutshell, three main stakeholders: the European Commission (EC), the representative bodies of regulators (ACER) and Network Operators (ENTSOG) are subsequently responsible for the text and scrutinize each other's work.

For this process, the Commission invited ACER to develop a framework guideline (FG) which remains non-binding. After that, the Commission requested ENTSOG to submit a network code (NC) in line with the relevant the framework guideline to ACER within one year. After submission of the network code by ENTSOG in December 2014, ACER provided a reasoned opinion within 3 months on whether the tariff network code is in line with the framework guideline. This was followed by an interactive process between EC, ACER and ENTSOG after which ENTSOG resubmitted the network code to ACER. ACER submitted its opinion on the resubmitted network code. After this, ENTSOG published a new version of the Network Code including, where needed, comments received. ACER will hereafter submit its opinion on the resubmitted network code to the Commission with a recommendation on the adoption. Below the chronological steps of the development processes of the FG TAR and the TAR NC and the INCR proposal are provided.

[4] *Directive No. 715/2009*
[5] *Article 6, 7 and 8 (6) of the Gas Regulation*

December 2011 – May 2012	- ACER scoping, including public consultation in January – February 2012 - EC Invitation for ACER FG TAR
August 2012	- Impact Assessment study of FG TAR (Brattle group)
September – November 2012	- Consultation process (ACER) on the draft TAR FG and Initial Impact Assessment
February 2013	- Responses to the Consultation - IA Incremental Capacity (Frontier economics)
March 2013	- Submission of a draft FG TAR to EC - EC raised concerns on ambition of FG TAR with regard to annual capacity tariffs - ACER response with request for postponement of the deadline (October 2013). A second consultation needed
April 2013	- Further request for ACER postponement of deadline (Nov. 2013) - Approval of the EC
May 2013	- Publication of CEER Blueprinting on Incremental Capacity
July – September 2013	- 2nd Consultation process for amending chapter 3 of FG TAR
November 2013	- Publication of Revised draft FG TAR delivered to EC
December 2013	- Publication of ACER Guidance paper on incremental capacity for amendment of NC CAM - EC Invitation for ENTSOG TAR NC - EC invitation for ENTSOG for Incremental Proposal
January 2014	- TAR NC Launch Documentation (LD) - Project Plan (PP) - Consultation process for PP - Responses to the consultation of PP - Publication of PP - Kick of Meeting (ENTSOG Workshop) - Launch Documentation for the Incremental Capacity Proposal - Project Plan for Incremental capacity - Responses to consultation on draft PP for the Incremental proposal
February 2014	- SJWS 1 (Stakeholder Joint Working Session, ENTSOG) - SJWS 2 (Stakeholder Joint Working Session, ENTSOG)
March 2014	- Assessment of Policy Options *Justification document for* Framework Guidelines on rules regarding Harmonised Transmission Tariff structures (ACER)

	- SJWS 3 (Stakeholder Joint Working Session, ENTSOG) - SJWS 4 (Stakeholder Joint Working Session, ENTSOG)
April 2014	- SJWS 5 (Stakeholder Joint Working Session, ENTSOG)
May 2014	- Publication of Initial draft TAR NC for consultation - Draft Incremental Proposal for public consultation - Publication of Supporting Document for consultation - Consultation process for Initial draft TAR NC - Consultation process for Initial Draft Proposal for Incremental and New Capacity (INCR Proposal)
June 2014	- Consultation workshop (ENTSOG)
September 2014	- Refinement workshop (ENTSOG)
November 2014	- Publication of Refined draft TAR NC for SSP - Publication of Amendment Proposal of NC CAM for SSP - Publication of Analysis of Decisions Document - Comparison between Refined draft and Initial draft - Impact assessment for tariff setting year SSP (ENTSOG) - Consultation process SSP - Responses to the consultation SSP - INCR SSP responses - Report consultation (December 2014)
December 2014	- Publication and submission to ACER of the TAR NC for ACER reasoned opinion - Comparison between TAR NC for ACER and Refined draft - Publication of Incremental Proposal - Publication of Amendment Proposal of NC CAM - Accompanying Document for TAR NC - Accompanying Document for INCR proposal
February 2015	- ACER public consultation on the revised ENTSOG proposal for Incremental Capacity to amend the NC CAM.
March 2015	- ACER reasoned opinion on the NC on Harmonized Transmission Tariff Structures for Gas
July 2015	- ACER public consultation on suggested amendments to the NC CAM, including the revised ENTSOG proposal for Incremental Capacity allocation and a change of the default auction calendar - TAR NC for re-submission to ACER

2.2.2 Impact assessment

PwC and Strategy& (formerly Booz & Company, now part of the PwC Network) consultants were selected by European Commission to perform the "Study on the impact assessment for rules on harmonised transmission tariff structures for gas and allocation of new gas transmission capacity". Precious inputs from ACER and ENTSOG in their roles as authors of the Framework Guideline and the Network Code have been collected during the study. PwC and Strategy& also received contributions from a Steering Committee Group made up of representatives from EC, ACER and ENTSOG.

2.3 Consultation and expertise

As described before, both ACER and ENTSOG have repeatedly solicited inputs to their work from all segments of the gas sector, from the outset and problem identification phase up to the fine-tuning of the detailed technical elements in the text of the Network Code.

The process for the development of the TAR NC and INCR proposal included formal written consultations as well as a series of dedicated workshops and bilateral, as well as multilateral, meetings by ENTSOG. Moreover ENTSOG published for public consultation in a form of Stakeholders Support Process (SSP) the refined draft Network Code in Harmonized Transmission Tariff Structures for Gas and a draft on Incremental Proposal. The respondents to this consultation included Network Users, Traders, Producers, Suppliers, End Users, Storage Operators and a number of associations.

2.4 External Expertise

External consultants were used at different stages in the preparation of the FG by ACER. Furthermore, in order to build the baseline scenario included in this impact assessment, PwC and Strategy& have developed and submitted two tailored questionnaires to both European NRAs (through ACER) and TSOs (through ENTSOG) to collect the necessary information for the assessment from all MSs.

3. PROBLEM IDENTIFICATION

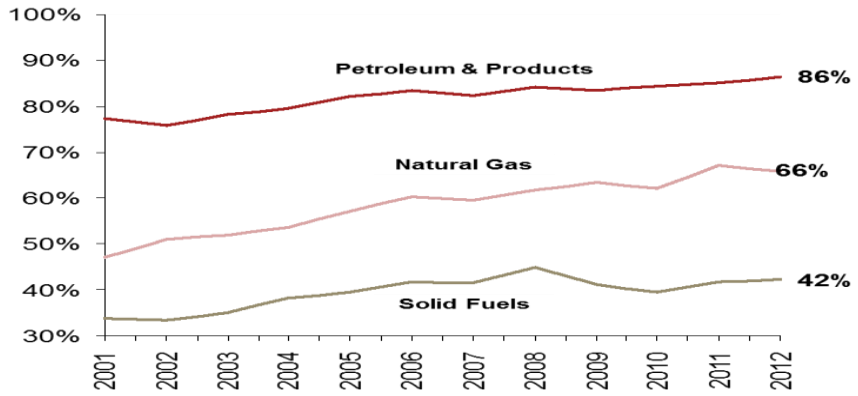
The Network Code (NC) on transmission tariff structures (TAR) focuses on improving harmonisation of transmission tariff structures across EU Member States. At the same time, the INCR proposal aims at designing common market-based approaches throughout Europe to allocate and price both existing and incremental/new capacity in an integrated manner. Efficient, market-driven and timely infrastructure investments for interconnection capacity are needed to support the completion of the internal energy market. This chapter describes both the extent of the problems related to the transmission tariff structures and the issues related to incremental capacity.

3.1 Context of the problem

3.1.1 Overview of European Gas Market and Transmission System

European dependence on gas imports has showed an increasing trend of import dependency rate from 51% to 66% in the period 2002-2012[6].

Figure 1: EU-28 Trend of energy import dependency - Net imports as % of total fuel consumption[7]

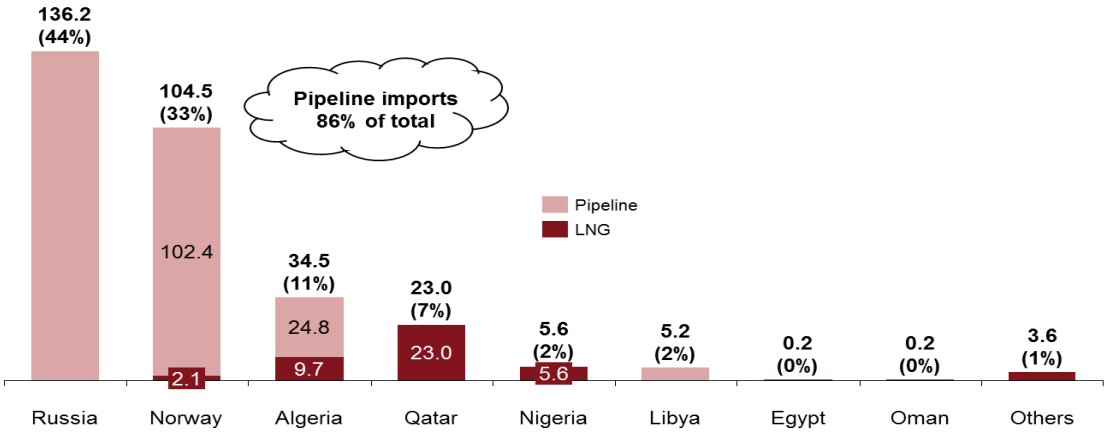


Natural gas is mainly imported from Russia (44%), Norway (33%) and Algeria (11%), with pipeline imports representing 86% of total imports and Liquefied Natural Gas (LNG) accounting for the remaining 14%.

[6] *EU Energy in Figures – Statistical Pocketbook 2014 based on elaboration of Eurostat data of May 2014;*

[7] *Source: EU Energy in Figures - Statistical Pocketbook 2014 based on elaboration of Eurostat data of May 2014;*

Figure 2: EU natural gas imports by supplier billion cubic meters, 2013[8]



In this context, the European gas pipeline system represents a critical element for all relevant stakeholders and energy players operating across the whole gas value chain:

- Transmission System Operators, who operate the high-pressure gas network;
- Distribution System Operators who operate the low-pressure gas network;
- National Regulatory Authorities who regulate the access to the gas transmission network in each Member State, including tariffs;
- Shippers, who act on the wholesale level and pay transmission charges to TSOs and DSOs for the transportation of gas to the end consumers;
- Producers/Importers, who bring the gas from the production sites to demand centres;
- Traders, who buy and sell natural gas in the market place contributing to increase market liquidity and integration;
- Final customers, who are the ultimate recipients of natural gas.

The European gas transmission network is heterogeneous and composed by different segments: producing countries (e.g. Netherlands), transit countries (e.g. Slovakia, Czech Republic, Austria) and consumption countries (e.g. Italy, Spain)[9]. The table below provides an overview of natural gas market data for all the countries in scope.

[8] *Source: BP Statistical Review of World Energy June 2014; Strategy& analysis*

[9] *Clusters identified based on economic indicators: production volume/consumption volume ratio and transported volume/consumption volume ratio.*

Figure 3: The Gas System in Europe[10]

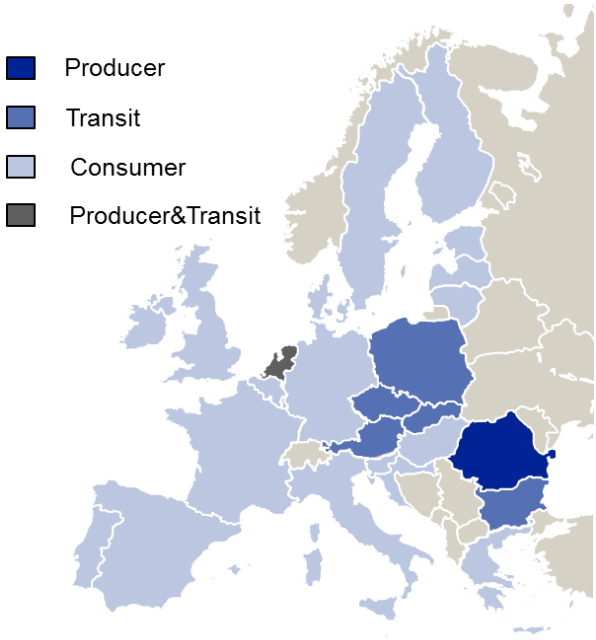
Country	# of TSOs	Number of E/System	Indigenous production 2013 (bcm)	Domestic gas consumption in 2013 (bcm)	Transported volume (Σ exit bcm 2011)*	Country typology[11]
Austria	2	1	1,4	7,7	53	Transit
Belgium	1	2	-	17	40	Consumption
Bulgaria	1	*NA* (1 in progress)	0,1	2,7	18	Transit
Czech Rep	1	1	0,3	8,3	36	Transit
Croatia	1	1	1,9	2,7	2,5	Consumption
Denmark	1	1	4,8	2,9	5,8	Consumption
Estonia	1	*NA* (only exit zones)	-	0,7		Consumption
Finland	1	*NA*	-	3,2	3,9	Consumption
France	2	3	0,3	45	67	Consumption
Germany	12[12]	2	11,8	87	159	Consumption
Greece	1	3	-	3,9	4,5	Consumption
Hungary	2	1	1,9	10	11	Consumption
Ireland	1	1	0,3	5,4	5,0	Consumption
Italy	2	1	7,7	69	85	Consumption
Latvia	1	*NA*	-	1,5		Consumption
Lithuania	1	1	-	2,7		Consumption
Luxembourg	1	1	-	0,3	1,2	Consumption
Netherlands	2	1	86,4	46,5	102	Transit/ Producer
Poland	1	3	6,2	15	38	Transit
Portugal	1	1	-	3,9	4,8	Consumption
Romania	1	1	10,6	13,3	13	Producer
Slovakia	1	1	0,1	5,1	69	Transit
Slovenia	1	1	-	0,8	1,7	Consumption
Spain	2	1	0,1	28	34	Consumption
Sweden	1	1	-	1,0	1,2	Consumption
UK	4	1	38,5	77	103	Consumption
Total	46	30	172,4	460,6	--	--

[10] *Source: Strategy& and PwC analysis; EIA, for indigenous production and ENTSOG for total transported gas in 2011. Please refer to Annex for further details on questionnaires collected*

[11] *Transit: transported volume is twice of the domestic consumption. Producer: ratio between indigenous production and domestic consumption is higher than 50%*

[12] *The total number of TSOs in Germany is 17. The standard incentive regulation regime is applied to 12 of them. Transitional provisions are applied to the remaining 5 TSOs until the next regulatory period*

Figure 4: Country typology



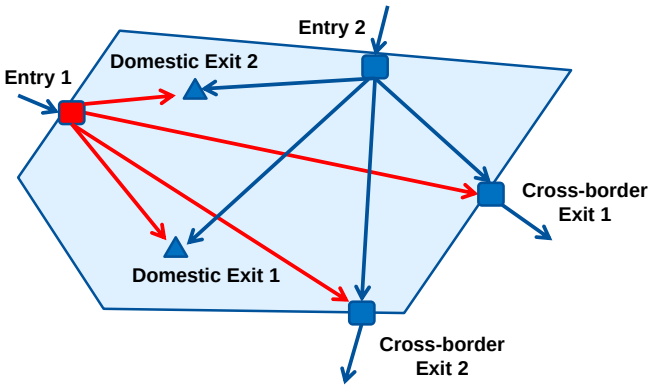
In each country, there can be one or multiple entry/exit (E/E) zones and in every E/E zone there might be more than one TSO, each responsible for operating its high pressure transmission network.

To transport gas, network users (namely shippers and traders) book capacity at each E/E point of interest, and pay transmission charges to each TSO responsible for its network. In each Member State, transmission tariffs for gas are generally defined at national level by the TSOs in accordance with the NRAs.

Transparent tariff structures and predictable tariffs are crucial to allow market participants to freely trade inside an E/E system and cross-border. In fact, a predictable environment will facilitate Network Users' commitment. While no environment is fully predictable, long term visibility could enhance profitable booking strategies. In this context, transparent and harmonized tariff structures can influence and affect the predictability of the capacity market environment from the point of view of NUs.

Moreover, following the shift from point to point tariffs to E/E tariffs as required by the Third Package, Member States are still facing with a large variety of tariff structures and reference price methodologies used to determine how much revenue a TSO is able to collect from a specific Entry or Exit point. In fact, with the abolishment of point to point tariffs, costs are no more associated to one specific route but many paths are possible as Entry and Exit capacities can be booked separately, and shippers can provide gas from/to any Entry/Exit point.

Figure 5: Entry-Exit System

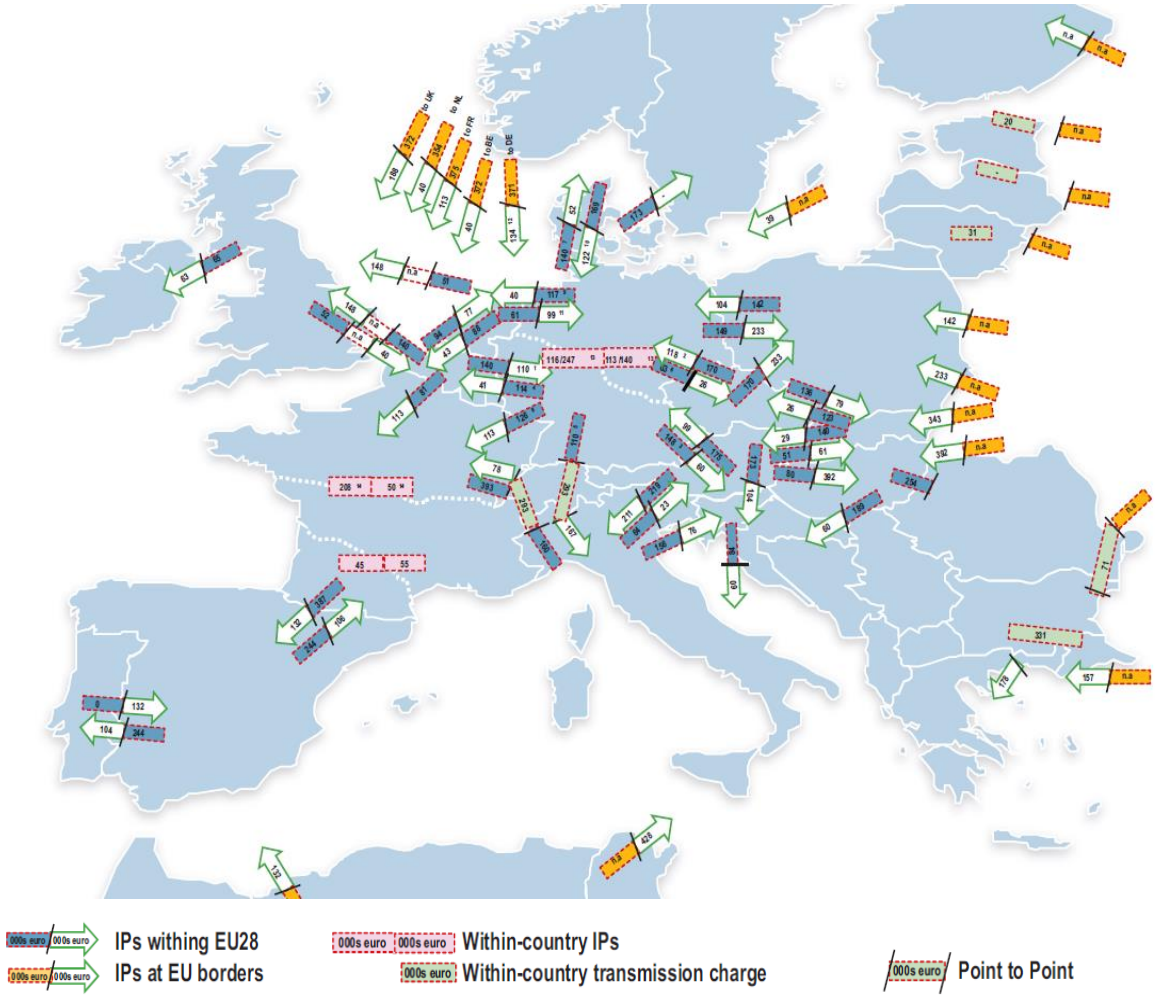


In order to achieve and ensure a reasonable level of cost reflectivity, transmission tariff structures and methodologies behind the calculation should be based on specific cost-drivers easily identifiable (e.g. capacity and distance). However, in most of the cases it is not possible to track the gas flows (as in a point to point environment) and therefore only in very few cases a full cost reflectivity is achievable. Acknowledging these principles of the Entry-Exit system, tariff structures and the choice on how to allocate costs between Entry and Exit points may lead to a different level of cost-reflectivity/ "cost socialization", potentially impacting in different ways systems users.

According to ACER/CEER[13], cross-border IPs transmission tariffs vary substantially across Europe. In particular differences in terms of tariff magnitudes at EU borders exist and sometimes also within countries with multiple domestic zones.

[13] *ACER Annual Report on the Results of Monitoring the Internal Electricity and Natural Gas Markets in 2013*

Figure 6: Average gas transportation charges through the EU 26 borders – 2013 (€ '000)[14]



[14] *For further details see page 198, ACER/CEER Annual Report on the Results of Monitoring the Internal Electricity and Natural Gas Markets in 2013*

3.1.2 Incremental capacity

The need for additional capacity should ideally be satisfied through efficient, market-driven and timely infrastructure investments for interconnection capacity. NUs' commitment is required to underpin such investments including an adequate return on investment.

In this context, regulation shall ensure security of supply and fair gas prices by creating a favourable environment stimulating economically efficient and timely investments.

The issues related to the current regulatory framework mainly deal with the investment decision and risk sharing. In particular the allocation of risks may require the adoption of common rules in order to provide a sound decision making process. The absence of a common approach could lead to differences across Member States putting necessary investments at risk.

3.1.3 Features of the Gas Transmission Tariff Structure

The core features of the gas transmission tariff structures are[15]:

- **Transmission services revenue:** tariff level is derived from allowed or target revenues of a TSO. While in the price-cap regime (where target revenue is set in order to set an allowed/guaranteed price) the volume risk is borne by TSOs, in revenue-cap regimes (where allowed/guaranteed revenue is set) the volume risk can be transferred to Network Users through the revenue reconciliation mechanism. In any case, transmission tariffs are charges levied on transmission Network Users by TSOs for using transmission services and the following steps/inputs are needed:
    - Tariff setting year/period: it is the validity period over which a given tariff will be applied;
    - Capacity/commodity split: it defines the proportion of allowed or target revenues to be recovered from capacity and, therefore, subject to the reference price methodology and the proportion to be recovered from flow based charges (commodity charge);
    - Entry/Exit split: it defines the proportion of the transmission services revenues to be recovered from entry charges and the proportion to be recovered from exit charges;
    - Reference price methodology: it is the methodology applied to the part of the transmission services revenue to be recovered from capacity-based transmission tariffs with the aim of deriving reference prices.
- **Reference price for annual firm capacity products:**
    - Reference price: it is the primary output of the reference price methodology and may include a multiplicative or additive scaling to meet allowed / target revenue or other "adjustments" such as equalization or benchmarking. The reference price is also used as the basis for setting the reserve prices for capacity products of shorter duration and for interruptible capacity;

[15] *ACER Justification document for Framework Guidelines on rules regarding Harmonized Transmission Tariff structures – 31/05/2014*

- **Reference price for other capacity products:**
  - Multipliers and seasonal factors: multipliers are factors applied to calculate reserve prices for shorter term capacity products, while seasonal factors are applied in order to incentivize the efficient usage of the networks in different period of the year;
  - Interruptible capacity: it is the transmission capacity that may be interrupted by the TSO in accordance with the conditions stipulated in the contract;
- **Payable price**: it is the price to be paid for capacity product, at the time of use, by the network users to the TSO. A premium may be included depending on demand/supply balance;
- **Revenue reconciliation mechanism:** it is the methodology by which any under or over recovery between collected and allowed revenues is reconciled and it is used in non-price cap regimes;
- **Other charges than capacity charges (dedicated services, commodity charges):** this residual category may include dedicated services as metering, odorisation, invoicing, title transfer fees, etc.

The problems associated with different features of gas transmission tariff structures will be described in Chapter *3.3 Problem Identification*.

3.1.4 Features of incremental capacity

Incremental capacity is strictly linked with the feature of capacity allocation and tariffs structures. The core features[16] regarding the incremental capacity are:

- **Demand assessment for incremental capacity:** the evaluation of potential or structural need of incremental capacity showed by network users;
- **Design phase for incremental capacity projects:** the problem identification reveals a list of necessary coordination requirements[17] between TSOs and NRAs from the two sides of the IP to which incremental capacity is needed.
  - Coordinated timelines for the project;
  - How delays in the provision of capacity are dealt with contractually;
  - How effects of delays on other systems can be mitigated;
  - The capacity volumes and characteristics of bundled yearly products for which demand can be tested;
  - The common procedure to be used for securing network users' binding commitments, taking into account the selection criteria defined in sections 2.e) and 2.f)[18];

[16] *These features are presented according to the legal drafting of the proposed provision and to intense one year research and consultation work done by ENTSOG interpreting the requirements of the ACER guidance Paper, FG TAR and consulting the stakeholders by means of the SSP. For the purpose of explanation of the main issues related to incremental capacity, it is preferable to rely on this structure.*

[17] *ACER guidance to ENTSOG on the development of amendment proposals to the Network Code on Capacity Allocation Mechanisms on the matter of incremental and new capacity* (2013)

[18] *Section 2.e) and 2.f) are related respectively to the integration of incremental capacity into the CAM NC annual yare capacity auction, and to separate Open Season Procedures.*

  - The way in which the requirements for triggering the investment decision in each regulatory system can be combined in a single economic test, and when the test would be satisfied;
  - Simultaneous or common information provision and a coordinated or single point of contact for network users.
- **Auction for incremental capacity:** Standard auction approach requires specific amendments of CAM NC in order to enable the integrated offer, testing and allocation of bundled incremental capacity together with the existing unsold yearly capacity.
- **Open season procedures:** Open season (OS) can take place where the likely capacity demand either extends across more than two systems, or require such a large and complex investment, that could undermine the soundness of the auction procedure envisaged by CAM NC.
  With the OS procedures, the allocation of the available existing capacity is still offered together with incremental capacity but with some difference in the auction mechanism. In fact network user commitment is secured outside the CAM NC auction algorithm. The intention is to preserve the flexibility associated with open seasons and thus maximise the potential to have a successful process that is compatible with the regime for existing capacity.
- **Economic Test:** The main objective is to determine a financial threshold to trigger investment decisions in order to prove that the investment project is relevant considering both its cost and network users' willingness-to-pay. The ACER's economic test formula is: $PV_{UC} \geq f \bullet PV_{AR.}$ **PV_{UC}** is the present value of network users actual commitment derived from the discounted cash flows based on the clearing price of the auctions multiplied by the capacity volume committed each year while **PV_{AR}** is the present value of the estimated increase of TSOs' allowed or target revenues related to the investment and ***f*** is the predefined fraction (or share) necessary to pass the test.

Nevertheless, all the measures envisaged in the tariff structures affect also the tariffs for incremental capacity, since the reference price is applied to determine the floor level at which network users can demand incremental capacity. Once the *f* parameter is decided, NRAs may provide an adjustment of the tariff if the reference price will not allow the success of economic test.

3.2 Current regulation

Principles established by the Third Package

In 2009 the Third Gas Directive and Regulation 715/2009 have been adopted. As the Third Package became law in the EU in March 2011, it brought new requirements and principles to foster the process of transformation of EU gas market structure.

In the context of a more efficient and competition-based market structure, where multiple network users are inputting and off-taking gas from the transmission system at different entry and exit points, setting an harmonised and transparent approach to tariff structures for gas has become critical.

High level requirements in relation to tariff structures for gas are laid down in Articles 13 and 14 (2) of the Regulation 715/2009 notably to facilitate gas trade and competition, while at the same time avoiding cross-subsidies between network users, providing incentives for investment and maintaining or creating interoperability for transmission networks. Into details, "*tariffs for network users shall be non-discriminatory and set separately for every entry point into or exit point out of the transmission system".*

Furthermore, *"tariffs for network access shall neither restrict market liquidity nor distort trade across borders of different transmission systems. Where differences in tariff structures […] would hamper trade across transmission systems, […] transmission system operators shall, in close cooperation with the relevant national authorities, actively pursue convergence of tariff structures and charging principles […].*

Finally *"to ensure transparent, objective and non-discriminatory tariffs and facilitate efficient utilisation of the gas network, transmission system operators or relevant national authorities shall publish reasonably and sufficiently detailed information on tariff derivation, methodology and structure"*[19]*.*

Even though the principles currently laid down in the Gas Regulation 715/2009 and Directive 73/2009 aim at realizing transparent and non-discriminatory tariff structures, they do not prescribe the mechanism as such. The reason is that the European legislator expects more detailed rules on tariff structures to be laid down in a NC. According to Article 8(6)(k) of the Gas Regulation a TAR NC shall cover rules regarding harmonised transmission tariff structures. Once the final version of the TAR NC will be adopted it will supplement and form an integral part of the Gas Regulation.

[19] *Article 18 of Regulation (EC) No 715/2009*

Other relevant Network Codes

The development of the harmonised tariff structures (TAR) Network Code is highly interrelated with other codes, primarily with the Capacity Allocation Mechanism (CAM) [20] and the Congestion Management Procedures (CMP).

The CAM NC requires that all firm and interruptible cross-border transmission services for each time interval are allocated via harmonised auctions. These auctions sell the same EU-wide standardised capacity products at the same time and according to the same rules across the EU. The auctions for different transmission capacity products require the setting of a reserve price, as a base floor, which is directly linked to the Network Code on tariff structures. The CAM NC also specifies that interruptible capacity will be sold via auction as well, according to the same principles as firm capacity of equivalent duration. Moreover, under the CAM NC, rather than sell cross-border transmission capacity at individual entry and exit points, TSOs will combine or bundle capacity at all the border points into a single product.

The CMP guidelines do not directly include provisions on tariff structures however there are several topics that potentially will change the context for tariff harmonisation. The CMP guidelines, which have to be applied across the EU since 1 October 2013, aim to reduce contractual congestion in gas pipelines. They require TSOs to make use of their reserved capacity or they face the risk of losing it . Unused capacity is placed back on the market. These rules are fundamental to ensure the efficient operation of the system and prevent capacity hoarding, which was a frequent practice to prevent market entry. Furthermore TSOs need to implement an oversubscription and buy back mechanism in order to offer additional capacity on a firm basis instead of offering interruptible capacity.

3.3 Problem identification

The Regulation (EC) No 715/2009 (Gas Regulation) of the European Parliament prescribes that gas transmission tariffs applied by all the European TSOs should be transparent, take into account the need for system integrity and improvement and reflect the actual costs incurred by the TSOs. Moreover, gas transmission tariffs should facilitate efficient gas trade and competition, avoid cross-subsidies between Network Users and provide incentives for investments in the transmission network[21].

Currently, different methodologies are followed by European TSOs to set gas transmission tariffs, and the principles defined in the Gas Regulation are not completely reflected in the tariffs set by all the TSOs.

[20] *Capacity Allocation Mechanism (CAM) Network Code (Regulation 984/2013)*
[21] *Article 13 of Regulation (EC) No 715/2009 (Gas Regulation) of the European Parliament*

Specifically, several problems are associated with the different components of gas transmission tariff structures:

- **Reference Price Methodology:** low transparency and substantial differences in the methodologies followed for the calculation of reference prices might hinder efficient gas trade and cause cross-subsidies among Network Users;
- **Multipliers and Seasonal Factors:** different approaches adopted by EU countries lead to potential cross-subsidization between Network Users, loss of long-term investments signals, and have an impact on short-term trading and gas market integration;
- **Fixed vs. floating price at IPs and Revenue Reconciliation:** heterogeneous application of fixed or floating price at IPs may potentially lead to unbalanced allocation of volume risk between Network Users and TSOs as well as between different types of Network users and the ex-post application of revenue reconciliation mechanisms might introduce cross-subsidization among Network Users and tariff instability;
- **Pricing of interruptible capacity:** different methodologies followed to define the price of interruptible capacity do not completely reflect the probability of interruption in the provision of transmission services, thus leading to cross-subsidies between different Network Users;
- **Publication requirements:** different publication requirements on the methodologies followed to calculate tariffs across EU countries might limit transparency and tariff predictability;
- **Publication of binding tariffs and tariff setting year:** different tariff setting years in Europe hinder tariff predictability and may introduce inefficiencies in the gas transportation system. Moreover, when tariffs are not published before capacity auctions network users are supposed to bid in blind without knowing the price for the coming year;
- **Changes in tariffs/ mitigating measures:** the potential future changes in the Entry/Exit tariffs due to variations in multipliers, reference price methodologies and costs incurred by TSOs might have impact on Network Users who have contracted long-term capacity in advance.

In the following sections, the problems associated with the different components of gas transmission tariffs will be detailed, explaining how stakeholders are impacted and why those issues should be addressed by a joint regulatory intervention at European level.

3.3.1 Reference price methodology

The reference price methodology is analysed splitting the issue into 5 sub-topics:

- Choice of the reference price methodology
- Entry/exit split
- Adjustment of the outcome of the reference price methodology
- Storage Entry/exit tariffs
- Multi-TSO Entry/Exit zones

Choice of the reference price methodology

Context

In order to have gas transported through a system, a shipper needs to book capacity from a TSO at the entry/exit points through which the gas is expected to flow. In order to reserve this capacity, the Network User pays specific transmission tariffs to the TSO.

The transmission charges are currently defined by the TSOs and/or by the NRA of each country following these steps:

- Determination of the costs a TSO is entitled to recover. These costs include both operating and capital costs;
- Definition of the allowed or target revenues, i.e. the amount of money that the TSO expects to collect to recover the costs of transportation services;
- Definition of the capacity/commodity split. The capacity/commodity split is an ex-ante or ex-post assessment of the proportion of the allowed or target revenues to be recovered from capacity charges (and thus subject to the reference price methodology) and the proportion to be recovered from flow based charges and therefore subject to a commodity tariff. The dominant approach in the EU has been that the majority of the allowed or target revenues are recovered through capacity charges[22].
- Definition of the gas transmission tariffs at all entry/exit points of the network. Responsibility for setting tariffs belongs to NRAs if attributed by primary legislation implementing Directive 2009/73. If the primary legislation entitles the NRA to define only the cost allocation methodologies, tariffs are set by TSOs but NRAs can ask for changes if the methodology is not correctly implemented;
- Collection of revenue based on the amount of capacity booked by network users, and / or on the actual flow of gas transported through the system;
- Where a revenue cap regime is applied: Ex-post revenue reconciliation. This may affect transmission tariff level in the upcoming years in case of gaps between the allowed revenues and the revenues that have actually been collected.

There are currently several different reference price methodologies in Europe, such as:

- **Postage Stamp.** It foresees the same reference price at all entry and exit points. It is the simplest reference price methodology and although it guarantees stable and predictable tariffs, it is the least cost-reflective, since it imposes the same reference price at all entry (or exit) points without considering the actual distance travelled by the gas;
- **Capacity Weighted Distance (CWD).** It is based on the principle that the reference price at each entry (or exit) point should be set considering the contribution of that point to the total cost of the system. The 'weight' of each entry (or exit) point is measured by its capacity-weighted distance from all exit (or entry) points;
- **Virtual Point Based.** It is similar to the CWD; however the 'weight' of each entry (or exit) point is calculated according to the distance of that point from a focal virtual point of the network. This virtual point can be either calculated mathematically (VP – A) or it can be determined geographically (VP – B);

[22] *Justification document for Framework Guidelines on rules regarding Harmonised Transmission Tariff structures – ACER analysis based on the KEMA/COWI (2013) study on entry/exit regimes and NRA data – see ACER 2012 Market Monitoring Report, p.197*

- **Matrix.** This reference price methodology is based on the principle that the reference price at each entry (or exit) point should reflect the actual investment costs of the TSO. This methodology is based on the concept of cost-reflectiveness and aims to minimise the error of cost representation with respect to a path-based tariff and its cost drivers;
- **Asset Allocation.** This methodology foresees the allocation assets' cost to groups of homogeneous network users, such as domestic vs. transit users. It is based on the principle that the risk of insufficient booking of technical capacities cannot be borne by resident network users. This issue is crucial for instance for transit countries. Therefore this methodology allows to apply a price cap regime on the part of the assets solely used for transit and a revenue cap regime with regard to the remaining assets. However, after applying that split, a reference price methodology as described above (postage stamp or Matrix) still needs to be applied. Therefore the asset allocation methodology is rather a hybrid and not a full-fledged reference price methodology.

Below a table summarizing the usage of different reference price methodologies among Member States.

Figure 7: Reference price methodologies across EU Member States[23]

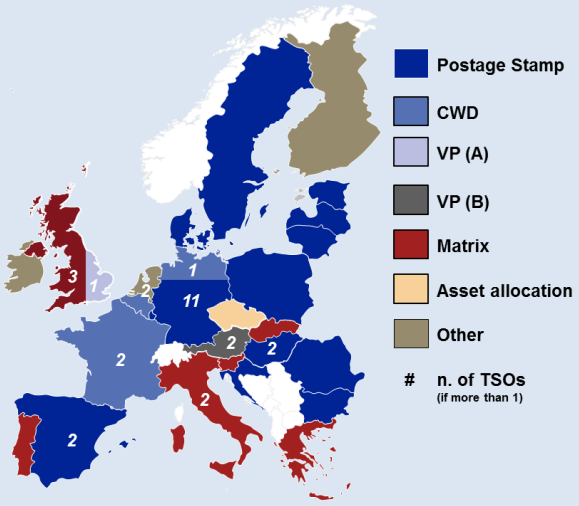
Country	# of TSOs	Primary reference price methodology					
		P. Stamp	Virtual Point	CWD	Matrix	Asset alloc.	Other
Austria	2		✓(2)				
Belgium	1			✓			
Bulgaria	1	✓					
Croatia	1	✓					
Czech Rep	1					✓	
Denmark	1	✓					
Estonia	1	✓					
Finland	1						✓
France	2			✓(2)			
Germany	12	✓(11)		✓(Ontras)			
Greece	1				✓		
Hungary	2	✓(2)					
Ireland	1						✓
Italy	2				✓(2)		
Latvia	1	✓					
Lithuania	1	✓					
Luxembourg	1	✓					
Netherlands	2						✓(2)
Poland	1	✓					
Portugal	1				✓		
Romania	1	✓					
Slovakia	1				✓		
Slovenia	1				✓		
Spain	2	✓(2)					

[23] *A single questionnaire has been collected for Premier Transmission Limited and for Belfast Gas Transmission for the scope of this work, as they are assumed to be the same entity; one questionnaire has been collected for Hungary. No response was received from the TSOs of Latvia, Luxembourg, Lithuania and Reganosa of Spain.*

Other Reference price methodologies: ***Gasum Oy (FI):*** *deregulation from EU's 3rd energy package;* ***Gaslink (IE):*** *postalised charging regime at domestic exit points;* ***Gasuine Transport Services (NL):*** *based on distance, primarily visible in the exit tariffs;* ***BBL (NL):*** *exempted from tariff and revenue regulation;*

Country	# of TSOs	Primary reference price methodology					
		P. Stamp	Virtual Point	CWD	Matrix	Asset alloc.	Other
Sweden	1	✓					
UK	4	✓(3)	✓(NatGrid)				
TOTAL	46	28	3	4	6	1	4

Figure 8: Map of reference price methodologies across EU Member States[24]



Significant differences and high level of optionality in the application of the reference price methodologies by the different TSOs across Europe lead to an increased complexity and limited to transparency in the definition of tariffs.

In fact, in the process of allocating revenues between entry and exits points several decisions should be taken, such as:

- Cost concept: long-run marginal cost approach (LRMC)[25] vs. historical cost approach;
- Entry-Exit split.

The complexity of some of the reference price methodologies and the low level of transparency in the application of those methodologies (including the definition of inputs and calculation steps) hinders the ability of Network Users to timely forecast the trend of future reference prices of capacity products at the Entry/Exit points of interest within an Entry/Exit zone. In particular consultation is essential to promote trust and understanding in tariff setting and to enable network users

[24] *A single questionnaire has been collected for Premier Transmission Limited and for Belfast Gas Transmission for the scope of this work, as they are assumed to be the same entity; one questionnaire has been collected for Hungary. No response was received from the TSOs of Latvia, Luxembourg, Lithuania and Reganosa of Spain.*

Other Reference price methodology: ***Gasum Oy (FI):*** *deregulation from EU's 3rd energy package;* ***Gaslink (IE):*** *postalised charging regime at domestic exit points;* ***Gasuine Transport Services (NL):*** *based on distance, primarily visible in the exit tariffs;* ***BBL (NL):*** *exempted from tariff and revenue regulation;*

[25] *The allowed costs are allocated among routes in relation to the level of congestion. A route more congested will be allocated more of the allowed costs*

to flag up what they perceive to be distortions or discrimination before the implementation.

Besides, the complexity and the limited transparency in the reference price methodologies applied by different TSOs hinders Network Users' ability to compare the transport cost through different routes across Europe, limiting competition among TSOs and affecting suppliers' trading strategy.

Entry/Exit Split

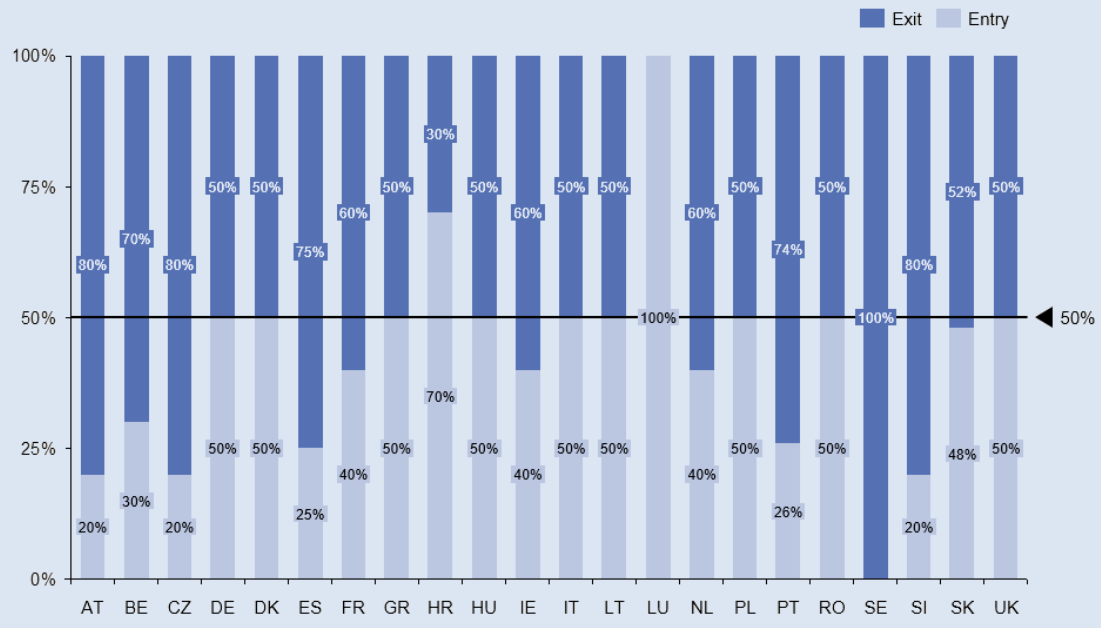
Context

The entry/exit split defines the amount of costs that are respectively allocated to entry and exit points. The split can be either an input or an output of the reference price methodology.

Currently, all the European countries (excluding LU) apply charges at both entry and exit points. However, there is a great variation in the split between revenues recovered at both points. 9 countries apply a 50/50 split, 11 rely more on exit points while the remaining 2 countries apply a 100%/0% (Luxembourg) and 0%/100% (Sweden) respectively. As a general trend, it could be noted that 21 out of 22[26] countries recover half or more of the revenue from exit points, in particular higher percentages of exit split can be found among transit TSOs.

An overview of the E/E split in use in 2013 is given in the figure below.

Figure 9: Entry-Exit split[27]



Even if the E/E split may be consistent at national level, different approaches can lead to inconsistencies at an IP level in terms of cost reflectivity, as well as incentives for shippers to use alternative routes undermining the efficient use of the system. Moreover, as noticed by ACER[28], if the tariff policy of a neighbour

[26] *In 2013 22 out of 26 countries apply an E/E tariffication system. BG, EE, FI and LT are using a different approach[LT has moved to E/E in 2015]*

[27] *Information for CZ, DK, GR, LT, LU, RO was retrieved from ACER justification document; Default rule in Germany is 50:50, however some TSOs apply a different E/E*

[28] *Framework Guidelines on Harmonised transmission tariff structures (initial) Impact Assessment, 17/09/2012*

system reduces the attractiveness of an IP, it can translate into a lower (than expected) use by shippers a problem of revenue recovery may arise.

Currently, 20 out of 22 countries recover half or more of the revenue from exit points, and higher percentages of exit split can be found in transit countries.

In principle, allocating costs to exit points, as in the current situation, ensures that network users are charged an amount of money that depends on the end use of the gas fostering cost-reflectivity. However, allocating costs to exit points might also introduce discrimination among Network Users, as end consumers would pay a price dependent on the type of exit point (e.g. exit to another Entry/Exit system, exit to a specific distribution system, etc.).

A certain level of harmonisation is needed in order to ensure that the breakdown of costs among grid users and among entry and exit points is not only as far as possible in line with the principle of cost-reflectivity, but it should also minimize cross-subsidies between national end users and transit users. A balance between cost-reflectivity and non-discrimination should therefore be found as any split of revenue recovery between entry and exit points may imply a certain level of cross-subsidy between users.

Adjustment of the outcome of the reference price methodology

Context

TSOs and/or NRAs may decide to apply additional adjustments to the tariffs calculated through the application of the reference price methodology. For instance, the reserve price may be rescaled to meet allowed /target revenues via a multiplicative or additive approach. Other adjustments such as equalization or benchmarking may be applied as well: the former with the aim of applying within a homogenous group the same reference price and the latter with the aim of restoring a competitive level of transmission tariffs. In few circumstances adjustments are embedded in the reference price methodology.

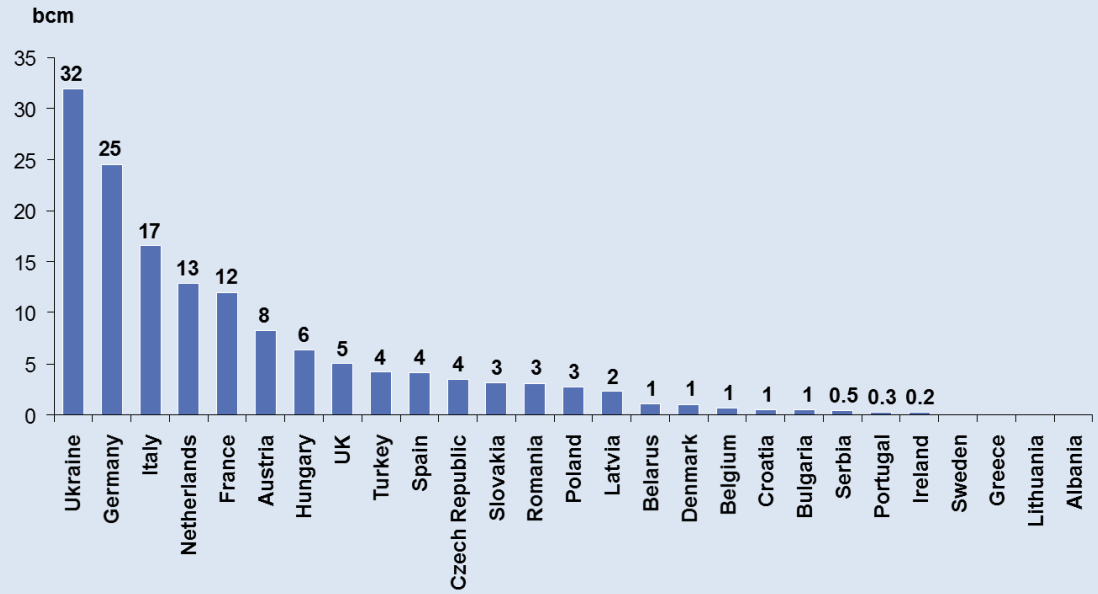
Currently, adjustments of the reference price methodologies outcomes are applied by the different TSOs and/or NRAs with different criteria, thus limiting transparency in the definition of Entry/Exit tariffs. The lack of transparency in the application of adjustments hinders Network Users' ability to replicate and follow tariff evolution and may introduce cross-subsidy.

Storage Entry/Exit tariffs

Context[29]

Between 2010 and April 2015, storage capacity in Europe steadily grew from 118 to 137 bcm of working gas volume (including gas storage Bergermeer in the Netherlands and 11 bcm of non-TPA in several countries. In Germany, Italy, Austria and the United Kingdom, several projects with a phased increase of capacity were completed[30]. In 2015, the Bergermeer gas storage facility in the Netherlands went on line with a capacity of 4.1 bcm (included in the figure below).

Figure 10: Storage Capacity in Europe 2015 [31] - Technical working gas volume (bcm)



In Europe, storage plays a major role in meeting the region's large, seasonal demand variations due to its temperate climate and high degree of gas demand in the heating sector.

Salt cavity caverns, gas fields and aquifers are usually the most suitable form of storage for this purpose. However different features regarding capacity, costs, multi-cycle capabilities and injection and withdrawal rates impact their usability for different purposes.

In terms of tariffs structures, Brattle report[32] points out that TSOs currently differ in the treatment of storage E/E tariffs.

Storage facilities are different to other entry and exit points in that they do not represent a net source of supply or demand but rather they shift supply from one period to another.

Without a storage facility, the TSO may have to size the import pipeline to supply the peak demand, while with gas storage, the pipeline can be sized for the average demand. In this way, the storage may allow a reduction in the size and cost of the required import pipeline and thus, a discount in the storage E/E tariff may be applied by the TSO to recognize the above mentioned features.

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[29] *This section describes the context of storage in Europe focusing only on the gas transmission tariffs from/to Entry/Exit points of storage facilities*

[30] *Gas medium-term market report 2015, market analysis and forecasts to 2020, IEA*

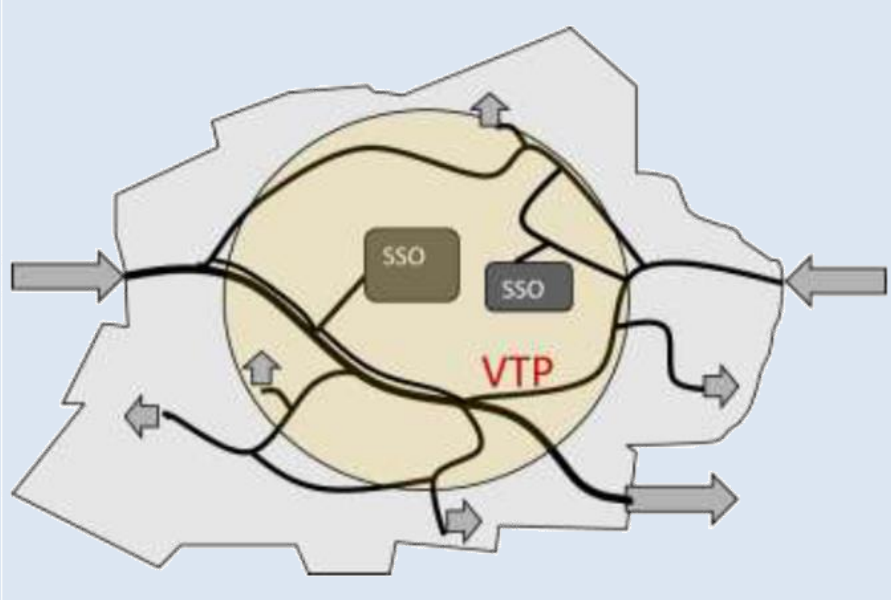
[31] *Source: GIE Storage Map 2015*

[32] *Brattle Group – Impact Assessment for the Framework Guidelines on Harmonised Transmission Tariff Structures, 6th August 2012*

Moreover, in an E/E system, network users pay an entry fee when entering the given market zone and then pay an exit fee when exiting to another market zone or to deliver gas to the end customer. In addition to these fees, users of storage facilities are usually required to pay an additional exit fee when injecting gas into storage and then an additional entry fee when withdrawing from storage. In this context, storage users may be paying up to two times to have gas transported into the system.

As a consequence, the usage of these facilities may be incentivized or penalized by the reference price calculated through the reference price methodology, with impact on the efficient usage of the system and the security of energy supply.

Figure 11: E/E system with Storage System Operator



Currently, different approaches are applied by EU Member States with regards to E/E tariffs from/to storage facilities. In most of the countries (12 out 20) the cost and benefits that storage facilities provide to the overall system, and the fact that the gas transported to/from storage facilities does not leave the market zone where the storage facility takes place, are taken into account in different ways when setting the transmission tariffs for storage facilities. There are countries like Denmark, Spain and Sweden where both entry and exit tariffs from/to storage facility are free of charge, while in Czech Republic, Romania and Slovakia storage facilities are treated like any other point of the system.

Figure 12: Approach to Storage E/E tariffs, 2013[33]

Country	Discount to be applied to E/E tariffs	
	Entry from Storage to Network	Exit from Network to Storage
Austria	Free of charge	Highly discounted
Belgium	No discount	Free of charge
Bulgaria	70%	70%
Croatia	No discount	90%
Czech Rep	No general discount applied. The NRA decides on storage E/E tariffs	No general discount applied. The NRA decides on storage E/E tariffs
Denmark	Free of charge	Free of charge
France[34]	85%	85%
Germany	No general discount applied	No general discount applied
Hungary	-	-
Ireland	No discount on capacity change. TSOs decide on storage E/E tariffs	No discount on capacity change. TSOs decide on storage E/E tariffs
Italy	Applied when costs are allocated to each pipeline (14%)	Applied when costs are allocated to each pipeline (14%)
Latvia	-	-
Netherlands	25%	25%
Poland	80%	80%
Portugal	No discount	Free of charge
Romania	No discount	No discount
Slovakia	No discount	No discount
Spain	Free of charge	Free of charge
Sweden	Free of charge	Free of charge
UK	No discount on capacity charge, free of charge from commodity charge	No discount on capacity charge, free of charge from commodity charge
Estonia	No storage facility	
Finland		
Greece		
Lithuania		
Luxembourg		
Slovenia		

Differences in the approach to set storage tariffs could potentially lead to inefficient investments: for example, a storage facility could be built in an E/E system where a special treatment is in place, but this may not be where storage is needed most. As gas storage facilities compete with other sources of flexibility, too high transmission tariffs, in general, could lead to overinvestment in other

[33] *In Ireland Exit commodity tariff is only paid once when the gas has flowed through the pipe twice (injection to and withdrawal from storage). In Germany from 2016 there will be a general discount at storages of 50% that can be extended to max. 90%*

[34] *In France, no discount is applied to E/E tariffs at storage points but, on average, the storage E/E tariffs equal 15% of the E/E tariffs of the balancing zones (entry at IP and exit at delivery point), with significant differences between the 2 TSOs (TIGF E/E storage tariffs being 40% more expensive than GRTgaz's).*

flexibility tools and underinvestment in gas storage. This would lead to a higher overall cost for the end consumer.

Besides, since gas in storages has already been charged with entry fees, and will be charged exit fees when delivered to the end user, gas storage users might potentially pay Entry/Exit tariffs twice.

Multi-TSO Entry/Exit zones

Context

In Entry/Exit zones with more than one TSO, the reference price methodology might be either applied jointly or separately by the different TSOs.

An inter-TSO compensation mechanism is adopted by some Member States (currently in Austria, France, Italy and Spain) to ensure the cost-recoverability of all the TSOs within the same Entry/Exit zone. However other countries are still in the process of considering the application of inter-TSO compensation mechanisms in view of future mergers between Entry/Exit zones.

Figure 13: Inter-TSO compensation mechanism and market evolution

Country	Inter-TSO compensation and market evolution	
	ITC mechanism	Comments
Austria	✓	An inter-TSO-compensation is set to cover the allowed cost of all the TSOs on the basis of the fixed booking situation
Belgium	*Under discussion*	The Belgian/Luxembourger IP will disappear in the future, a cooperation is being discussed between the 2 TSOs
France	✓	GRTgaz and TIGF have undertaken the process of merging the gas wholesale marketplaces in France. Starting from 1 April 2015, a common market area, made up of the GRTgaz South and TIGF areas, has been set up under the name Trading Region South (TRS)
Germany	*Envisaged*	In 2017, Germany plans to establish an ITC
Italy	✓	There is one and the same methodology per E/E zone but, since there are several TSOs, the ITC aims at re-distributing revenues according to allowed revenues
Luxembourg	*Under discussion*	The Belgian/Luxembourger IP will disappear in the future, a cooperation is being discussed between the 2 TSOs
Spain	✓	No inter-TSO compensation mechanism, but the "Settlement process" has a similar objective.

In absence of a regulation on multi-TSO Entry/Exit zones, the separate application of the reference price methodologies in such zones might potentially cause cross-subsidization among different groups of Network Users. For example, users of the TSO that has most of its assets in the E/E zone might pay substantially different tariffs than the users of the TSO that only has a small share of assets in the E/E zone, even though both users get the same access to the Entry-Exit system.

Furthermore, the adoption of multiple reference price methodologies in the same Entry/Exit zone might introduce additional complexity in the system, reducing the transparency in the definition of transmission tariffs in the Entry/Exit points.

On the other hand, in case of cross-border merger of Entry/Exit zones placed in different Member States, the application of a joint tariff methodology and the inter-TSO compensation mechanism would require a joint decision of the respective NRAs. Some frictions and delays may arise due to lack of coordination and agreement between NRAs about which reference price methodology should

be applied and what costs should be considered, due to the different calculation of TSOs allowed revenues. What are considered justified costs of their TSO by one NRA could be questioned by the other NRA. In particular, the Member State which has to increase tariffs will face difficulties.

3.3.2 Multipliers and seasonal factors

Context

The reserve price for annual standard capacity products is based on the reference price calculated through the reference price methodology. In case of capacity products of shorter duration, the reserve price is generally set proportionately to the reference price of annual capacity products, applying some coefficients that are defined with the aim of promoting long vs. short term commitment and of ensuring adequate recovery of TSOs' revenues. These coefficients are known as "multipliers". Multipliers can also be combined with additional coefficients that may vary during the year, reflecting the changes in seasonal demand for gas transportation, which is usually higher during winter periods. These coefficients, when clearly distinguished from multipliers, are called "seasonal factors". However, European TSOs might also adopt a unique coefficient (multiplier) that includes the effect of changes in seasonal gas demand.

The figures below show the situation in 2013 for monthly multipliers (including seasonal factors, when applicable). The arithmetic average across summer months is 1.29, in winter months is 1.98, while across the whole year is 1.64.

Figure 14: Monthly Multipliers in 2013 (April-Sept.) – Seasonal factors included (if any)[35]

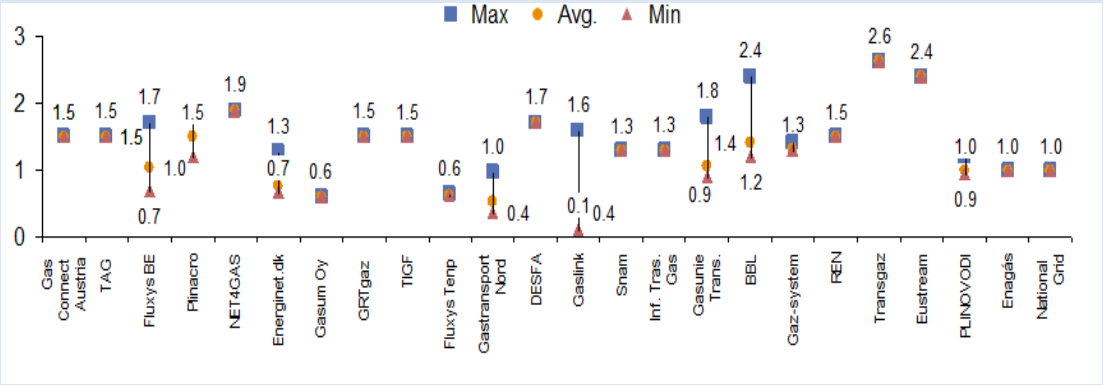
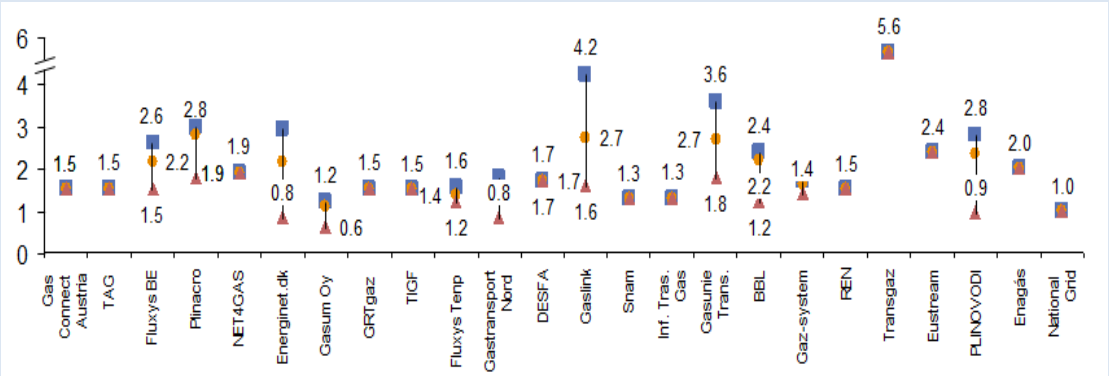


Figure 15: Monthly Multipliers in 2013 (Oct.-March) – Seasonal factors included (if any)



[35] *For Gasunie Trans. is intended Gasunie Transport Services NL (GTS)*

For daily multipliers, the arithmetic average across summer months is 1.9, in winter months is 3.1, while across the whole year is 2.47.

Figure 16: Daily Multipliers in 2013 (April-Sept.) – Seasonal factors included (if any)

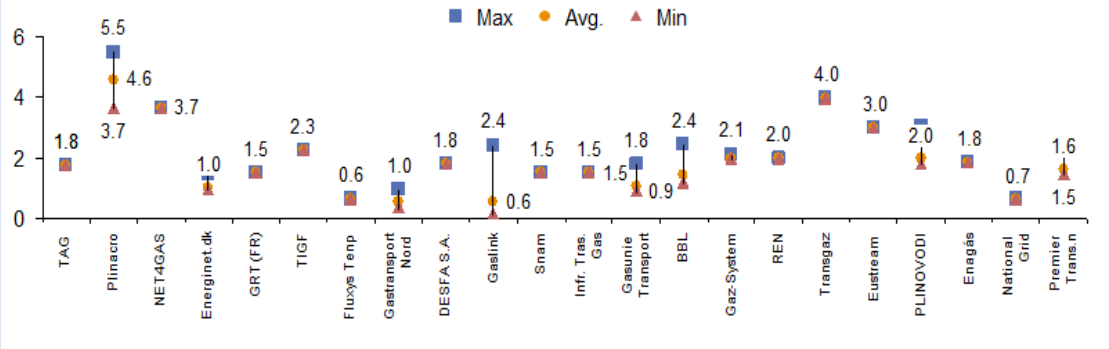
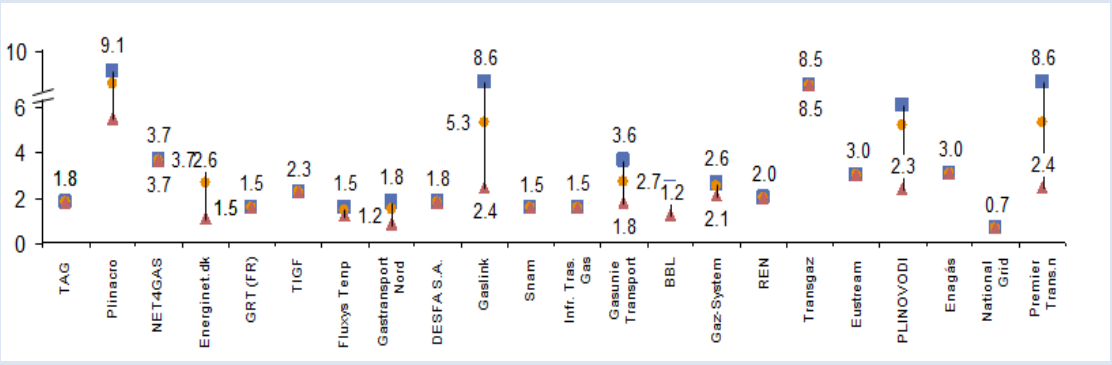


Figure 17: Daily Multipliers in 2013 (Oct-March) – Seasonal factors included (if any)



Generally, multipliers are used to compensate for the structuring of capacity bookings over the year and to promote the efficient use of the system. Some TSOs traditionally prefer to follow a "peak load pricing" approach where prices in peak periods (usually winter months for gas) are higher than "off-peak" (during summer). Some TSOs apply higher multipliers to short term capacity products to actively promote long term bookings; others are instead less interested in applying high multipliers, either because their revenue is guaranteed anyway or because they have larger long term booked capacity.

Different approaches in the pricing of short-term capacity products can play a significant role in driving cross-border trade and market integration:

- High multipliers (higher than 1) increase the price of short duration products and may have the effect of fostering long-term commitments (that will incentivize those who have already booked long-term capacity against to short–term commodity trading, with a positive effect on market integration), so that a higher amount of the total technical capacity of TSOs will be booked via annual capacity product, facilitating revenue recovery and tariff stability. On the other hand, too high multipliers may cause inefficiencies, e.g. situations of contractual congestions where all available capacity is sold long term without being fully utilized, and might discourage cross-border trade
- Low multipliers (lower than 1) discourage long-term commitments but incentivize short-term trading, with positive effect on market integration; however promoting short-term products will minimize the long-term capacity booked by shippers and will discourage investments in incremental transmission infrastructure.

Overall, an unbalanced approach on multipliers may lead to:

- Possible cross-subsidization between Network Users who book annual capacity and those who book short-term products
- Loss of long term investments signals
- Reduction of short term trading and market integration
- Inefficient cross-border trades

Similarly to multipliers, also seasonal factors may be used by TSOs to adjust upwards or downwards the reserve prices of short duration capacity products. Without seasonal factors, cost-reflectivity may be undermined due to the fact that the main cost driver for pipelines is the peak capacity, which in most of the case occurs during the coldest days in winter. Thus, if seasonal factors are applied, they might encourage the efficient usage of the system (e.g. ship gas in the summer and store it vs. ship gas only in winter period) as well as the filling of the storage in summer which is beneficial for security of supply.

3.3.3 Fixed vs. floating price at IPs and Revenue Reconciliation

Context

In Europe, there are currently three main tariff setting regimes:

- *Price-cap regime.* In an entry/exit zone with a price-cap regime, the NRA sets an upper limit to the transmission tariffs charged by the TSO;
- *Revenue-cap regime*. In an entry/exit zone with a revenue-cap regime, the NRA sets the maximum 'allowed revenues' that can be recovered by the TSO to cover their costs;
- A combination between *price-cap regime and revenue-cap regime.*

In a pure *price-cap regime* the volume risk (the risk that booked capacity could be lower than expected and could lead to under-recovery of revenues) is borne by the TSO and there is no revenue reconciliation mechanism. On the other hand, in a *revenue-cap regime,* missing revenues resulting from any under-recovery are returned to the TSO through the revenue reconciliation mechanism. This mechanism is equally applied to return extra-revenues to Network Users in case of revenue over-recovery.

Independently from the tariff setting regime, the payable price is the price paid for capacity by Network Users at the time of use (as opposed to the prevailing price at the time of booking)[36].

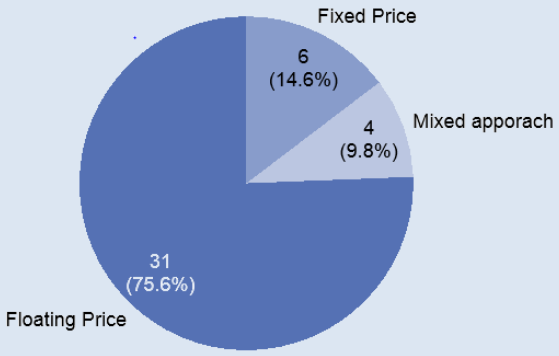
There are currently different approaches to fixed/floating payable price across Europe:

- *Fixed price regime*, where the price paid by the network user for the capacity product at the time of use is equal to the reference price at the time of booking;
- *Floating price regime*, where the price paid by the network user is different than the price at the time of booking for reasons such as, variations in the TSO's allowed revenues, and in the actual total capacity bookings, between the time of use and the time of booking (in case of revenue-cap regime);
- A combination between *fixed payable price* and *floating price regime*.

Most of the EU TSOs are currently applying a floating price approach. A fixed approach is used in only 6 cases (Bulgaria, Croatia, Denmark, Netherland (BBL), Slovakia, UK (IUK)) while a mixed approach is applied by Net4Gas (CZ), EGVõrguteenus (EE), Gasum Oy (FI) and National Grid (UK).

[36] *Framework Guidelines on rules regarding harmonized transmission tariff structures for gas, ACER, November 2013*

Figure 18: Payable price approach[37]



The choice between floating or fixed payable price approaches at IPs is connected to the problem of revenue reconciliation and allocation of volume risk between Network Users and TSOs.

Under a revenue cap regime, a *floating price* protects TSOs from the volume risk, allocating it on Network Users. It also affects the ability of Network Users to predict the tariffs of capacity products to be paid at the time of use and limits Network Users' ability to commit on the long-term, thus discouraging the development of additional gas supply capacity.

The *fixed price,* generally, fosters long-term commitments and protects Network Users who booked capacity in advance from variations in prices. By doing so, a pure *fixed price* regime allocates the remaining volume risk to the TSOs, introducing a risk of under-recovery (if no commodity charge is applied). The extent to which this risk is allocated to TSOs or Network Users varies according to the type of tariff setting regime (revenue-cap or price-cap regime) and the level of booked transport capacity by network users.

In case of *fixed price* in a revenue cap regime (non-price cap), the risk of under-recovery can be potentially transferred from TSOs to Network Users who book capacity at a later stage (as compared to Network Users who booked capacity in advance), by applying a revenue reconciliation mechanism that will change the reference price reflecting potential variations in the TSO's allowed revenues. In networks where allowed revenues are subject to significant changes over time, the *fixed price* approach may cause discrimination and undermine competition among Network Users who pay a different price for the same capacity product booked in a different timeframe. While the application of the revenue reconciliation mechanism has positive impact on TSOs financial stability, it should be limited, as it would increase instability in the reference price year over year and would overall reduce the tariffs transparency.

[37] *A single questionnaire has been collected for Premier Transmission Limited and for Belfast Gas Transmission for the scope of this work, as they are assumed to be the same entity. No response was received from the TSOs of Latvia, Luxembourg, Lithuania and Reganosa of Spain. For further details please refer to Annex - analysis of answer to questionnaires*

On the other hand, a *fixed price* in a price-cap regime (without application of revenue reconciliation mechanism) would keep the volume risk on TSOs, thus protecting Network Users (who did not book long-term capacity in advance) from high variations in the reference price of capacity products year over year.

Besides, in presence of *fixed price* regimes, revenue reconciliation can be performed through the Complementary Revenue Recovery Charge (CRRC). Since commodity charges are dependent on the actual use of the system, revenues collected from commodities are exposed to volume risk. On the other hand, as commodity charges are recovered only when shippers use the system, they might be considered an additional burden to trade. However, a full recovery of costs only through commodity charges would subsidize costs related to capacity booking, transferring the economic burden on Network Users with a high load factor[38].

In presence of different approaches to floating/fixed price in Europe, a common regulation at European level is needed to ensure that volume risk is properly allocated between the market and TSOs.

In addition, the choice of the fixed/floating price approach at IPs might have an impact on the allocation of capacity, as each side of an IP is required to be auctioned as bundled capacity based on the Network Code on Capacity Allocation. Specifically, in case of use of a floating price at one side of the border and fixed price at the other side, the floating price might reduce the tariff predictability provided through fixed prices on the other side of the border.

Furthermore, the problem of stranded assets may exacerbate the above mentioned issues. Due to security of supply, some of the infrastructures will be maintained, rising CAPEX and thus, some TSOs may be exposed to a vicious circle of lower cross-border flows and rising unitary cross-border tariff. Tariff decrease through benchmarking may worsen the situation, triggering a downwards price spiral for some assets, compensated by tariff increase in other points, resulting in non-cost reflective and cross-subsidized tariffs.

Thus, different mechanisms and lack of common approaches to deal with revenue reconciliation and allocation of volume risks may have a strong impact on tariff level stability, predictability and cross-subsidization between Network Users.

[38] *Initial Impact Assessment accompanying the document Framework Guidelines on Harmonised Transmission Tariff Structures (2013)*

3.3.4 Pricing of interruptible capacity

Context

Unlike firm capacity, which is guaranteed as uninterruptible by any TSO except in cases of force majeure, interruptible capacity is the gas transmission capacity that may be interrupted by any TSO in accordance with the conditions stipulated in the transport contract with the network user.

Generally, the price of interruptible capacity products is defined applying a discount to the reference price of firm capacity products, as it should reflect the probability of interruption in the provision of transmission services. Currently different approaches are adopted by European TSOs on the subject, as illustrated in the figure below. A number of TSOs apply an ex-ante discount while others apply an ex-post discount. In the former case, the discount is applied when tariffs are set, while in the latter the discount is applied retroactively when interruptions have already occurred. Nevertheless discounts vary substantially across the different EU Member States.

The problem of pricing of interruptible capacity products is also connected to the pricing of *non-physical backhaul capacity*. Non-physical backhaul (or *reverse*) flow is the amount of gas that is nominated to flow in the opposite direction to the physical flow at unidirectional entry/exit points. Non-physical backhaul capacity can be provided only if there are enough nominations for the gas to flow in the prevalent direction of the physical flow. Therefore, non-physical backhaul capacity at unidirectional points is similar to interruptible capacity at bidirectional points, since both of them can be interrupted by the TSO. The difference lies in the conditions under which the interruption occurs: non-physical backhaul capacity is interrupted if there are not enough nominations in the "forward" direction, while interruptible capacity is interrupted if there are too many nominations under firm capacity contracts (i.e. in case of congestion at the entry/exit point).

Figure 19: Pricing of Interruptible Capacity[39]

Country	Approach to Interruptible Capacity		Discount applied
	Ex ante discount	Ex post discount	
Austria		✓(2)	-
Belgium	✓		From 20% up to 40%
Bulgaria		✓	-
Croatia		✓	-
Czech Rep.		✓	-
Denmark	✓		Ellund Exit: 10%, Dragør: En: 5%, Ex: 5%
Finland	No interruptible capacity		-
France	✓(2)		50%
Germany	✓(12)		Vary according to the TSOs (Min ~ 10% - Max ~40%)
Greece	✓		50%
Hungary	-		-
Ireland	No interruptible capacity		-
Italy	✓(2)		From 10% up to 20%
Netherlands	✓(2)		30%
Poland		✓	-
Portugal	✓		28%
Romania		✓	-
Slovakia		✓	-
Slovenia		✓	-
Spain	✓ (Enagas)		50%
UK	✓ (National Grid)		100% (only interruptible product sold is daily capacity)
Total	24	9	-

[39] *No response was received from the TSOs of Latvia, Luxembourg, Lithuania and Reganosa of Spain*

Currently there is not a unique approach to the pricing of *non-physical backhaul capacity* products across Europe, and the majority of stakeholders responding to the 2012 public consultation were in favour of an EU wide harmonisation.

In coherence with the Gas Regulation, the price of interruptible capacity should reflect the probability of interruption and should thus be lower than the reserve price of firm standard capacity products with equivalent duration.

However, based on the information collected, European TSOs do not have a unique approach regarding the pricing of interruptible capacity products. In absence of a harmonized approach, the cost-reflectivity of interruptible capacity tariffs might be hindered, as there is not a unique pricing methodology that defines prices based on probability of interruption in the provision of transmission services. The lack of cost-reflectivity might turn into discrimination between different network users and limit cross-border trade impacting market integration.

Similarly, the lack of a harmonized approach on pricing of non-physical backhaul capacity represents a potential issue for cross-border trade activities, as cost-reflectivity of non-physical backhaul capacity tariffs is not properly ensured. Specifically, given the virtual nature of the flow, the costs related to the provision of non-physical backhaul capacity, which are mostly administrative costs, may be lower than the costs incurred by TSOs for providing interruptible capacity products at bidirectional points. The level of pricing of non-physical backhaul capacity should therefore be lower than interruptible capacity products. In the study KEMA/ REKK on Methodologies for Gas Transmission Networks, backhaul capacity prices are well above costs of providing the service[40].

3.3.5 Publication requirements

Context

Network Users are supposed to be able to make reasonable estimation of the reference price from published transmission cost data, including a reasonable estimation of the reference price in the subsequent years in order to optimize their booking strategies balancing long vs. short term capacity products.

Some TSOs and NRAs are now publishing tariff related information together with some details on the approaches followed in the calculation of the allowed revenues, while all needed information to fully understand how the reference price at each entry and exit point is derived might not always be published.

Different publication requirements and non-standardized format may further limit tariff predictability. Moreover, the lack of transparency reduces Networks Users' ability to assess whether tariffs are sufficiently cost-reflective.

Shippers and Network Users are currently complaining, not only about transparency in the definition of tariffs structures but also on limited visibility on how the level tariffs might evolve in the following period. In most of the countries, the calculation of the costs and the allowed or target revenues of the transmission system operators are not published. Low levels of tariff predictability might limit Network Users' commitment on long-term products with potential impact on network investments.

[40] *KEMA/REKK report, Methodologies for Gas Transmission Networks*

3.3.6 Publication of binding tariffs and tariff setting year

Context

In most Member States, capacity tariffs are set on annual basis, but the starting point of the tariff setting year can vary substantially[41]. The most frequent options for the tariff setting year are:

- 1st January until the 31st of December *(calendar year)*
- 1st October until the 30th of September (*gas year)*
- 1st of July until the 30th of June
- 1st of April until the 31st of March

Besides, in most of EU Member States, the capacity tariffs are published one month before the start of the tariff setting year.

Country	Tariff Setting Year	
	Tariff setting year	Tariff validity
Austria	**Jan – Dec**	**4 years**
Belgium	**Jan – Dec**	**4 years**
Bulgaria	**Jan – Dec**	**No fixed period**
Croatia	**Jan – Dec**	**3 years (until 2016)**
Czech Rep.	**Jan – Dec**	**1 year**
Denmark	**Oct – Sept**	**1 year**
Estonia	**Not defined**	**No fixed period**
Finland	**-**	**-**
France	**Apr – March**	**1 year**
Germany	**Jan – Dec**	**1 year**
Greece	**Jan – Dec**	**4 years**
Hungary	**Oct – Sept**	**-**
Ireland	**Oct – Sept**	**5 years**
Italy	**Jan – Dec**	**1 year**
Latvia	**Under review**	**-**
Lithuania	**Jan – Dec (until 2016)**	**5 years**
Luxembourg	**Jan – Dec**	**1 year**
Netherlands	**Jan – Dec**	**1 year**
Poland	**Not defined (current: Jan – Dec)**	**1 year**
Portugal	**July – June**	**1 year**
Romania	**Oct – Sept**	**1 year**
Slovakia	**Jan – Dec**	**5 years**
Slovenia	**Jan – Dec (until 2016)**	**3 years**
Spain	**Jan – Dec**	**1 year**
Sweden	**Oct – Sept**	**-**
UK	**Oct – Sept**	**1 year**

Due to the low level of harmonisation in the tariff setting year, shippers are currently unable to benchmark different gas transportation routes for the same period of time and, in addition, they are not able to forecast the level of tariffs at the points of different entry/exit zones with the same level of predictability.

[41] *ENTSOG, Impact Assessment: Harmonisation of the Tariff Setting Year (7th November 2014)*

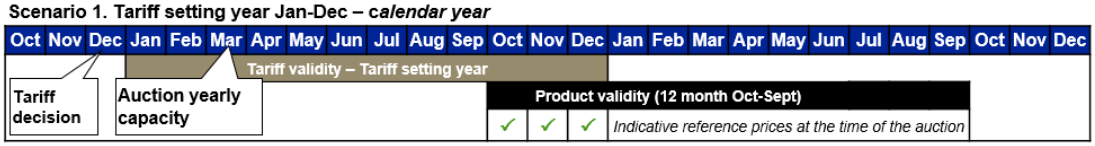
Besides, network users claim difficulties in booking bundled capacity products at interconnection points of entry/exit zones that apply a different tariff setting year, since they are unable to assess the development of future tariffs for the upcoming periods on both sides of the borders.

Taking into account the current situation in terms of publication of binding tariffs, a further issue may arise due to the provisions included in the CAM NC where it is foreseen that capacity auctions will be set in March. Several stakeholders raised concerns asking for a level playing field where the publication of binding reference price, tariff setting year, and capacity allocation calendar are harmonised across EU Member States.

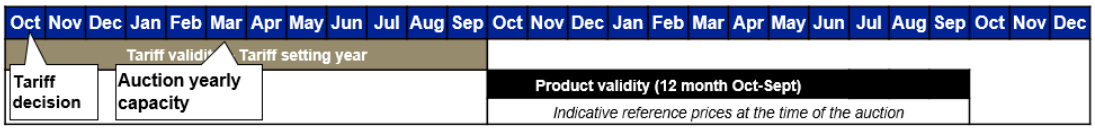
In case of an annual capacity auction in March for products valid for the 12 month period commencing in October, a misalignment of the tariff setting year may lead to an unsustainable situation for Network Users:

- 1st January until the 31st of December *(calendar year):* Network Users will know the tariff only for 3 months (October, November and December) and they will rely on indicative prices for the remaining 9 months;
- 1st October until the 30th of September (*gas year):* Network Users will not know the tariff for any of the 12 months of the auction period

Scenario 1. Tariff setting year Jan-Dec – *calendar year*



Scenario 2. Tariff setting year Oct-Sept – *gas year*



In this context, Network Users are supposed to bid partially or totally blind in the auctions. Publishing tariffs only after an auction process is completed (also assuming a 30 days of notice period) would force Network Users to shift their preference toward short term capacity products.

3.3.7 Changes in tariffs/ mitigating measures

Context

Network Users can book annual capacity products through long-term contracts with the TSOs. However, as Entry/Exit tariffs might change over the years due to changes in TSOs' allowed / target revenues, in the methodologies adopted to calculate tariffs and variations in the levels of multipliers, many Network Users believe that, in the future, measures aimed at mitigating the impact of such changes on existing long-term contracts should be introduced.

Besides, the introduction of a new Network Code on gas transmission tariffs may bring changes to the European gas system with high potential impact on Network Users with long-term contracts. In this context, many stakeholders have raised a request for mitigating measures (such as one-off capacity reset clauses, stop-loss clauses, capacity re-shuffle, etc.)[42].

The potential changes in the Entry/Exit tariffs might have an impact on Network Users who have contracted long-term capacity in advance:

- Reductions in the levels of multipliers might incentivize short-term bookings and disproportionately penalize long-term strategies;
- Changes in TSOs' costs can be reflected in unforeseen variations in Entry/Exit tariffs to be paid at the time of use by Network Users in presence of *floating payable price* regimes;
- Adjustments in the reference price methodology might introduce additional changes in the tariffs that might not be fully understood by Network Users, in case no transparency is provided in the way reference price methodologies are applied.

In the context of the development of the NC TAR, several stakeholders have considered the mitigating measures foreseen in the draft TAR NC insufficient to address any possible impact the new regulation may introduce in the market, and they have requested during the Stakeholder Support Process (SSP) the introduction of additional mitigating measures (such as one-off capacity reset clause, etc.). Shippers who have already booked long-term capacity (before CAM NC auction) argue that the implementation of the NC TAR, by introducing relevant changes in the structure of transmission tariffs, will have large impact on their long-term contracts, and they claim the right to apply clauses to hand back capacity. Introducing such clauses would free up capacity, reducing the risk of situations where the contracted capacity is not actually used; however it could also have negative consequences for TSOs' cost-recoverability, as many investments in transmission capacity were pursued in view of the capacity booked through long-term contracts.

The Impact Assessment will analyse and assess the potential effects of such measures on the market, looking at both the interests of TSOs and at those of the various stakeholders.

[42] *Refined Draft TAR NC non-confidential responses to consultation in a form of Stakeholder Support Process – responses on Chapter #10 "Final and Transitional Provisions" (24 respondents in total); Strategy& Analysis*

4. OBJECTIVES

4.1 General objectives

The general objective is to create the necessary regulatory framework for transmission tariff structures, which fosters a well-functioning, efficient and open internal gas market, in line with EU Treaty goals:

- Establish a functioning internal market in gas, in the spirit of solidarity between the Member States (Article 3 (3) TEU; Article 194 (1) TFEU);
- Ensure security of energy supply in the Union (Article 194 (1) (b) TFEU);
- Promote the interconnection of energy networks (Article 194 (1) (d) TFEU).

4.2 Specific objectives

The specific objectives of European rules on gas transmission tariff structures are:

- Facilitate trade and competition through a well-functioning and transparent wholesale market;
- Avoid cross-subsidies and undue discrimination between Network Users, thereby ensuring cost-reflective transmission tariffs;
- Provide incentives for investments, and maintain or create interoperability for transmission networks;
- Improve transparency in the gas market.

4.3 Operational objectives

Each policy option should pursue the following operational objectives:

- Set out clear and transparent rules on how the price for annual firm transmission capacity is determined in an Entry/Exit system and how short-term prices are derived;
- Ensure the application of transparent and cost-reflective tariff methodologies;
- Introduce rules to facilitate the mergers between different Entry/Exit zones;
- Introduce publication and consultation requirements to enable Network Users to forecast transmission tariffs to a reasonable extent;
- Determine levels of multipliers ensuring balance between facilitating short-term trading and long-term commitments providing signals for efficient investments;
- Set a common approach to payable price at Interconnection Points fostering tariff predictability and creating a level playing field for all users, enabling TSOs' cost recoverability at the same time;
- Foster cost-reflectivity of tariffs for non-firm products, such as interruptible capacity products and non-physical backhaul capacity products;
- Set a common approach to the revenue reconciliation mechanism to enable tariff stability, and TSOs' cost recoverability and financial stability;
- Avoid substantial tariff fluctuations due to changes in the regulatory framework.

4.4 Legal base and subsidiarity principle

The right of the EU to provide a more detailed regulation on transmission tariff structures (TAR) in the form of binding EU Network Codes (NC) is set out in the Article 8(6) (k) of the Gas Regulation. The Commission's initiative to adopt a TAR NC is fully in line with the principle of subsidiarity, as the NC TAR only sets the minimum degree of harmonisation to be met to foster transparent, non-discriminatory and cost-reflective transmission tariffs across EU Member States. The Gas regulation states that NCs shall, if appropriate, take into account regional special characteristics. It also states that, in calculating tariffs for access to networks, it is important to take account of the actual costs incurred, insofar as such costs correspond to those of an efficient and structurally comparable network operator, and are transparent, as well as of the need to provide appropriate return on investments and incentives to construct new infrastructures[43].

[43] *Article 8 Regulation (EC) No. 715/2009*

5. POLICY OPTIONS

This chapter aims at identifying and describing different policy options to address the problems described in Chapter 3: *Problem identification.*

Considering the full spectrum of policy options to tackle the problem of transmission tariff structures for gas across EU, three main choices are assessed in the impact assessment:

- **Option 1:** no further EU action *(baseline scenario);*
- **Option 2:** basic level of harmonisation through technical European rules on transmission tariff structures for gas;
- **Option 3:** advanced level of harmonization through technical European rules on transmission tariff structures for gas

Each policy option can include, if needed, more sub-options to better analyse and assess the selected topics.

5.1 Option 1: No further EU action (baseline scenario)

This policy option does not foresee any further rules to harmonize the transmission tariff structures of gas across EU Member States beyond what has already been stated in the Gas Regulation. Under this policy option no new specific EU policies would be introduced and tariff setting and transmission tariff structures would continue to be wholly determined at national level.

The description of the current situation of European gas transmission tariff structures and the detailed explanation of issues connected with the different components of transmission tariffs are provided in Chapter 3: *Problem Identification.*

In this context, current practices and differences across Member States would continue and improvements in the transmission tariff structures would likely take place in a fragmented manner. Any step taken to harmonise tariff structures would be on a voluntary basis between Member States.

National schemes and regulations may fall short when it comes to consider and take into account cross-border aspects of gas transaction and, as set out in Chapter 3, there are currently very significant national differences in terms of tariff setting and transmission tariff structures that are unlikely to converge.

Thus, the baseline scenario, here considered for the impact assessment, is built on the largely organic process of market integration as set out in the principles of the Gas Regulation and Gas Directive but does not consider any further binding EU-wide harmonised rules.

5.2 Option 2: Basic level of harmonisation through technical EU rules on transmission tariff structures for gas

Under this policy option, harmonised rules for tariff setting and transmission tariff structures would be set. These harmonised rules would leave room for national specificity where this better achieves the objectives set out in Chapter 4: *Objectives.*

5.2.1 Reference price methodology

Choice of the reference price methodology

Sub-option 1: Increased transparency/public consultation, Guidelines of Good Practice and evaluation report from ACER

This policy sub-option would prescribe that:

- ACER will provide Guidelines of Good Practice to TSOs on the methodologies to be applied to calculate the reference prices, describing the different possible methodologies, the input parameters, the calculation formulas and criteria for the choice of the methodology;
- TSOs or NRAs will calculate reference prices in-line with the chosen reference price methodology, taken into account of ACER guidelines;
- TSOs or NRAs will conduct a cost allocation test after the calculation of reference prices;
- TSOs or NRAs will benchmark the reference prices calculated through their reference price methodologies against the reference prices calculated through the Capacity Weighted Distance methodology:
    - ENTSOG should publish a calculation algorithm (Excel or equivalent) to be used as a template for all TSOs for the calculation of reference prices through the Capacity Weighted Distance;
    - The inputs to be used in the Capacity Weighted Distance methodology apart from the transmission services revenues should be:
        a) Forecasted booked capacity;
        b) Distances between Entry/Exit points calculated through the path approach;
        c) 50/50 Entry/Exit split.
    - Those inputs should be published by TSOs or NRAs in each Entry/Exit system
- After 5 years since the entry into force of the policy, ACER will produce an evaluation report assessing the need for further harmonized rules (2nd phase);
- TSOs should follow general principles in the application of the reference price methodology, with regards to:
    - Application of the reference price methodology in multi-TSO Entry/Exit systems;
    - Possible application of discounts to storage facilities;
    - Possible criteria for asset cost split.

Sub-option 2: Limited number of reference price methodologies allowed

This sub-option limits the reference price methodologies to four different approaches, indicating the requirements that should be satisfied in order to prefer a specific methodology against another. A consultation should be conducted by either the NRA or the TSO to take the decision on the reference price methodology to be applied, and the NRA should take the ultimate decision, providing a reasonable justification for the preference of a reference price methodology against all other methodologies. As part of the consultation, the NRA or the TSO should conduct the cost allocation test, which is aimed at validate that the chosen reference price methodology satisfy the key criterion of cost-reflectiveness, notably with a view to avoid discrimination between cross border network users and network users of the domestic markets.

The reference price methodology should be applied to the capacity-based part of the transmission services revenue and should be one of the following:

- Postage Stamp;
- Capacity Weighted Distance;
- Virtual Point Based (variant A or B);
- Matrix.

The choice of the reference price methodology should be made considering the following requirements:

- **Postage stamp.** It can be used in any entry/exit zone that satisfies the following principles:
    - The majority (two thirds) of gas transmission capacity is used either for domestic or for cross-border network users or;
    - The average distance travelled by domestic flows is comparable to the average distance travelled by cross-border flows, so that applying the postage stamp would not cause significant cross-subsidization between domestic and cross-border network users.
- **Virtual Point Based.** It can be used in any transmission system where it is possible to identify a (physical or virtual) reference node where the majority of flows converge;
- **Other cost allocation methodologies.** The choice between the capacity weighted distance and the matrix methodologies should consider the trade-off between simplicity of the structural representation of the network and the cost-reflectivity of the tariff.

This policy option requires also that all information concerning the reference price methodology shall be published in a timely manner to enable network users to predict how the level of transmission tariffs can change in the foreseeable future.

Sub-option 3: Choice of the reference price methodology based on cost-reflectivity vs. simplicity trade-off (NRA decision)

This sub-option would:

- Require NRAs/TSOs to follow certain harmonised steps when calculating the reference prices i.e. treatment of inputs, application of cost drivers, method of calculation, and application of any secondary adjustments;
- Flexibility for the TSOs or NRAs to select the cost concept used as the input to the calculation of reference prices;
- NRAs obliged to consider the trade-off between cost reflectivity and simplicity by choosing one reference price methodology in reaching this decision (such as Postage Stamp, Capacity Weighted Distance, Virtual Point variants, Matrix);
- This choice also to be informed by clearly defined circumstances and inputs into each methodology;
- Include criteria for when to apply a historic or incremental cost concept.

This sub-option would foresee also that:

- NRAs/TSOs will apply any reference price methodology subject to criteria;
- TSOs will conduct a cost allocation test after selecting the reference price methodology.

Sub-option 4: Only two reference price methodologies described in the NC – Post. Stamp and CWD

This policy sub-option would prescribe that:

- The Postage Stamp and the Capacity Weighted Distance (CWD) should be used as default reference price methodologies, with specific calculation steps and specific input parameters (a description of the methodology and the inputs should be provided). A comparison against the Postage Stamp would be required in case the proposed methodology is the CWDA;
- ACER shall also issue a recommendation on reference price methodologies other than Postage Stamp and CWDA as well as relevant parameters and criteria for choosing such methodologies;
- In case a TSO decides to apply a reference price methodology different than Postage Stamp or CWD, the following process should take place:
    - The TSO or NRA should benchmark the reference prices calculated through the chosen reference price methodology against the reference prices calculated through one of the two default methodologies (Postage Stamp or CWD);
    - The TSO should provide a justification to the NRA for the adoption of a reference price methodology different than the two default options, providing evidence of the benchmark on prices;
    - The TSO or NRA should consult the result of the benchmark and should send the results of this consultation to ACER for an opinion;
    - Within 3 months after the receipt of such request, ACER is to provide a non-binding opinion on the methodology to be applied;
    - Within 3 months following the receipt of the opinion from ACER, the NRA is to take a decision on the methodology to be applied (which is to include a justification of how ACER's recommendation

regarding the reference price methodologies other than detailed in the TAR NC and ACER's opinion were taken into account).
- Independently from the choice in the reference price methodology, the TSO should conduct a cost allocation test after applying the reference price methodology, the result shall be included into the consultation document;
- After 5 years since the entry into force of the policy, ACER will produce a report on the application of the reference price methodologies.

Entry/ Exit split

50/50 Entry exit split as default rule unless otherwise set or approved by the NRAs

Under this policy option, the entry/exit split, when is not a result of the application of the reference price methodology, shall be equal to 50/50 unless otherwise set or approved by the NRAs.

The set of circumstances where the NRAs may decide to apply the E/E split different than 50/50, are:

- The E/E split is based on cost drivers such as distance, technical capacity or forecasted contracted capacity;
- The E/E split better fulfils the following (minimum) objectives:
  - Minimize cross-subsidization between network users, in particular between those serving cross-border and domestic markets;
  - Not to create barriers to cross-border trade;
  - Avoid the differences between the allowed revenue and the actually obtained revenue.

Adjustment of the outcome of the reference price methodology[44]

Limited number of secondary adjustments

Under this policy option, 3 secondary adjustments are allowed.

- Equalization;
- Benchmarking;
- Storage adjustment *(treated in a separate policy option under Storage E/E tariffs).*

The conditions for the application of equalization shall be at least one of the following:

- Contribute to security of supply;
- Enhance stability of transmission tariffs;
- Foster competition in the retail market;
- Foster competition in the renewable energy sector;

The conditions for the application of benchmarking[45] on a case-by-case basis shall include all of the following:

[44] *The adjustment of Storage E/E tariffs is considered as a secondary adjustment but will be treated under a separate policy option in order to consider specific sub-options in the impact assessment*

- An "effective competition" between the Interconnection Points exists;
- The application of the reference price methodology is not sufficient for meeting the competitive level of transmission tariffs;
- The adjustment is needed to increase the quantity of the contracted capacity at a given entry or exit point.

Storage Entry/Exit tariffs

Sub-option 1: Individual NRA decision on necessity of adjusting the outcome of the reference price methodology based on harmonized criteria

According to this option, when the NRA sets or approves the transmission tariffs for storage facilities, it should take into account the following considerations:

- The net benefits that the storage facilities may provide to the transmission system;
- The need to promote efficient investment in the transmission system;
- The need to minimize detrimental effects on cross-border trade.

Based on those considerations, the NRA sets or approves reference prices at entry/exit points to/from storage facilities.

Sub-option 2: Free of charge tariff as default rule + NRA decision for possible deviation

This policy option, on the contrary, foresees that Entry/Exit tariffs from/to storage facilities will be free of charge as a default rule. Specific circumstances for the introduction of Entry/Exit tariffs from/to storage facilities will be evaluated at national level between the TSO and NRA, considering the relevance of storage facilities for the security of energy supply in the specific market and assessing the costs that the storage facility causes to the transmission system (i.e. off-site storage facilities requiring higher investments compared to underground storage, etc.).

[45] *Benchmarking implies reducing the tariff at one point in order to attract greater gas flows. Higher capacity sales at this point would be expected to offset the need for increased tariffs at other points*

Multi-TSO Entry/Exit zones

Sub-option 1: One single ref. price methodology applied jointly but separate application allowed for a limited period under specific conditions

This option foresees that in principle one and the same reference price methodology shall be applied jointly by all TSOs within an E/E system. In order to do so, the allowed revenues of all TSOs active in the E/E system are added up to one single aggregated E/E system revenue. Then the one single reference price methodology for the E/E system is applied to the aggregated revenue. As a result of applying the reference price methodology jointly, the NRAs would need to establish an effective inter-TSO compensation mechanism as due to that application not necessarily each TSO would charge its revenue at its E/E points.

Furthermore this option would allow that under some circumstances and for a limited period of time the reference price methodology is applied separately by the TSOs within the same E/E system. The conditions for applying that exception is that the separate application ensures that the costs charged by the respective TSOs correspond to those of an efficient TSO and that an effective Inter-TSO compensation mechanism is established in order to prevent detrimental effects on the transmission services revenue recovery of the TSOs involved and to avoid cross-subsidisation between different groups of network users.

Sub-option 2: One single ref. price methodology applied jointly but separate application allowed under specific conditions

Same as Sub-option 1 but the separate application of the reference price methodology by the TSOs within the same E/E system would not only be allowed for a limited period but whenever conditions are met or cost-benefit analysis shows that its more appropriate.

5.2.2 Multipliers and seasonal factors

Sub-option 1: Differentiated ranges for short-term capacity products, with allowed deviation under specific circumstances

Under this sub-option, the level of multipliers, (if seasonal factors are applied then the arithmetic mean over the gas year of the combination with multipliers) shall fall within two ranges depending on the typology of non-yearly standard capacity products:

- For quarterly and monthly standard capacity products the level of multipliers can be any value between 0.5 and 1.5;
- For daily and within-day standard capacity products, the level of multipliers can be any value between 0 and 1.5.

The policy option would allow to deviate from those ranges in case the TSO or NRA justifies that the result of the following calculation exceeds 1.5 for at least one of the three years before the date of calculation or for the year after the date of the calculation:

$$N_m = \frac{\max\left(CAP_{c,i}\right) \times 365}{\sum_{i=1}^{365} CAP_{c,i}}$$

Where:

- N_m is the potential multiplier exceeding the maximum default limit defined by the policy;
- $CAP_{c,i}$ is the actual or forecasted amount of contracted capacity for non-yearly standard capacity products in kWh/d;
- For leap years, the formula shall be adjusted so that the figure 365 is substituted with the figure 366.

In any case, the multiplier for the short-term capacity product should always be lower than 3.

The application of this formula would allow the adoption of a multiplier higher than 1.5 (but always lower than 3) for those TSOs who have experienced a peak in the actual (or forecasted) contracted capacity for short-term products that is substantially higher than the average contracted capacity over the year.

Sub-option 2: One single range for all short term capacity products after a limited period

Under this sub-option, the level of multipliers, including seasonal factor (if applicable) shall fall within two ranges depending on the typology of non-yearly standard capacity products:

- For quarterly and monthly standard capacity products the level of multipliers can be any value between 1 and 1.5
- For daily and within-day standard capacity products, the level of multipliers can be any value between:
    - 1 and 3 for a transitional period of 4 years of application;
    - 1 and 1.5 after the transitional period.

After 2 years since the application date of the policy, a report should be produced on the appropriateness of ranges of multipliers. Another report should be produced after 4 years since the application date.

5.2.3 Fixed vs. floating price at IPs and Revenue Reconciliation

Floating price as default rule with fixed under specific circumstances

The TSO/NRA will first define the tariff setting regime:

- *Price-cap*. In an entry/exit zone with a price-cap regime, the NRA sets an upper limit to the transmission tariffs charged by the TSO;
- *Revenue-cap*. In an entry/exit zone with a revenue-cap regime, the NRA sets the maximum 'allowed revenues' that can be recovered by the TSO to cover their costs;
- A co-existence of *price-cap* regime and *revenue-cap* regime.

Once the tariff setting regime is defined, the TSO will define the approach to the payable price, i.e. the price to be paid by Network Users for capacity products at the time of use.

Under this policy option, two possibilities are allowed in the approach to calculate the payable price for a given standard capacity product at any Interconnection Point (IP).

- *Floating price* will be offered as default approach. The price paid at the time of use by Network Users for a standard capacity product at any IP will be calculated as the reserve price applicable at the time of use plus an auction premium, if any.

  With the *floating price,* revenue reconciliation will be performed adjusting the prices year over year to reflect any variations in allowed revenues. In addition, each TSO shall use one regulatory account with the possibility to use sub-accounts for the purpose of tracking the under- or over-recovery originating from a particular group of points or from a particular type of transmission tariffs. The frequency over which the regulatory account should be reconciled will not be harmonized.

- *Fixed price* can be offered either in parallel or not, to the *floating price,* under the following circumstances:
  1. If the NRA decides to adopt a price-cap regime and therefore bears the volume risk;
  2. If the capacity product being paid involves incremental capacity, i.e. new investments in pipeline projects;
  3. If an existing long-term contract between the TSO and the Network User foresees the payment of a *fixed price.*

5.2.4 Pricing of interruptible capacity

Sub-option 1: Pricing based on ex-ante or a combination of ex-ante/ex-post discount

This policy option foresees that the reserve price for standard capacity products for interruptible capacity should be set at a discount compared to the reserve

prices for the respective standard capacity product for firm capacity. Two approaches are possible:

- Using an ex-ante discount, i.e. a discount applied at the time of booking;
- Using a combination of ex-ante and ex-post discount (i.e. a discount to apply when an interruption in the provision of the transmission service occurs) in case of:
  - Absence of physical congestion;
  - Available firm capacity for the daily standard capacity products exceeding 10% of the technical capacity on average at a given interconnection point for the tariff period preceding the date of the calculation.

In either case, TSOs or NRAs, shall publish along with the transmission tariffs, a report on the probability of interruption of the interruptible capacity for the next tariff period including the level of the discount applied, the explanation on the calculation and historical and/ or forecasted data used.

The combined ex-post discount will be calculated on top of the ex-ante discount without any double counting and, as a consequence, the total possible discount would be at least equal or higher than the ex-ante discount only.

Besides that, the same approach, above delineated for the pricing of interruptible capacity, will be applied, to the pricing of non-physical backhaul capacity.

Sub-option 2: Interruptible capacity based on ex-ante discount vs. backhaul capacity based on marginal cost

Under this policy option, the following differences compared to the previous approach will be applied:

- The pricing of interruptible capacity will be calculated using the ex-ante discount only, i.e. the discount will be applied at the time of booking;
- The pricing of non-physical backhaul capacity should reflect the marginal (additional) costs that the TSO incurs to provide this service and shall not be below zero.

Sub-option 3: Interruptible capacity and non-physical backhaul capacity based on ex-ante discount

Under this policy option, the pricing of interruptible capacity and of non-physical backhaul capacity shall be set using an ex-ante discount only, i.e. a discount will be applied at the time of booking.

5.2.5 Publication requirements

Increased transparency on transmission tariffs

Under this policy sub-option, the TSO and/or NRA will publish:

- All parameters used in the reference price methodology;
- The calculation steps done to calculate reference prices for standard capacity products;

- An explanation on the adjustments made on the outcomes of the reference price methodology (if any);
- The process followed to define tariffs for non-transmission services;
- The process followed to define tariffs for any other type of capacity (or commodity) products, such as interruptible capacity products, short-term capacity products, etc.

All TSOs and NRAs should publish either a simplified tariff model, or a set of sensitivity analyses that would let Network Users predict the changes in the transmission tariffs of firm capacity products at all Entry/Exit points of interest.

Moreover, the TSO or the NRA will publish the explanation for the following variables:

- The difference in the level of transmission tariffs for the same type of service applicable for the current tariff period and for the tariff period for which the information in published;
- The estimated difference in the level of transmission tariffs for the same type of service applicable for the tariff period for which the information is published, and for each tariff period within the remainder of the regulatory period.

5.2.6 Publication of binding tariffs and tariff setting year

Sub-option 1: No harmonization of tariff setting year + publication of indicative reference prices with 30 days of notice period prior to auction

This policy option does not specify any set of rules regarding the harmonisation of the tariff setting year however in order to alleviate the issue of non-harmonisation the new regulation foresees that, at least 30 days in advance of the tariff period, the TSO or the NRA, depending on who is responsible for setting the transmission tariffs, shall publish the following information applicable for the tariff period following the auction with 30 days of notice:

- Indicative reference prices;
- Binding multipliers and seasonal factors.

Sub-option 2: No harmonisation of tariff setting year + publication of binding reference price prior to capacity auction

This policy sub-option foresees that binding reference prices will be published prior to capacity auction in July, to enable Network Users to bid knowing ex-ante the reference price for capacity products (independently from the tariff setting year, calendar, gas year, etc.).

5.2.7 Changes in tariffs/ mitigating measures

Gliding path system and grand-fathering of contracts with fixed tariffs before TAR FG

In order to allow a smooth transition of the new regulation, this sub-option allows for a gliding path system over 5-10 years if the expected changes in tariffs at least at one entry or exit point lead to an increase by

20% or more. Furthermore this sub-option foresees a grandfathering of contracts with fixed transmission tariffs which have been concluded before the publication of TAR FG in order to protect the legitimate expectations of the contracting parties.

5.3 Option 3: Advanced level of harmonization through technical EU rules on transmission tariff structures for gas

This policy option will provide room for further improvement in light of full harmonisation and increase acceptability form Stakeholders. The EU rules regarding transmission tariff structures would be more advanced with less room for taking national circumstances into account.

5.3.1 Reference price methodology

Choice of the reference price methodology

Postage Stamp as the only reference price methodology allowed

This policy option foresees that each TSO will apply the Postage Stamp methodology using forecasted booked capacity as an input parameter.

Entry/ Exit split

50/50 entry exit split without exception

Under this policy option, a default 50/50 Entry-Exit split will be applied in each E/E zone without exception.

Adjustment of the outcome of the reference price methodology

Benchmarking as the only adjustment allowed

This policy option foresees that only Benchmarking would be allowed as an instrument to modify the outcome of the reference price methodology. The adjustment of the reference price will be allowed to decrease the transmission tariffs at a given entry or exit points when this is needed to meet the competitive level of transmission tariffs. The same conditions as described under Option 2 would apply.

Storage Entry/Exit tariffs

Sub-option 1: No adjustment of the outcome of the reference price methodology

Under this sub-option, no discount will be allowed to price differently transmission tariffs for storage facilities. The reference price calculated as the output of the reference price methodology will be applied at each entry and exit points from/to storages.

Sub-option 2: Zero-E/E tariffs to storage facilities

This policy option foresees that Entry-Exit tariffs from/to storage facilities will always be free of charge with no possibility for taking into account national circumstances.

Multi-TSO Entry/Exit zones

One single ref. price methodology applied jointly

This option foresees that one and the same reference price methodology shall be applied jointly by all TSOs within an Entry-Exit system. As a result of applying the reference price methodology jointly, the NRAs would need to establish an effective inter-TSO compensation mechanism as due to that application not necessarily each TSO would charge its revenue at its entry and exit points. No exceptions to that rule would be allowed.

5.3.2 Multipliers and seasonal factors

One unique multiplier to be applied to all short term capacity products

This option foresees that the same multipliers for short-term capacity products would apply across EU with no flexibility to use ranges. In details, this option proposes a harmonised multiplier (if seasonal factors are applied then the arithmetic mean over the gas year of their combination with multipliers)) for all short term products of 1.3.

5.3.3 Fixed vs. floating price at IPs and Revenue Reconciliation

Sub-option 1: floating price approach

This option foresees that floating price regime will be the only option offered at each IP. For incremental capacity, a fixed approach can still be applicable.

Revenue reconciliation will be performed by adjusting the floating price for standard and in some cases specific capacity products.

Sub-option 2: fixed price approach + commodity charge for revenue reconciliation

This option foresees that fixed price regime will be the only option offered at each IP. Complementary Revenue Recovery Charge (CRRC) will be used to perform revenue reconciliation.

5.3.4 Pricing of interruptible capacity

The reserve price set to the marginal costs and the payable price determined through the auction premia

Under this option, the reserve price for all interruptible capacity will be set to the marginal costs and the payable price will be determined mainly through the auction premia. The interruptible capacity can be offered at marginal costs only in case if the firm capacity is fully sold-out. The tariff would be determined through market based arrangements and reflect the value the interruptible capacity has for the market.

5.3.5 Publication requirements

Increased transparency on transmission tariffs and transmission costs

Under this policy sub-option, the TSO and/or NRA will fulfil all the publication requirements listed in sub-option 1, and will publish all cost parameters leading to the calculation of tariffs, such as Revenue Asset Base (RAB), operational expenditures, WACC, efficiency targets, re-evaluation of assets and date of activation of assets.

Information on costs should be published in a readable and self-explanatory way, in order to let Network Users understand how tariffs reflect the costs incurred by TSOs. In addition, since the Postage Stamp methodology will be applied by all Member States, a common template will be made available enhancing transparency in the market.

5.3.6 Publication of binding tariffs and tariff setting year

Sub-option 1: Tariff setting year aligned with gas year with publication of binding reference price prior to capacity auction

This sub-option foresees to align the tariff setting period across all Member States to October-September *(gas year).* Binding reference prices will be published prior to capacity auction in July.

Sub-option 2: Tariff setting year aligned with calendar year with publication of binding reference price prior to capacity auction

This sub-option foresees to align the tariff setting period across all Member States to January-December *(calendar year).* Binding reference prices will be published prior to capacity auction in July.

5.3.7 Changes in tariffs/ mitigating measures[46]

Sub-option 1: One-off capacity reset

This sub-option foresees the possibility for any Network User to reset the total amount of booked capacity before the full implementation of the TAR NC. This possibility will be allowed in all the points where the CAM NC is applied.

Sub-option 2: Stop-loss clause

This sub-option foresees an on-going possibility for any Network User to return booked capacity in whole or in part also after the full implementation of the TAR NC, if the reference price at an Entry or Exit point increases by more than 30% in real terms over a three year period preceding the date of termination. This possibility will be allowed at all the points where the CAM NC is applied.

[46] *Sub-options take into account the proposals raised by stakeholders in the Stakeholders' Consultation Process. See "Refined Draft TAR NC Non-Confidential Responses to Consultation in a Form of Stakeholder Support Process"*

Summary of the options and sub-options foreseen for each topic

Topics	Option 1 – BAU	Option 2 – basic level of harmonization	Option 3 – Advanced level of harmonization
1. Reference Price Methodology	Defined at national level	**Choice of the reference price methodology:** • Sub-option 1: Increased transparency/public consultation, Guideline of Good Practice and evaluation report from ACER • Sub-option 2: Limited number of reference price methodologies allowed • Sub-option 3: Choice of the reference price methodology based on cost-reflectivity vs. simplicity trade-off (NRA decision) • Sub-option 4: Only two reference price methodologies described in the NC – Post. Stamp and CWD **Entry Exit split:** • 50/50 Entry exit split as default rule unless otherwise set or approved by the NRAs **Adjustment of the outcome of the reference price methodology:** • Limited number of secondary adjustments **Storage Entry/Exit tariffs:** • Sub-option 1: Individual NRA decision on necessity of adjusting the outcome of the reference price methodology based on harmonized criteria • Sub-option 2: Free of charge tariff as default rule + NRA decision for possible deviation **Multi-TSO Entry/exit zones:** • Sub-option 1: One single ref. price methodology applied jointly but separate application allowed for transitional period under specific conditions • Sub-option 2: One single ref. price methodology applied jointly but separate application allowed under specific conditions	**Choice of the reference price methodology:** • Postage Stamp as the only reference price methodology allowed **Entry Exit split:** • 50/50 entry exit split without exemptions **Adjustment of the outcome of the reference price methodology:** • Benchmarking as the only adjustment allowed **Storage Entry/Exit tariffs:** • Sub-option 1: No adjustment of the outcome of the reference price methodology • Sub-option 2: Zero-E/E tariffs to storage facilities **Multi-TSO Entry/exit zones:** • One single ref. price methodology applied jointly
2. Multipliers and seasonal factors		• Sub-option 1: Differentiated ranges for short-term capacity products, with allowed deviation under specific circumstances • Sub-option 2: One single range for all short term capacity products after a transitional period	• One unique multiplier to be applied to all short term capacity products
3. Payable price at IPs and Revenue Reconciliation		• Floating price as default rule with fixed under specific circumstances	• Sub-option 1: floating price approach • Sub-option 2: fixed price approach + commodity charge for revenue reconciliation
4. Pricing for interruptible capacity		• Sub-option 1: pricing based on ex-ante or a combination of ex-ante/ex-post discount • Sub-option 2: Interruptible capacity based on ex-ante discount vs. backhaul capacity based on marginal cost • Sub-option 3: Interruptible capacity	• The reserve price set to the marginal costs and the payable price determined through the auction premia

		and non-physical backhaul capacity based on ex-ante discount	
5. Publication requirements		• Increased transparency on transmission tariffs	• Increased transparency on transmission tariffs and transmission costs
6. Publication of binding tariffs and tariff setting year		• Sub-option 1: No harmonization of tariff setting year + publication of indicative reference prices with 30 days of notice period prior to auction • Sub-option 2: No harmonisation of tariff setting year + publication of binding reference price prior to capacity auction	• Sub-option 1: Tariff setting year aligned with gas year with publication of binding reference price prior to capacity auction • Sub-option 2: Tariff setting year aligned with calendar year with publication of binding reference price prior to capacity auction
7. Changes in tariffs/ mitigating measures		• Gliding path system and grand-fathering of contracts with fixed tariffs before TAR FG	• Sub Option1: One-off capacity reset • Sub Option2: Stop–loss clause

6. IMPACTS PER MEASURE

The aim of this chapter is to assess the potential economic, social and environmental impacts based on the adoption of the policy options and sub-options described in Chapter 5: *Policy Options*.

The main changes generated by the different policy options have been identified for each topic and, moving from such changes, impacts on the gas value chain have been analysed.

Social impacts are mainly referred to job creation. Environmental impacts analysis is mainly focussed on the energy mix changes which the options under evaluation can trigger.

Whenever possible, the impact assessment is based on quantitative analyses. When qualitative evaluations have been made, the outcomes of any given policy choice is described and assessed by looking at all stakeholders involved and on the well-functioning of the market. Key outputs of the assessment are focused on distributional impacts among different market participants, consumers, producers, incumbents and new entrants, as well as among different Member States.

6.1 Option 1: no further EU action (baseline scenario)

6.1.1 Economic Impacts

Results of the public consultation[47]: During public consultations, the majority of consultation respondents expressed their agreement and support for a harmonised approach regarding tariff-setting structures. These findings have been collected in both the consultation processes conducted by ACER and ENTSOG. Relevant stakeholders, as industrial association, shippers, gas traders and Network Users in general, have indeed perceived the current regulatory framework non-sufficient, asking for a level playing field where tariff setting and tariff predictability is evenly shared in the market. This option was, in general, not supported during the public consultation processes.

Facilitating competition: Market rules for gas transmission networks are very complex and technical. This policy option does not foresee any further rules on transmission tariffs structure beyond what has already been enshrined in the Gas Regulation. Each TSO would apply individual approaches and principles on transmission tariff structure with different levels of transparency and tariff predictability. In this context, the differences in transmission tariff structure may create artificial barriers to cross-border competition and trades. Moreover, the absence of any additional harmonized rules may mean that transmission tariff

[47] *Any quote that is done, is for the only purpose of supporting the dominant view emerged during the public consultation. The reference document is the SSP conducted by ENTSOG summarizing many of the latest opinions of the stakeholders on the different topics addressed by the IA. For further details, please refer to*: http://www.entsog.eu/public/uploads/files/publications/Tariffs/2014/TAR0435_141121_SSP%20Responses%20per%20Question.pdf

structure differs across Europe adding further complexity for new entrants and reducing the overall attractiveness of the market.

Transparency and non-discrimination: The current situation allows for various policy approaches, and Network Users active in more than one Member State may need to build up substantial knowledge about different rules applied in each country. This would be more challenging for new entrants and small competitors. Moreover, the lack of European rules on transmission tariff structures may increase complexity and act as a barrier to the efficient use of the gas infrastructures between Member States, hindering locational signals for the development of new infrastructures. Different approaches in tariff setting are not necessarily driving to market inefficiencies; however, when tariff structures do not reflect system costs or are not fully transparent in terms of tariff predictability, a non-efficient use of the transmission network may arise.

Administrative burden: This option is the easiest to implement. NRAs and TSOs are already requested by the Third Package, to be transparent when setting tariffs, so the administrative burden will not increase substantially if this policy option will be implemented.

In addition, whilst this option may, at the outset, be perceived as being much less onerous than to implement a European framework, it may create significant inefficiencies in policy development. The administrative burden of keeping purely national tariff setting regimes will increase with deepening market integration. What is more, the direct administrative and economic costs of different systems are likely to increase disproportionately as integration reaches its final stages.

Conclusion: Under this policy option, differences in the tariff structures across EU Member States will persist. Transmission tariff structure will continue to be decided at national level and any step taken to harmonise the current situation would be pursued on a voluntary basis between different countries. Based on 2012 ACER's Market Monitoring Report[48], the European prospective is not a priority among Member States when setting transmission charges.

Tariff structure can have an impact on tariff predictability from the point of view of investors and network users. It influences the level of transparency necessary for stakeholders to evaluate costs and the evolution of the tariff. As mentioned, this may have detrimental effects on competition and on cross-border trades. Furthermore it may disincentive market-based investments.

In order to address these issues, a common EU framework, rather than a country by country approach, should better guarantee a level playing field and a transparent and cost-reflective tariff setting. In fact, the improvements required should be compatible and coherent between Member States and, due to the cross-border nature of the issues, EU-level rules are needed as cooperation among Member States do not seem to be sufficient in order to reduce complexity and balance different interests.

[48] *ACER, Market Monitoring Report 2012*

6.1.2 Social Impacts

Direct social impacts are not significant, however indirect impacts may arise. As mentioned before, the transmission tariff structure is one of the aspects to ensure the proper functioning of the gas market. Moreover, further integration of the electricity and gas markets has a significant potential to contribute to GDP growth and hence also to job creation. The Single Market Integration Report[49] states that the GDP share of the energy sector in the EU has been increasing since 2000 and has exceeded 2.5% in recent years. It also states that this indicator does not fully reflect the importance of the energy sector in the economy, which provides critical production inputs for all other sectors, thus contributing significantly to their cost competitiveness.

Therefore, the BAU option, which does not foresee any further harmonisation of EU-wide transmission tariff regimes may lead to undesired social impacts, that follow from the likely scenarios developed when assessing the economic impacts. A decreased competitiveness of EU industries resulting from potentially sub-optimal gas trades, and higher prices, due to less efficient market structure may have negative effects on the European industry and thus on the labour market.

If Option 1 is chosen, no impacts on job rights, job equality or job health and safety are expected.

6.1.3 Environmental Impacts

Relevant environmental impacts are not expected to arise if the current situation persists in the future. However, not fostering the internal gas market could have indirect impacts.

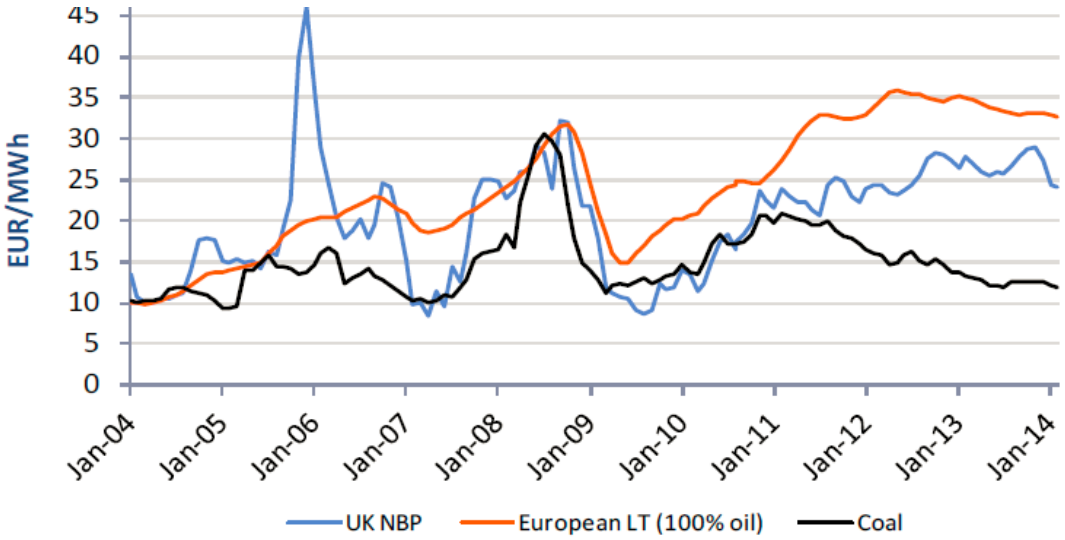
For instance, gas prices' growth relative to coal, can have a serious impact on the choice of the generation source for electricity. Higher gas than coal prices have favoured the latter in terms of merit order. This resulted in higher CO2 emissions from power generation and such condition is likely to persist, notably if the carbon market prices remain depressed.

In the last three years gas consumption in the power generation sector has indeed dropped significantly[50] due to price competition from low coal prices.

[49] *COM (2012) 752, State of the single market integration 2013- contribution to Annual Growth Survey 2013*

[50] *UK: -43% in 2012 and -8% in 2013; Italy: -13% in 2012 and -17% in 2013; Spain: -22% in 2012 and -28% in 2013. EU: -11% in 2014 with a total consumption of 410 bcm. Consumption in 2013 was 460 bcm while in 2010 was 530 bcm. (Source: Italian Power exchange, GME)*

Figure 20: Month-ahead price



If this condition persists, it may affect investments (as far as environmental impact is concerned) potentially resulting in more polluting power generation facilities.

The size and the importance of environmental impacts of the BAU are difficult to assess. Anyhow, they will not only depend on the level of gas prices but also on the relative difference with other sources, mainly coal. Any distortion in the gas market that may be related to inappropriate transmission tariffs may worsen natural gas's price gap towards competitors.

6.2 Option 2: basic level of harmonisation through technical EU rules on transmission tariff structures for gas

6.2.1 Economic Impacts

When considering the economic impacts of the policy Option 2, it is important to highlight that it will have no effect on the calculation of the regulated revenues TSOs are allowed to recover. For this reason, transmission charges at aggregate level will not be affected. However, distributional effects within an Entry-Exit system are expected where major changes are required to align the current situation to the ones foreseen under this option.

The level of charges may increase at some entry and exit points, while it may decrease in others. Such distributional effect is likely to be the result of a need to rebalance tariff structures to better contribute to non-discrimination, effective competition and the efficient functioning of the market, while aiming to achieve cost-reflectivity, the avoidance of cross-subsidies, the promotion of new investments and greater transparency. The extent of these changes will vary on a country basis, also considering local circumstances and possible mitigating measures foreseen to smooth the application of the new regulation.

To fully evaluate the distributional effect, an integrated model should consider simultaneously all the possible changes foreseen in this policy option compared to the baseline scenario. However, tariff level at a given entry or exit point is a function of several factors. Aside from the crucial decision regarding the choice of the primary reference price methodology, many other inputs/variables will affect tariff levels such as the Entry-Exit split, the revenue reconciliation methodology, the application of secondary adjustments and the approach to multipliers and seasonal factors.

The way in which the current situation will be adapted to be compliant with the chosen policy option in each Member State will finally depend on the outcome of the consultation procedures. Thus, it is not possible to anticipate which combination of variables is likely to be applied by each Member State. Taking into account these difficulties, policy options and sub-options have been assessed through quantitative analyses and other findings:

- If available, quantitative analyses are based on data collected through questionnaires, and simulations are performed on a simplified gas network for selected countries;
- Other findings are driven by qualitative analyses based on available and public documentations, as well as selected interviews with network users and relevant stakeholders.

From a general point of view, the economic impact has been analysed by looking at the effects on Member States, TSOs and Network Users in a broader sense. An assessment of the impacts on the administrative burden, on the functioning of the market/competition, as well as, on property rights and costs-benefits has been considered in the analysis.

Reference price methodology

Choice of the reference price methodology

Sub-option 1: Increased transparency/public consultation, Guidelines of Good Practice and evaluation report from ACER

Results of the public consultation: A number of Stakeholders raised concerns regarding the number of reference price methodologies currently applied by European TSOs. From the SSP for instance, European association like EFET, Eurogas, IEFEC, and IOGP showed perplexity on the high level of optionality. The main concern regards the low level of transparency and optionality related to the number and description of reference price methodologies. For instance Eurogas, IEFEC, Statoil, EDF, EFET, Energie Netherlands and others stakeholders expressed their disappointment in the SSP. For this reason Stakeholders asked for a wider consultation process where all relevant information regarding tariff calculation will be publicly available. For instance IOGP, Statoil, GDF Suez, Gazprom, Edison, Eni, and IFIEC asked for an annual consultation instead of every four years.

Facilitating competition: The Guideline of Good Practice developed by ACER are expected to include those reference price methodologies which are allowing to allocate costs in a cost-reflective and non-discriminatory way. Moreover, the selected reference price methodologies will be transparent, non-discriminatory and they will effectively contribute to market integration.

On one hand, this sub-option foresees less EU-level rules and a more evolutionary and flexible approach with regard to common standards on reference price methodologies by demanding ACER to establish the Guidelines Good Practice. On the other hand, it is not ensured that Member States would comply with those non-binding Guidelines. In this sense, limited improvements are expected compared to the current situation.

Transparency and non-discrimination: This option, compared to the baseline scenario, increases transparency and does not introduce any form of discrimination in the market thanks to several provisions (i.e. cost allocation test, increased publication requirements).

Administrative burden: The final administrative burden will depend on the reference price methodology chosen by each TSO. In fact, in each reference price methodology is embedded a different administrative burden (i.e. Matrix, high; Postage Stamp, low).

Conclusion: This sub-option is a step forward compared to the current situation, however, it is partially addressing the main concerns and feedbacks provided by the stakeholders. In fact, simplification and guidelines may not be enough, as this is based on the good will of Member States to follow the guidelines of good practice. In principle, TSOs or NRAs will still be able to apply any reference price methodology allowed, and this may not increase tariff predictability from a stakeholder point of view.

Sub-option 2: Limited number of reference price methodologies allowed

Results of the public consultation: In addition of what mentioned before, several feedbacks have been collected, also on the different elements of optionality and low level of tariff predictability of the reference price methodology included in this sub-option. Almost 50% of stakeholders (shippers 29%, storage operators 11% and traders 7%) are against the high level of optionality of the choice of the reference price methodology. In this context, a quote from EDF (Network User - France) and Edison (Shipper – Italy) summarises this issue: *"If stakeholders are not able to see how these parameters change throughout the regulatory period, they have no chance of achieving a reasonable degree of tariff predictability, as required by the Framework Guidelines".* For this reason Stakeholders asked for a wider consultation process where, all relevant information regarding tariff calculation will be publicly available.

Facilitating competition: Under this policy option, each NRA or TSO can choose, after a consultation process, to adopt one of the following reference price methodologies:

1. Postage Stamp
2. Capacity weighted distance
3. Virtual point
4. Matrix approach

Tariff simulation:

In order to assess the economic impact, a simulation of 4 EU countries, equally split between 2 transit countries and 2 consumption countries was performed.

- Transit Country **(TSO A and TSO B);**
- Consumption Country **(TSO C and TSO D).**

Although the simulation is based on real data provided in the questionnaires by TSOs, for confidentiality reasons, impacts are better reported without making specific references.

Common inputs of each reference price methodology are the following:

- Allowed or target revenues;
- Entry/Exit Split;
- Booked and technical capacity;
- Adjustment rate for storage (if any).

Given the computational burden of implementing all reference price methodologies, few simplifications and assumptions have been made. Therefore, results are supposed to be similar, but never the same, as TSOs may calculate on their own simulations. For further details please refers to *ANNEX C – Reference price methodology.*

Thus, the analysis performed is purely indicative and without prejudice to any regulatory decision to be taken with respect to the reference price methodology. The final impact on different stakeholders of the gas sector (i.e. Shippers, DSOs, Traders, etc.) will depend on the specific reference price methodology, on whether adjustments are made to its outcome, and on which input parameters are used and applied to entry-exit split.

The next tables summarise the potential and theoretical results[51] among different reference price methodologies compared to the baseline scenario currently adopted. A weighted average between different entry points, as well as, between domestic and cross-border exit points has been performed.

Table 1: Tariffs simulation of Transit Country's Entry/Exit points – TSO A

Avg Tariff €/y/Sm3/d - 2013[52]	Baseline	Postage Stamp	CWD - A	CWD - B	VP based – A	VP based – B	Matrix
Entry	1,60	1,60	1,60	1,83	1,60	1,74	1,60
Exit Domestic	0,90	1,82	1,16	1,01	--[53]	0,22	0,15
Exit Cross Border	1,92	1,82	1,90	1,64	2,02	1,83	2,00

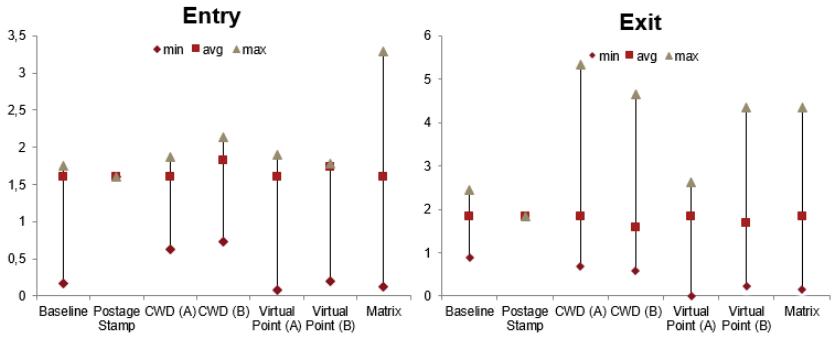


Table 2: Tariffs simulation of Transit Country's Entry/Exit points – TSO B

Avg Tariff €/y/Sm3/d (2013)	CWD - B Baseline	Postage Stamp	VP based – A	VP based – B	Matrix
Entry	0,37	0,37	0,37	0,68	0,37
Exit Domestic	0,54	0,96	0,78	0,32	0,73
Exit Cross Border	1,21	0,96	1,07	0,78	1,10

[51] *Mathematical steps of each reference price methodology are included in ANNEX A – Reference price methodology*

[52] *€/year/Standard Cubic Meter/day*

[53] *The VP based – A methodology foresees that where the resulting values are less than 0, the corresponding reference price is set at a minimum value which is larger than 0*

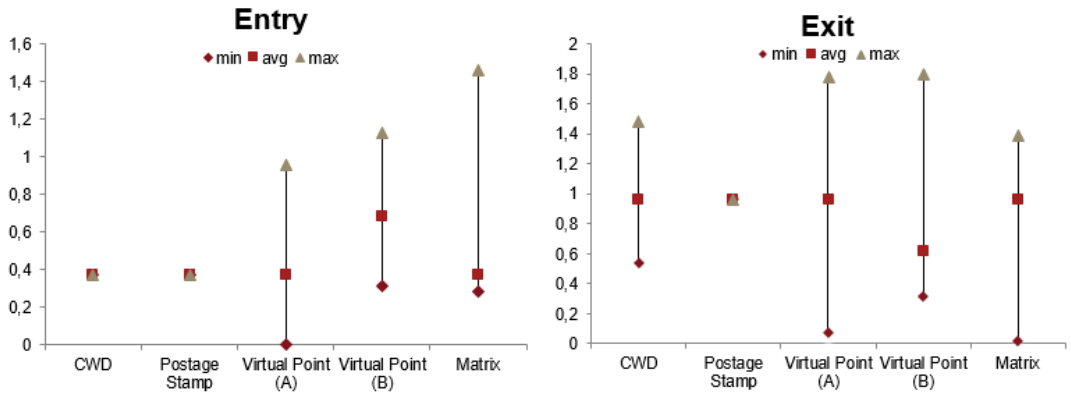


Table 3: Tariffs simulation of Consumption Country's Entry/Exit points – TSO C

Average Tariff €/y/Sm3/d (2013)	Baseline P. Stamp	CWD - A	CWD - B	VP based – A	VP based – B	Matrix
Entry	0,58	0,58	0,48	0,58	0,57	0,58
Exit Domestic	0,58	0,48	0,56	0,70	0,31	0,81
Exit Cross Border	0,58	0,76	0,90	0,36	1,07	0,17

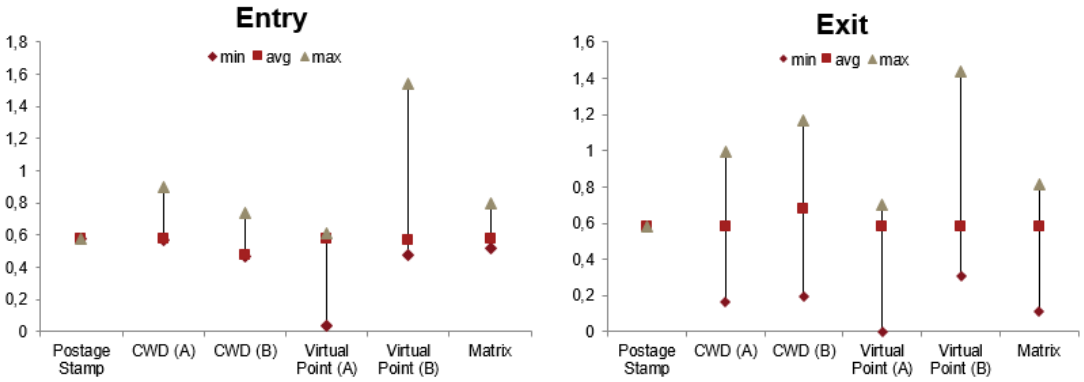
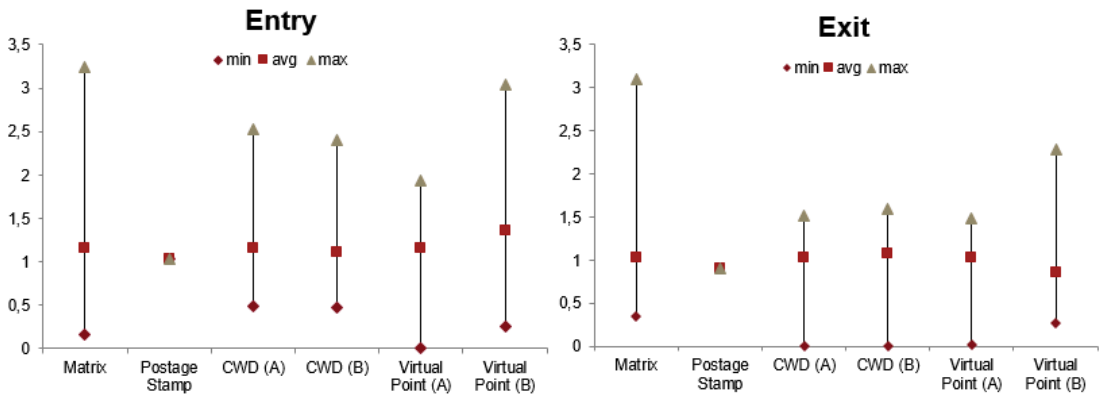


Table 4: Tariffs simulation of Consumption Country's Entry/Exit points – TSO D

Average Tariff €/y/Sm3/d (2013)	Baseline Matrix	Postage Stamp	CWD – A	CWD – B	VP based – A	VP based – B
Entry	1,16	1,04	1,16	1,11	1,16	1,36
Exit Domestic	1,15	1,05	1,07	1,12	1,12	0,91
Exit Cross Border	0,39	0,91	0,80	0,84	0,58	0,57



As highlighted in the simulations performed, different methodologies lead to different E/E tariffs. This is due to different assumptions, inputs and also on the level of cost-reflectivity. This is not an issue per se, but due to the complexity of some of the reference price methodologies and to the low level of transparency in the application of those methodologies (including the definition of inputs and calculation steps) Network Users' ability to timely forecast the trend of future reference prices at Entry/Exit points of interest within an Entry/Exit zone may be undermined. Specifically, when a methodology has more variants (such as Virtual Point Based), the degree of optionality in the definition of inputs is higher.

Figure 21: Reference price methodologies - Level of optionality

	Postage Stamp	CWD – A	CWD – B	VP based – A	VP based – B	Matrix
Cost Concept	Historical	Historical		Incremental	Historical	Historical or Incremental
Entry/ Exit split	Input	Input or Output		Input or Output	Output	Input or Output
Key inputs in tariff derivation	• Allowed revenue • Capacity booking	• Proportion of Capacity at each E/E points relative to total capacity	• Proportion of capacity of E/E points relative to total relevant E/E capacity	• Marginal Distance • Expansion constant (€/GWh/KM) • Annuitisation factor • Mathematical approach to VP	• Minimize difference between revenues obtained from E/E points and required revenues • Geographical approach to VP	• Tariff to be as close as possible to the unit cost from the matrix
Cost Drivers	Capacity	Capacity/ Distance		Capacity/ Distance		Flexible
Entry Tariff	One uniform entry tariff	Single uniform price per capacity/distance	Restricted to dominant flows	Different at each entry point		Different at each entry point depending on cost concept
Exit Tariff	One uniform exit tariff	Single uniform price per capacity/distance	Single uniform price per capacity/distance	Different at each exit point		
Level of optionality	**Low**	**Medium**		**High**		**Medium**

Besides, the complexity and the limited transparency in the reference price methodologies applied by different TSOs may hinder Network Users' ability to compare the transport cost through different routes across Europe, limiting competition among TSOs and affecting suppliers' trading strategy.

Cost allocation test:

In addition to the simulation performed above, this sub-option foresees a cost allocation test in order to validate whether the chosen reference price methodology entails cross-subsidies between transmission tariffs for "domestic" points vs. "cross border" points. A methodology that yields worse test ratios with respect to others, would, in general, indicates cross-subsidy between domestic and cross border tariffs.

A reference price methodology with a high (in absolute value) result of the test is likely to be biased towards / against domestic or cross border customers (or the suppliers that serve them), and could therefore be challenged in any possible venue (e.g. NRA, ACER, European Commission). A positive result means that Cross-Border flows are overpaying the network costs and providing implicit subsidies to Domestic Users, a negative result, the contrary.

According to the simulation reported in Table 7, Postage Stamp and CWD are the reference price methodologies implying the most cost-reflective allocation in the Transit countries analysed before. In Annex C – Reference price methodology is included a detailed description on how the test has been performed.

Table 5 Results of the cost allocation test

	Postage Stamp	CWD - A	CWD – B	VP based – A	VP based – B	Matrix
Transit Country – TSO A	-11,3%	-36,4%	-33,2%	-94,3%	-74,3%	-85,7%

The same test has been conducted also for the other selected countries. Also in these selected cases, simulations are based on a simplified description of the systems using the product of the weighted average distance and the technical capacity as a cost driver. The cost allocation test for the Consumption Country - TSO D has not been performed because transit flows in this system are very limited (less than 1% of the total booked capacity).

The same test was conducted also for the other selected countries. Also in these cases, simulations are based on a simplified description of the systems and an "airline" distance is the only cost driver used for the test. The cost allocation test for the Consumption Country - TSO D has not been performed because transit flows in this system are very limited (less than 1% of the total booked capacity).

Table 6 Results of the cost allocation test for the other clusters of countries

	Postage Stamp	CWD - A	CWD - B	VP – A	VP – B	Matrix
Transit Country – TSO B	17,6%	8,3%	10,0%	-2,1%	-10,1%	-7,4%
Consumption Country – TSO C	53,0%	17,9%	13,7%	62,7%	-15,3%	84,8%

Transparency and non-discrimination: Each methodology drives to a compromise in terms of cost reflectivity, transparency and ease of implementation. Several concerns collected during the consultation process are indeed related to a lack of transparency about how tariff structures are derived, and potentially, to a lack of predictability over tariffs level. Both of these issues are exacerbated by the complexity of some of the reference price methodologies and by the variety of approaches adopted. In particular, Network Users active in more than one Member State may need to build up substantial knowledge about different rules applied in each country. This would be more challenging for new entrants and small competitors.

Figure 22: Reference Price Methodologies - Pros & Cons

	Postage Stamp	CWD	VP Based	Matrix
+	• Clear and easy to understand for Network Users in order to replicate tariff • Easy to apply for TSOs • Provide good tariff stability over the years and visibility for NUs	• Clear and easy to understand for Network Users in order to replicate tariff • Easy to apply for TSOs	• Provides locational signals could lead to expansion of certain points • Cost reflective (variant A with incremental cost) • Incremental costs can be taken into account	• Highly cost reflective since it includes the key cost drivers in tariff calculation • Provides strong locational signals • Incremental costs can be taken into account
-	• Less cost reflective • Cost differences for different kind of pipelines may not be embedded in the methodology • Does not provide locational signals for further system development and/ or efficient use of the system	• Tariff stability over the years and across different E/E point may be undermined depending on the capacity used (loose of locational signal and tariff instability) • Cost differences for different kind of pipelines may not be embedded in the methodology	• Very complex modelling to implement for TSOs and to replicate for NUs • Expansion constant, annuitisation factor and secondary adjustments are needed to calculate tariffs in Variant A. • Results and thus tariffs are very sensitive to flow patterns changes	• The complexity depends on the number of Entries (columns) and Exits (rows) that the Matrix requires • Not guaranteed that the solution can be founded for any network system • Results and thus tariffs are very sensitive to flow patterns changes

Re-distributional effect between network users:

In addition, a re-distributional effect between network users has been analysed in order to highlight the magnitude and any possible consequence the choice of the reference price methodology might have across EU Member States.

From the table below, it is possible to assess the maximum impact on network users and neighbouring countries of choosing a different reference price methodology compared to the one currently in use – BAU scenario. In the Max Up column is calculated the highest possible tariff increase compared to the baseline scenario while in the Max Down column the lowest. Possible (negative) impacts for Network Users are calculated by multiplying the booked capacity by the Max Up column[54] on aggregated basis for entry and exit points, split into cross-border and domestic.

Table 7 Potential impacts

€/y/Sm3/d (2013)		BAU	Post. Stamp	CWD-A	CWD-B	VP - A	VP - B	Matrix	Max Up	% from BAU	Max Down	% from BAU	Booked capacity (M m3/d)	Impact M €
TSO A	Avg. Entry	1,60	1,60	1,60	1,83	1,60	1,74	1,60	0,23	14%	0,00	0%	252	58
	Avg. Exit Cross-Border	0,90	1,82	1,16	1,01	0,00	0,22	0,15	0,92	102%	-0,90	-100%	183	169
	Avg. Exit Domestic	1,92	1,82	1,90	1,64	2,02	1,83	2,00	0,10	5%	-0,28	-15%	19,6	2

€/y/Sm3/d (2013)		BAU CWD-B	Post. Stamp	VP - A	VP - B	Matrix	Max Up	% from BAU	Max Down	% from BAU	Booked capacity (M Sm3/d)	Impact M €
TSO B	Avg. Entry	0,37	0,37	0,37	0,68	0,37	0,31	84%	0,00	0%	184	57
	Avg. Exit Cross-Border	0,54	0,96	0,78	0,32	0,73	0,42	78%	-0,22	-41%	180	75,6
	Avg. Exit Domestic	1,21	0,96	1,07	0,78	1,10	0,00	0%	-0,43	-36%	103	0

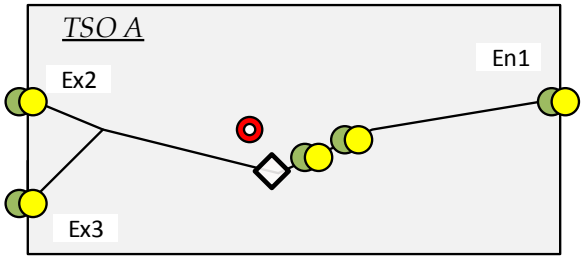
€/y/Sm3/d (2013)		BAU P. Stamp	CWD-A	CWD-B	VP - A	VP - B	Matrix	Max Up	% from BAU	Max Down	% from BAU	Booked capacity (M Sm3/d)	Impact M €
TSO C	Avg. Entry	0,58	0,58	0,48	0,58	0,57	0,58	0,00	0%	-0,10	-17%	19	0
	Avg. Exit Cross-Border	0,58	0,48	0,56	0,70	0,31	0,81	0,23	40%	-0,27	-47%	9,2	2,1
	Avg. Exit Domestic	0,58	0,76	0,90	0,36	1,07	0,17	0,49	84%	-0,41	-71%	16,3	8

[54] *The analysis is focused on possible negative impact only, positive impact can be derived by multiplying the booked capacity by the Max Down column*

€/y/Sm3/d (2013)		BAU Matrix	P. Stamp	CWD -A	CWD-B	VP - A	VP - B	Max Up	% from BAU	Max Down	% from BAU	Booked capacity (M Sm3/d)	Impact M €
TSO D	Avg. Entry	1,16	1,04	1,16	1,11	1,16	1,36	0,20	17%	-0,12	-10%	463	92,6
	Avg. Exit Cross-Border	1,15	1,05	1,07	1,12	1,12	0,91	0,00	0%	-0,24	-21%	531	0
	Avg. Exit Domestic	0,39	0,91	0,80	0,84	0,58	0,57	0,52	133%	0,00	0%	1,82	0,94

In the analysis performed, the Transit country **(TSO A)** carries out a large part of the EU gas. A change in the cost allocation within the Transit country system may, therefore, have a significant impact across Europe.

Simplified gas network for Transit Country



Considering the aggregated values, the potential tariff change in the cross-border exit points, based on the associated booked capacity, will lead to an impact of 169 M €/year with the assumption of 100% capacity based tariffs. This impact would be the maximum shift between traders and customers located downstream[55].

Figure 23 Connection with the south route of the Transit Country

Assuming for example that the Transit Country (TSO A) shared a border with the Consumption Country – TSO D, possible in the abstract scenario, as shown in the figure below, the final transportation cost from EN1 through the connection to the Hub would be around 9% cheaper. A table with a hypothetical yearly contract of 100 Sm3/d is reported below.

[55] *In addition, by assessing the total amount of transportation costs shifted to the particular type of network users due to the change in the applied reference price methodology, also respective change in entry tariffs within every assessed methodology shall be taken into account. This may change the output of the simulation*

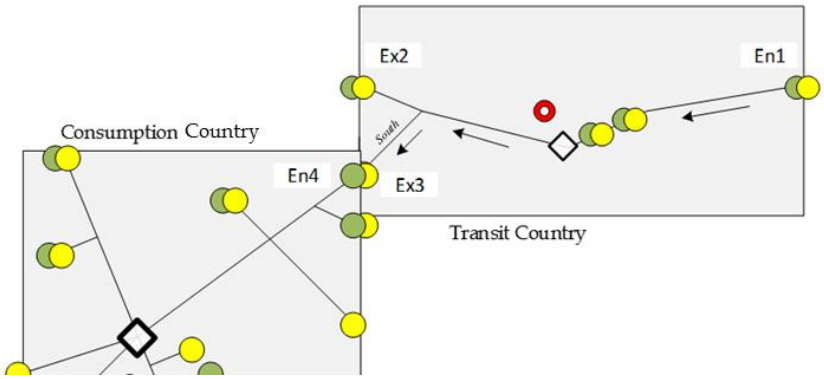
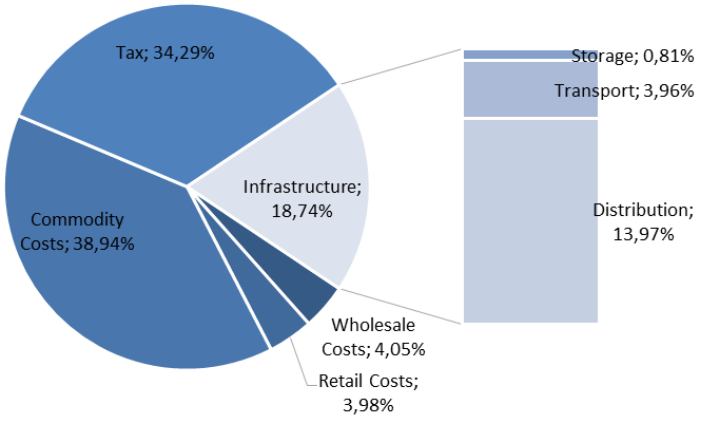


Table 8 Simulation of transport cost adopting a Postage stamp[56]

Final Cost of transport in €	Baseline	Postage Stamp	%
Cost at En1 (Transit Country TSO A)	175,6	159,8	-9%
Cost at Ex3 (Transit Country TSO A)	198,6	182,4	-8%
Total	374,2	342,2	-9%

This variation might affect the cost of gas in country D. In the Consumption Country – TSO D the current average final cost for households is around 80.4 €cent/Sm3, while for the industrial sector it is 38.1 €cent/Sm3. The weight of transport on final cost of household gas is around the 3.96%, as shown in the following chart.

Figure 24 Composition of natural gas final prices in the Consumption Country - TSO D



[56] *The decrease in tariffs in the transit country shown in Table 11 has been offset by an increase of the domestic exit tariff. In fact, the use of a postage stamp would double the exit domestic tariff increasing from 0,90 to 1,82 €/y/Sm3/d*

Under this evidences and assumption, the impact on wholesale gas prices would, however, be very limited. A decrease of 9% on the cost of transport would reduce the final cost of gas of 0.36%. This analysis is purely indicative and cannot be taken as a real case without considering a more general impact derived among others from the possible change of the other tariffs.

As mentioned before, the impact on different types of network users is complex and hard to evaluate, however a higher transmission tariffs derived from a change of the reference price methodology should in general fall mainly on the less elastic demand and/or supply players that are located downstream and/or upstream of the TSO that is supposed to change its reference price methodology. In the short term, end users' demand is rather inelastic, notably for residential and other smaller consumers. Demand by power station, heat generators and industry can be more or less elastic depending on competition and availability of other energy sources. In this second case, no generalisation is feasible. In addition to end users, also shippers and traders may have an impact.

Shippers are basically neutral as they are supposed to transfer any increase to captive customers. The effect for shippers that sell to industrial/ power generation depends on the specific contractual clauses whether the exit cost is borne by the seller or the buyer. Anyhow, the final impact is influenced also by their delivery point. Pure traders, on the contrary, are expected to benefit from the change in case of lower entry and exit tariffs at the borders as this will increase the opportunities for gas exchanges across countries, exploiting spreads between adjacent markets/hubs.

In addition, industries like power and steam generation are expected to be more flexible (or to have a higher elasticity of demand); therefore they are likely to bear a lower impact than smaller consumers, as they have more opportunities to switch to other fuels, even if this cannot be generalized, due to the specificities of each industry.

Administrative burden: As mentioned before, also in this case the final administrative burden will depend on the reference price methodology chosen by each TSO.

Conclusion: Listing and narrowing the number of allowed reference price methodologies increase transparency and simplification and this will facilitate trade and competition. However, taking into account stakeholders' feedback and as shown in the above analysis, there is still a high level of optionality embedded in some of the reference price methodologies allowed under this sub-option which does not guarantee enough transparency and tariff predictability for network users, in particular for those involved in cross-border trades.

Sub-option 3: Choice of the reference price methodology based on cost-reflectivity vs. simplicity trade-off (NRA decision)

Results of the public consultation: As mentioned before, a number of Stakeholders (among others Eurogas, IEFEC, Statoil, EDF, EFET, Energie Netherlands consulted in the SSP) raised concerns regarding the number of reference price methodologies allowed. Moreover, several feedbacks were collected on the different elements of optionality and low level of tariff predictability of each reference price methodology.

This sub-option has limited differences compared to the previous sub-options 1 and 2. Most of the circumstances and the required steps in calculating the reference price methodology are the same and thus also the economic impacts, except for one aspect: the level of cost-reflectivity is at the NRA decision.

In particular, the NRAs are obliged to consider a trade-off between cost-reflectivity and simplicity when choosing the appropriate reference price methodology. In this context, NRAs will especially consider for instance how meshed is the system, the need for locational signals (taking into account the maturity of the system, the topology and changes to gas flows) and the need to promote efficient use of the network.

Differently from a pure cost allocation test included in other sub-options, where the aim is to guarantee a suitable level of cost-reflectivity of the chosen reference price methodology, this process will also ensure consistency in the approach across all the steps followed in the calculation of the reference price methodologies by evaluating the proper level of simplicity/complexity required by the each specific network.

Conclusion: As for sub-option 2, this alternative is a step forward compared to the current situation, but it only partially addresses stakeholders' concerns emerged during the consultation process.

Sub-option 4: Only two reference price methodologies described in the NC – Post. Stamp and CWD

Results of the public consultation: As mentioned before, a number of Stakeholders (among others Eurogas, IEFEC, Statoil, EDF, EFET, Energie Netherlands consulted in the SSP) raised concerns regarding the number of reference price methodologies allowed. Moreover, several feedbacks have been collected on the different elements of optionality and low level of tariff predictability of each reference price methodology. Also ACER expresses its concern, in the reasoned option, with regards to the criteria for the application of a reference price methodology, in particular, on the circumstances and network characteristic that should lead to the choice of a particular methodology.

Facilitating competition: This sub-option aims to address stakeholders' concerns regarding the level of optionality of the applied methodologies and the current complexity in tariff predictability, as well as the abovementioned ACER's concerns included in the reasoned opinion on the first version of the TAR NC. The fewer and the more predictable are the allowed methodologies, the lower the market uncertainty that is related to the tariffs derivation. In addition, fewer reference price methodologies will reduce complexity in the market especially for new entrants. In fact, this will increase harmonization and narrow the potential variability across EU due to different approaches and considered inputs.

Anyhow, if a different methodology may fit best for a particular system, it will still be applicable and will be benchmarked against one of the two primary reference methodologies demonstrating its advantages. Moreover, the proposed methodology and the benchmark results will be consulted, increasing transparency and stakeholders' involvement in the decision making process.

Transparency and non-discrimination: Although more compelling rules are foreseen, the sub-option is transparent and creates a level playing field between network users. In particular, to further increase transparency in the market, ACER is required to produce a report on the application of the methodologies across all EU countries 5 years after the entry into force of the TAR NC. In addition, the issuing of guidelines of good practice on the application of different reference price methodologies, the respective circumstances, as well as, input parameters, will lead to more transparency and less discrimination in the tariff setting procedures.

Administrative burden: The administrative burden is not expected to be relevant. Both the Postage Stamp and the CWD do not lead to specific extra costs for TSOs, nor for the NRAs. However, compared to the previous option, extra administrative burden, may arise due to further justifications required to support the decision of a different reference price methodology from the two with the best score in terms of cost reflectivity.

Conclusion: This sub-option improves transparency and predictability of the transmission tariffs through further simplification while leaving enough autonomy to take into account national specificities, in case the two default reference price methodologies (P. Stamp and CWD) do not fit.

Entry/ Exit split

50/50 Entry exit split as default rule unless otherwise set or approved by the NRAs

Results of the public consultation: On this topic there is no clear position, however a fixed 50/50 split is generally considered as restrictive and a potential element of cross subsidization. A quote from BP Gas says:" *We fear that a 50:50 split may be unduly restrictive. NRAs may wish to retain the flexibility to socialize under or over-recovery through domestic exit points, which may push the ration beyond the 25:75 contemplated. The imposition of a 50:50 split would require floor prices at uncongested points, which may act against (some) regulatory authorities' desire for greater price convergence between points connected by uncongested routes.[…]".* Another quote from E.On underlines that they can *"[…]not support a 50/50 split, neither as a general rule for cost allocation between entry and exit nor as the only alternative to cost or distance based cost allocation methodologies. We would rather support an explicit statement that after robust stakeholder consultation the relevant NRA has the option to decide".*

Facilitating competition: According to the 4 TSOs considered in our simulation, only the Transit Country – TSO B currently applies an Entry Exit split different from 50/50 (i.e. 30-70%). The analyses performed are still related to the model used for the simulation reference of the price methodology, and in this case, a sensitivity analysis has been conducted. The economic impact analysed, can be related to the breakdown of revenues, not only between entry and exit points, but also between domestic and cross border points.

Table 9 Input Data for Transit Country – TSO B

	Unit	CWD	
Cross Border Capacity	Sm3/d	360.187.128	(1)
Domestic Capacity	Sm3/d	206.767.220	(2)
Allowed Revenues (cap)	€Mn	285	(3)
Ratio (Cross B. Costs/ Domestic costs)	-	1,878	(4)

E/E split	**30% - 70%**	**40% - 60%**	**50% - 50%**	
Domestic Costs	**€Mn 99**	**€Mn 99**	**€Mn 99**	(A) = (3)/[1+(4)]
Entry	*€Mn 29.7*	*€Mn 39.6*	*€Mn 49.5*	(A.1) = (A) * En split
Exit	*€Mn 69.3*	*€Mn 59.4*	*€Mn 49.5*	(A.2) = (A) * Ex split
Cross Border Costs	**€Mn 186**	**€Mn 186**	**€Mn 186**	(B) = (A) * (4)
Entry	*€Mn 55.8*	*€Mn 74.4*	*€Mn 93*	(B.1) = (B) * En split
Exit	*€Mn 130.2*	*€Mn 111.6*	*€Mn 93*	(B.2) = (B) * Ex split
Domestic Tariffs				
Average Entry Tariff	€Mn 0,151	€Mn 0,201	€Mn 0,251	(C.1) = [(A.1)+(B.1)]/[(1)+(2)]
Average Exit Tariff	€Mn 0,335	€Mn 0,287	€Mn 0,239	(C.2) = (A.2) / (2)
Total Domestic Tariff	*€Mn 0,486*	*€Mn 0,488*	*€Mn 0,491*	(C.3) = (C.1)+(C.2)
Domestic Revenues	**€Mn 100.5**	**€Mn 100.9**	**€Mn 101.5**	(C) = (C.3)*(2)

Cross Border Tariffs				
Average Entry Tariff	€Mn 0,151	€Mn 0,201	€Mn 0,251	(D.1) = [(A.2)+(B.2)]/[(1)+(2)]
Average Exit Tariff	€Mn 0,361	€Mn 0,31	€Mn 0,258	(D.2) = (B.2) / (1)
Total CB Tariff	*€Mn 0,512*	*€Mn 0,511*	*€Mn 0,510*	(D.3) = (D.1) + (D.2)
CB Revenues	**€Mn 184.5**	**€Mn 184.1**	**€Mn 183.5**	(D) = (D.3)*(1)

The ratio (4) has been calculated by the simulation of entry and exit tariffs based on 30/70 E/E split, and thus, deriving domestic and cross border costs. This input is purely indicative of the state of the art of the collection of revenues by the TSO among cross border and domestic points, and for simplification, it can be used as an indicator of costs.

Once the entry exit split is changed from 30-70% to 50-50%, the average cross border tariff decreases of 0.39%, while the average domestic tariff increases of 1.03%. This implies a reallocation of around 1 million Euros from the revenues collected within the cross border points to the revenues collected by the domestic ones, further stressing the effect of cross subsidization.

Transparency and non-discrimination: In this example the redistribution of 1 million Euro represents only the 0,35% on the total amount of revenues collected by capacity among all the points of the Transit Country - TSO B. This shows that the final impact can be negligible (and even more if compared to the total gas prices). However, it can make a difference for the affected network users as it depends on how it will be distributed.

Yet, if we consider the 50/50 split as a default rule, without any different provisions of the NRA, based on the figure presented in Chapter 3, most of the TSOs in Europe should adjust their split upward. In particular the MSs that should increase the percentage on entry are Austria, Belgium, Czech Republic, Spain, France, Ireland, Netherlands, Portugal, Slovenia, Slovakia and Sweden. On the contrary, MSs that should reduce their entry split are Croatia and Luxembourg.

In addition NRAs are expected to have additional information obligations to justify deviation from the default E/E split.

Administrative burden: This option does not impose additional administrative burden.

Conclusion: The proposed policy option strikes the balance between harmonisation and cost-reflectivity. While a default E/E split is foreseen, local circumstances and different network typologies can be still taken into account as NRAs may intervene to modify the split set at 50/50 between entry and exit points.

Adjustment of the outcome of the reference price methodology

Limited number of secondary adjustments

A number of stakeholders indicated the need to foster transparency and include the chosen secondary adjustments in the consultation process of respective NRA/TSO due to the fact that secondary adjustments are fundamental part of the overall cost allocation approach and therefore must be consulted upon. Around 20% (11% shippers and 9% traders) of stakeholders during the SSP are convinced that in particular the application of benchmarking may enhance the risk of strong cross subsidization. On the other hand, a group of interviewed traders is concerned about the potential impact on locational signals, due to the application of additive rescaling adjustment on the reference price. A quote from Eurelectric says: *"We still maintain that rescaling should be approached only on a multiplicative basis, rather than on an additive one, to avoid destroying locational signals."*

Results of the public consultation: A number of stakeholders indicated the need to foster transparency and include the chosen secondary adjustments in the consultation process of respective NRA/TSO due to the fact that secondary adjustments are fundamental part of the overall cost allocation approach and therefore must be consulted upon. Around 20% (11% shippers and 9% traders) of stakeholders during the SSP are convinced that in particular the application of benchmarking may enhance the risk of strong cross subsidization. On the other hand a group of interviewed traders concerned about the potential impact on locational signals due to the application of additive rescaling adjustment on the reference price.

Facilitating competition: As mentioned, evidence emerged from the consultation process reveals that, in many cases, stakeholders were against these measures. This is the case because secondary adjustments will be applied during or after the reference price methodology and thus may distort or change their output, hindering tariff transparency and predictability. However, these adjustments, considering the current option under analysis, will be part of the consultation process. Stakeholders will be better informed on how the secondary adjustments are applied and in which circumstances they are allowed.

Besides, equalization and benchmarking, are already applied as secondary adjustments in some of the Member States. Thus, the economic impact of the option should be limited and it is close to the current situation in market.

Administrative burden: In general, this option does not impose additional administrative burden. Application of benchmarking will require additional steps and therefore could cause an increase of the administrative costs.

Conclusion: Listing, narrowing and the need to include the secondary adjustments into the public consultation will foster transparency and predictability of the tariff.

Storage E/E tariffs

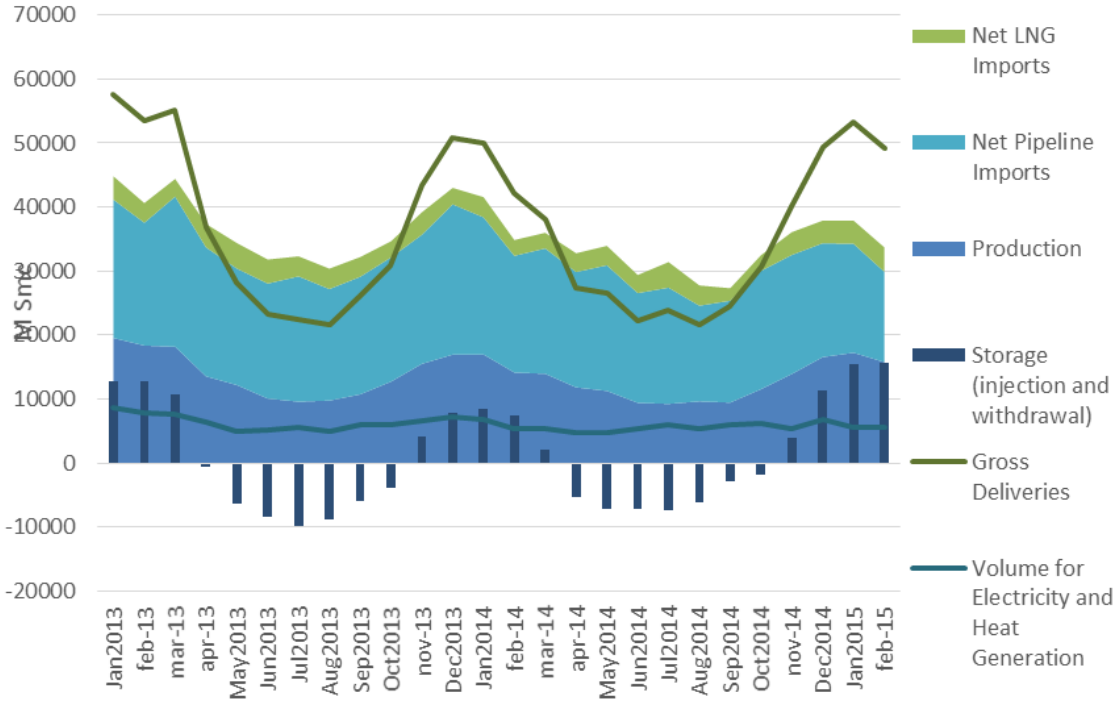
Sub-option 1: Individual NRA decision on necessity of adjusting the outcome of the reference price methodology based on harmonized criteria

Results of the public consultation: This sub-option is in line with Stakeholders' positions, even though it does not foresee a default free of charge tariff. In particular the main concern expressed by 50% of the respondents to the SSP regards the double charging. These are, among others, Centrica Storage Limited, EDF, EFET, EON As Storage, GIE, Gas Storage Netherlands, Gas Storage Operators Group, GDF Suez Infrastructure, SSE, Statoil.

Facilitating competition: The high level guidelines under this policy option will allow NRAs to take into account positive externalities that storages may bring into the system. In case that would not be foreseen under this policy options, NRAs could not continue to take them into account.

For instance, the following chart shows the role of storage between January 2013 and January 2015. Over the four winter periods Dec-Feb 2010/11 and 2013/14, gas storage withdrawals averaged approximately 19% of the total EU gas demand[57], contributing in security of supply and efficient gas pricing.

Figure 25 Contribution of different facilities in EU gas delivery[58]

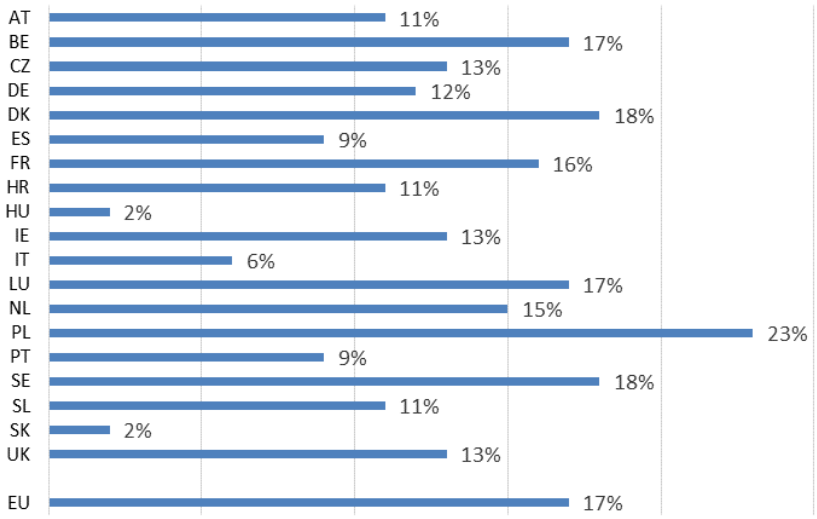


[57] *ACER/CEER Annual Report on the Results of Monitoring the Internal Electricity and Natural Gas Markets in 2013*

[58] *PwC and Strategy& elaboration on JODI Gas Data*

Moreover, a recent study by Poyry[59] reveals that the average reduction in the price volatility caused by an increased storage capacity might be around 17% in the EU, and depending on temperature and weather conditions, the final reduction could be larger.

Figure 26: Percentage reduction in price volatility from 2004 to 2009



Storage plays an important role in providing flexibility and reliability: balancing seasonal demand and supply, and supporting the significant cross-border trade that takes place in the EU, in particular, when it comes to large volumes of transit through neighbouring countries. Originally developed to balance gas supply and demand, to optimize the transmission network size and management, and to provide security of supply, storages, as markets developed and liberalized, acquired an additional commercial role as supporting tool for trading. With the development of renewable energy sources in the power sector, storage is called to play a supplementary function to cover variability in gas demand, when gas is used as a back-up to intermittent power supply.

At the same time, the current willingness to pay for gas storage is, in some cases barely sufficient to cover the marginal cost of storage operations. Moreover, the shrinking of the European gas demand, the increasing competition between storage and other sources of flexibility – such as LNG and spot gas – and falling summer/winter gas price spreads have put pressure on the financial motives to keep gas in store and develop new storage capacity, but the security aspect should not be overlooked. These unfavourable market conditions might not only put a burden on the realisation of future planned investments, but if they persist in the long-run, they might also impact the storage capacity currently made available.

However, a structural shift in the European supply and demand balance is taking place, tasking for additional requirements for both short-term gas and seasonal flexibility across Europe. The use of gas as a back-up fuel for renewable energy sources in the power sector is expected to expand. The variability and volatility of

[59] *Transportation Tariff Discounts For Gas Storage, POYRY, November 2012*

gas demand will therefore increase and require flexible gas infrastructure with adequate storage capacity and flexibility.[60]

However ongoing capital constraints and lack of clear market price signals are hampering investment in new seasonal storage thus a new framework allowing the recognition of the full value of storage, including its strategic role for security of supply may be needed at the EU level.

Transparency and non-discrimination: Under this policy option, further steps compared to the current situation have been made, however, high-level guidance when setting or approving transmission tariff from/to storage facilities may not be enough. Transportation tariffs make up an important part of the variable cost of storage and different treatments are still possible between Member States. This may hamper the development of efficient trade and competition. Moreover, differences in the storage tariffs setting approach could lead to inefficient investments and cross-subsidisation. A storage facility could be built in an E/E system where a special treatment is in place but this may not be where storage is needed most. However, transmission tariffs count for a small part of the decision on where to site storage, with a number of other policy decisions such as tax incentives also being important.

Administrative burden: This option should not increase TSOs or NRAs burden as a reasoned justification of the different treatment of E/E tariffs from/to storage is already published for transparency reasons thanks to the provisions included in the Third Package regulation.

Conclusion: The implementation of a policy option where entry/exit tariffs can be priced differently from any other entry or exit point will promote an efficient usage of storage facilities across EU Member States as positive externalities with regard to the transmission system will be reflected in the level of tariffs. In any case, NRAs are those who are responsible for quantifying these positive effects if any and translate them into tariffs setting in order to avoid a non-cost reflective pricing.

Sub-option 2: Free of charge tariff as default rule + NRA decision for possible deviation

Results of the public consultation: The majority of respondents to the public consultations supports the introduction of a free of charge tariff as a default rule for entry/exit points from/ to storage facilities.

Facilitating competition: The main challenge in developing a policy for storage entry and exit tariffs is ensuring that it addresses the identified problems while remaining cost-reflective. A free of charge tariff for storage E/E points would encourage the use of storage and therefore, bring into the system the benefits described in the previous paragraph. In addition, a default free of charge E/E tariff for storage facilities will also create a level playing field across EU Member States also considering other sources, such as LNG, increasing the importance of these facilities in terms of security of supply. In fact in this way, storage facilities

[60] *Underground gas storage in the world, 2013, CEDIGAZ*

and LNG will pay the same transportation costs: an entry fee when accessing the system and an exit fee when leaving the system.

The EU gas system is heterogeneous, and several factors should be taken into account when defining storage tariffs. It might be the case that storages are not close to the centre of demand and investments needed to connect the facility to the main pipeline are significant. In these cases, a free or discounted charge would lead to a less cost reflective system. However, this sub-option allows for specific circumstances that will be evaluated at national level (i.e. off-site storage facility) and a different treatment may be applied accordingly.

Administrative burden: This option should not increase NRAs burden as a reasoned justification of the different treatment of storage E/E tariffs is already published for transparency reason thanks to the provisions included in the Third Package regulation.

Conclusion: A default free of charge E/E tariffs may lead to a loss in term of cost-reflectivity and possible cross-subsidies, even though this issue could be mitigated through NRA's possibility to modify E/E tariffs.

Multi-TSO Entry/Exit zones

Sub-option 1: One single cost allocation but separate application allowed for transitional period under specific conditions

Results of the public consultation: During the consultation process, the topic did not raise much attention. Some stakeholders (Statoil and IOGP) asked in the SSP whether it was possible to separately apply any reference price methodology in a multi-TSO entry/exit system, while others indicated their preference to oblige the respective TSOs or NRAs to determine tariffs jointly (Sedigas).

Facilitating competition: Thanks to the fact that one and the same reference price methodology shall be applied to all entry and exit points in an E/E system, integration and harmonisation across EU Member States will be enhanced. Moreover, this will guarantee that prices are set coherently without distorting competition, as all network users get access to the whole E/E system, and not only to the pipeline system of one TSO.

Transparency and non-discrimination: In this context, the main issue to be considered is to avoid that network users of one TSO cross-subsidize the network users of the other TSOs active in the same E/E zone. The degree of cross-subsidization can be reduced by applying one single reference price methodology to one single allowed revenue, given by the sum of the respective revenues of all TSOs active in the E/E zone together with an inter-TSO compensation mechanism, with the aim of ensuring the recovery of the allowed revenue of each single TSO.

Moreover, the NRA may determine or approve to deviate from applying the primary reference price methodology jointly in case this is necessary to incentivise one or more TSOs to operate their system efficiently. If this is the case, the NRA may determine or approve different Entry-Exit splits for these TSOs. Therefore, NRA should assess on a case by case basis whether a different E/E split is needed to guarantee cost-reflectivity in the system and justify possible deviation from the default rule on entry exit split.

Administrative burden: This option may introduce extra costs, especially related to the implementation of the Inter-TSO compensation mechanism, however, the ITC itself is the only way to prevent any form of cross-subsidy and at the same time to ensure competition.

Conclusion: This option fosters harmonisation and simplification across EU Member States whilst respecting the principle of subsidiarity on the market. Moreover, the transitional period will allow for a smoother impact guaranteeing that, at least in the early stage, national circumstances can be taken into account as national gas transmission networks evolved differently and the different networks are heterogeneous.

Sub-option 2: One single cost allocation but separate application allowed under specific conditions

This sub-option, compared to previous one, differs with respect to the fact that the separate application of the reference price methodology in a multi-TSO E/E system is not a transitional and temporary measure.

Administrative burden: This option may introduce extra cost, especially related to the implementation of the Inter-TSO compensation mechanism, however, the ITC itself is the only way to prevent any form of cross-subsidy and at the same time to ensure competition.

Conclusion: Although this sub-option has limited differences compared to the previous one, allowing for a separate application of the reference price methodology may reduce transparency and hinder stakeholders' possibility to follow and replicate tariff structures.

Multipliers and seasonal factors

Sub-option 1: Differentiated ranges for short-term capacity products, with allowed deviation under specific circumstances

Results of the public consultation: A number of Stakeholders raised concerns about the level of multipliers foreseen in the new regulation. More specifically, they commented the fact that the level of multipliers should give an adequate incentive through long/short term prices to the shippers. In particular from the SSP, 28% of shippers and the 12% of traders raised concerns about the cap and floor level of the multipliers. From the consultation emerged that multipliers of 1.5 already provide sufficient incentives for long-term bookings, and any price beyond this level would represent a barrier to short-term cross-border trading. Few quotes are reported: EDF (Network User - France) *"EDF is strongly opposed to allowing multipliers to go above the upper limit of 1.5 as foreseen. We believe that this may make the use of short-term product uneconomical and prevent shippers from optimising their capacity bookings."* EDF Trading (Trader - France): *"Whilst we understand the need of TSOs for revenue stability and the role of long-term capacity booking in achieve this, we cannot accept a situation that legitimises short-term capacity prices being set at five times the price of annual capacity, even if setting shorter term multipliers at this level is linked to a pre-defined formula. We believe that multipliers of 1.5 (that is, up to 50% more expensive that the equivalent amount of capacity booked as an annual strip) already provides sufficient incentives for long-term bookings and any price beyond this level would represent a barrier to short-term cross-border trading."*

On the other hand, a zero reserve price may lead to detrimental effects on the market. For instance, Enel (Network User – Italy) *"welcomes the reduction of the cases in which the maximum multiplier is no more than 1. However, we believe the short-term capacity should cost more and not less than the long-term capacity as the longer the duration of the reservation of capacity the higher the risk for the shipper (and the greater the security for the TSO). Therefore we still claim that it does not seem appropriate to apply multipliers of less than one for short term products (quarterly or daily)."* Gas Infrastructure Europe (GIE) Association TSO, Storage and LNG operator: *"GIE is of the opinion that multipliers should in all cases not be lower than 1 as this reflects the nature of a cost structure driven by peak demand. Any multiplier below 1 is an invitation to free riders behaviour to the expense of other network users. In case of congestion a multiplier of 1 is sufficient in other cases it has to be above 1."*

Facilitating competition: This sub-option, compared to the current situation, introduces and increases harmonisation preventing arbitrary decisions across EU Member States, by setting two different ranges for quarterly and monthly multipliers as well as for daily/within day.

Table 10: Multipliers range

	Min	Max
Quarterly and monthly	0,5	1,5
Daily and within day	0	1,5

A higher cap as explained in the description of the policy option is still possible but linked to the following predefined formula and in any case, it should be justified by the NRA or the TSO as relevant.

$$N_m = \frac{\max(CAP_{c,i}) \times 365}{\sum_{i=1}^{365} CAP_{c,i}}$$

Simulations have been performed by Gas Networks Ireland[61] in order to verify whether the level of multipliers might affect Network Users' short vs long term capacity booking strategy behaviour. The simulation reveals that, if the above mentioned range of multipliers for short term capacity product is applied, shippers may slightly shift from long term to short term capacity.

In term of revenue collection, the effect generated by the shift from LT to ST capacity products may be offset by the fact that non-yearly capacity products have a lower economic equivalent, while missing revenues from yearly products should be compensated by an increase in the yearly reference price leading to possible tariff instability.

Figure 27: Gas Networks Ireland simulation - % of revenues from annual vs. ST capacity products[62]

	Type of booked capacity	Distribution of revenues with current multipliers	Distribution of revenues with Proposed multipliers (with current seasonal factors)	Distribution of revenues with pproposed multipliers
Exit	Annual	83,6%	79,0%	81,9%
	Monthly – AE	1,8%	0,1%	0,9%
	Daily – AE	14,6%	20,9%	17,2%
Entry	Annual	90,9%	82,4%	84,1%
	Monthly – AE	1,7%	0,8%	2,3%
	Daily – AE	7,4%	16,8%	13,6%

As shown in the analysis, applying the proposed multipliers, the policy option will, on one hand, promote and increase market integration, stimulating short term trading. On the other hand, a redistribution effect between short term and long term capacity holders may arise. Overall the tariff level for annual and short term capacity products might be likely to increase, but whether this will also increase the costs for specific network users, will depend on its possibility to book profiled or not and on the seasonal factor. This will also have an effect on the network users' willingness to book annual capacity. In fact, high multipliers (i.e.>2) will force shippers to book yearly capacity products while low multipliers (i.e.<1) will make short term capacity products always cheaper than long term products.

Thus, any new range should create the right balance between increasing liquidity and cross-border trades while guaranteeing a certain amount of investments underpinned by LT commitments. In fact, in the case shippers are only incentivized to book what they use at the very moment it will be difficult to have enough LT bookings to support market based investments.

[61] *"Short Term tariffs – Potential Impacts" Gas Network Ireland 13/10/2014; Development of the TAR NC 4th Stakeholder joint working session – Multipliers 26/03/2014*

[62] *"Short Term tariffs – Potential Impacts" Gas Network Ireland 13/10/2014*

In addition, the possible flight to ST vs. LT products, as well as, any possible impact on the incremental capacity could be further influenced by the decision on the payable price approach (i.e. fixed vs. floating). The topic will be further discussed under the following paragraph *Fixed vs. floating payable price regime at IPs and Revenue Reconciliation*.

Figure 28: Gas Networks Ireland Simulation - Yearly reference price increase

	Tariff increase with proposed multipliers (with current seasonal factors)	Tariff increase with proposed multipliers
Exit Capacity Tariff	7,6%	12,9%
Entry Capacity Tariff	5,3%	11,3%

As stated, the results have been obtained under the hypothesis of an optimized booking strategy. Currently, large part of the capacity is booked LT and Network Users in many Member States are not able to step back from these contracts leading to possible situations of cross-subsidies. This may reduce the acceptance of the sub-option and may force long term users to ask for a capacity reset to restore a level playing field with short term capacity holders.

Another example can be seen in Germany, where a new capacity allocation and congestion management (KARLA Gas) was introduced in 2011. According to the new rule, for all capacity products, irrespective of their duration, multipliers of 1 have been implemented. Together with the possibility to terminate the contracts according to the German General Terms and Conditions, shippers adjusted their booking behaviour shifting toward shorter term capacity products. The average decrease of total amount of booked capacity was approximately of -26% (GUD – Gas Year 2011/2012 vs. 2013/2014). The subsequent tariff increase due to the shift in booking behaviour from 2012-2014 was approximately of +30% (GUD)[63].

Transparency and non-discrimination: Even though any change in the level of multipliers will not have an immediate impact on capacity bookings due to the LT commitments currently in place, any lower level of multipliers, compared to the baseline scenario, may give shippers a signal to book short term capacity, leading to tariff instability and introducing a risk of cross-subsidies from users with a constant load factor to users with a more volatile load factor.

Administrative burden: This option does not impose additional information obligations on Network Users nor on TSOs.

Conclusion: A system is designed to handle flows during peak conditions. On average it is therefore only partially used, while it creates permanent costs for the provision of daily peak demand capacity. Multipliers applied to calculate the reference price of short term capacity products allow charging system users contributing to the peak consumptions, the equivalent of the costs created by their respective daily capacities. Too low level of multipliers encourages users to adjust their bookings according to their needs; too high multipliers will have the opposite effect incentivising to book flat capacity long term.

[63] *ENTSOG, Development of the TAR NC: Consultation Workshop 25/06/2014*

The possible shift from LT to ST capacity products due to low level of multipliers might not be relevant at congested IPs, where shippers would strive to secure capacity in advance in order to avoid paying a premium during the day-ahead auctions, as well as at entry points from outside the EU, which are not subject to mandatory CAM discipline. However, structural lack of congestion may be the new typical situation in Europe thanks to new regulations on the level of security of supply and, with a zero reserve price for short term capacity products, it would be impossible to recover costs. In, fact, if the IP is not congested, any multiplier equal or lower than 1 will give shippers a clear signal to book capacity on a daily basis leading to possible under-recovery and tariff instability. Even though this option has positive impacts in fostering harmonization among EU MSs, the absence of a floor to 1 does not exclude the possibility for potential cross subsidization between long and short term contracts.

Sub-option 2: One single range for all short term capacity products after a transitional period

Results of the public consultation: As mentioned before, Stakeholders are more in favour of a policy option where no possible deviation from the proposed range is allowed. In addition, the majority of the stakeholders opposed to a floor level of zero during the consultation process.

Facilitating competition: the minimum level for multipliers of 1 (i.e. no multiplier) avoids situations of cross-subsidization and flight to short-term.

Transparency and non-discrimination: Beyond the process, where NRAs are required to approve and publish the decision taken on the level of multipliers and seasonal factors, this sub-option allows for a transitional period of 4 years and for a higher cap up to the value of 3 for daily and within day standard capacity products. In this period two reports, one after 2 years and one after 4 years as from the application date, will evaluate the appropriateness of the ranges, and if it will be the case, the cap level will be moved to 1.5, as for the other short term capacity products.

This will further increase transparency in the market and harmonisation, by setting a single and unique range for all short term capacity products.

Administrative burden: This option does not impose additional information obligations on Network Users, but it envisages the preparation of the reports to verify and understand the conditions of the capacity market in order to apply the range 1-1.5. Both TSOs and NRAs will be involved accordingly.

Conclusion: Too high multipliers may hamper short term trading and limit market liquidity, pushing shippers to buy upfront flat annual capacity and reducing their possibility to optimize their portfolios. At the same time, low multipliers especially below 1 may lead to a flight to ST products and to possible cross-subsidies between network users. This sub-option better answers stakeholders' concerns by setting a cap of 1.5 and a floor of 1 for all short term capacity products fostering simplification and harmonization in the market.

Fixed vs. floating payable price regime at IPs and Revenue Reconciliation

Floating approach with allowing fixed regime under specific circumstances

Results of the public consultation: During the consultation process, Stakeholders asked, in addition to the floating tariffs, the possibility to have also a fixed price regime in order to reduce their exposure to tariff fluctuations. Fixed regime has been strongly supported by the Stakeholders during the public consultation, in particular from 44% of the interviewed in the SSP (40 % shippers and 4% traders). However, their support has been carried out considering the possibility to have simultaneously the floating and the fixed pricing regime for LT capacity products. In particular the stakeholders in favour of the introduction of the fixed approach are DEPA / GAS SUPPLY DIVISION, E.ON, EDF, EDF Trading, Edison, EFET, ENEL, Energie-Nederland, Energy UK, ENI, Eurelectric, GasTerra BV, Gazprom, IOGP, SSE, Statoil and Vattenfall. An example is reported by GasTerra BV (Shipper – EU): *"GasTerra considers it crucial to for shippers to have the right to fix the payable price and thus manage the costs of their (long-term) capacity portfolio. GasTerra supports that a floating payable price will be used as the default method to set the payable price. The consequence is that all shippers, whatever their booking strategies are, will be exposed to tariff variations due to under- or over-recovery or changes in the allowed TSO revenue."*

Facilitating competition: This option introduces the possibility to offer, also the fixed payable price (only under some circumstances), increasing the degree of tariff predictability among Network Users. Fixed payable price regime can raise the interest of shippers in committing to long term contracts and thus this may provide locational signal to the development of additional gas supply capacity.

In general, the longer the time between price setting and product payments, the higher the risk of under or over recovery and, thus, of tariffs instability. One way to address the problem is to minimize the proportion of revenues to be fixed by the auction as compared to the proportion of revenues to be the direct result of the forecast and tariff methodology. While this allows minimizing tariff instability by reducing the volume of under or over recoveries, it implies that stakeholders lose visibility over the price payable at the time of use. As mentioned in the previous paragraph, the payable price has also an impact on network users' willingness to commit on the long-term and/ or on incremental capacity. Without a certain level of price certainty, Network Users will not commit in the long term to underpin incremental capacity, and this may reduce further network developments.

Transparency and non-discrimination: Although the introduction of a fixed payable price answers Network Users' concerns, a risk of cross-subsidization may be introduced. In fact, under the fixed payable price approach, users who booked capacity in advance are protected from changes to the reference price between the time of booking and the time of use, and therefore, do not have their charges scaled to meet allowed revenues. Thus, the fixed payable price has the potential to lead to a significant risk of revenue under-recovery and a rebalancing of charges between existing and future users, depending on how far and how much capacity is booked and on the variability of allowed revenues over time.

On the other hand, the fixed price approach will increase shippers' long term commitment and in case of incremental capacity, it has advantages over the floating regime.

Considering the fact that, fixed price regime is an option that TSOs can offer under specific circumstances along with the obligation to offer floating tariffs, this can be seen as an incentive for network users to purchase longer term capacity and to increase price certainty and potential signals for system developments.

Administrative burden: No particular extra costs are expected from this sub-option. Additional cost would be caused in case both fixed and floating approaches would be applied in parallel.

Conclusion: The introduction of a new regulation on the payable price can bring further elements of harmonization across the EU, but it needs to consider a trade-off between the different issues connected with the application of the two approaches, floating vs. fixed regime.

The inclusion of the possibility to apply the fixed payable price approach has been welcomed by stakeholders. This may reduce the harmonisation in the market and it may imply a sort of cooperation between NRAs and/or TSOs to ensure that, wherever possible, the price offered at each side of the IP is consistent.

The main impact, and thus, the main issue to address is the extent to which the price paid for capacity at the time of use should be allowed to deviate from the prevailing price at the time of booking. Payable price approaches which result in different tariff structures for different capacity products have the potential to concentrate revenue recovery on one group of users to the benefit of another. In addition, even if fixed price approach can be offered only under specific circumstances, it should be avoided to offer it along with the floating one as extra costs and complexity may arise.

Pricing of interruptible capacity

Sub-option 1: pricing based on ex-ante or a combination of ex-ante/ex-post discount

Results of the public consultation: Some stakeholders raised concerns on the TSOs' ability to estimate the duration of interruptions and the proportion of capacity that would be interrupted with any degree of certainty. For instance E.On and EFET, among others are concerned that the formula for setting discounts on a combined ex-ante and ex-post basis could incentivise TSOs to deliberately underestimate the probability of interruption. Moreover, a significant part of the respondents raised concerns about the pricing of interruptible capacity by a pure ex-post discount as it transfers the financial risk to the shippers.

In addition, according to 64% (48% Shippers, 16% Traders) of interviewed in the SSP the combined discount can lower the transparency. For instance: DEPA / GAS SUPPLY DIVISION: *"[…] we do not agree with the inclusion of any form of an ex-post discount for interruptible products. The proposed combination of ex-ante and ex-post discount will only frustrate users, making them unable to quantify the risk they undertake. Frustration will be increased in bundled products where different approaches may be implemented on either side of an IP."* Edison (Shipper- Italy): *"Edison would like to see a complete removal of an ex-post discount option for interruptible capacity, that should neither be applied "per se" nor in combination with an ex-ante discount."*

Facilitating competition: Setting an ex-ante discount as a default rule together with the possibility to use a combination of ex-ante and ex-post discount under specific circumstances, will increase simplification and facilitate competition thought a harmonized approach across EU Member States.

Transparency and non-discrimination: Compared to the baseline scenario, the level of transparency and tariff predictability will be enhanced. A standardized report where information, such as the probability of interruption for each or some IPs, the level of the discount applied and the explanation of how the probability of interruption is calculated for each type of product, will be publicly available to Network Users. The same approach proposed for interruptible capacity rather than the marginal cost approach, will be applied to the pricing of non-physical backhaul. This is because the non-physical backhaul capacity at unidirectional points is similar to interruptible capacity at bidirectional points. The difference being the type of physical infrastructure, bi-directional or uni-directional IP or the conditions for interruption, non-physical backhaul capacity is interrupted if there are not enough nomination while other interruptible capacity is interrupted if there are too many nominations.

Administrative burden: Compared to the current situation, where TSOs are already foreseen to make public all the information about interruptible capacity, no extra cost is expected to be generated by this sub-option.

Conclusion: This sub-option is addressing network users' concerns, however, transparency and simplification are not guaranteed, allowing for two possible ways of pricing interruptible capacity products.

Sub-option 2: Interruptible capacity based on ex-ante discount vs. backhaul capacity based on marginal cost

Results of the public consultation: Stakeholders were split on the issue of pricing non-physical backhaul capacity. Most of respondents indicated their support to price it in the same way as interruptible capacity products. DEPA Gas supply division and SSE confirm this opinion. Almost 30% in the SSP agreed with a marginal cost approach, raising some concerns regarding market integration and cost-reflectivity if non-physical backhaul capacity will be priced as interruptible capacity. Among others, E.On, EDF, EDF Trading, Edison and Eurogas. A minority (4%), as IOGP and Statoil, is convinced that interruptible day-ahead capacity should be mandatorily offered at zero reserve price.

Facilitating competition: Allowing for two different approaches in the pricing of interruptible capacity may add unnecessary complexity and differences across EU Member States. As mentioned, stakeholders raised some concerns regarding market integration and cost-reflectivity if non-physical backhaul capacity will be priced as interruptible capacity. In fact, to maximize opportunities for cross-border trade and the utilization of the gas transmission infrastructures, non-physical backhaul products may be priced on a marginal cost basis reflecting the actual cost a TSO should incur in order to provide this service. In fact, because of the same reason, the two products are not interruptible because of the same reason and the discount for non-physical backhaul could be greater than the one for interruptible capacity. Besides, conditions of (onward or backhaul) flows and spare capacity are very different across networks, which, in some cases, vary significantly. For example, meshed networks of final destination markets have very different frequency and opportunities of direction changes in both physical and virtual flows than those of mainly linear, unidirectional transit pipelines.

Transparency and non-discrimination: Also under this sub-option, the level of transparency and tariff predictability will be enhanced. (*The principle of non-discrimination will be analysed in the following sub-option.)*

Administrative burden: As for sub-option 1, no extra cost is expected to be introduced by sub-option 2.

Conclusion: Also in this case, two different approaches in the pricing of interruptible capacities may be detrimental for simplification and transparency. Moreover, no substantial benefits are expected from introducing a marginal cost approach for non-physical backhaul capacity products.

Sub-option 3: Interruptible capacity and non-physical backhaul capacity based on ex-ante discount

Results of the public consultation: As mentioned above, stakeholders were split on the issue of pricing non-physical backhaul capacity. However the only ex discount has been strongly supported as shown in the sub-option 1.

Facilitating competition: By foreseeing a unique approach, market integration and completion will be enhanced also compared to previous sub-options.

Transparency and non-discrimination: The debate on how to price differently interruptible capacity products and non-physical backhaul capacity products lays on the possibility to identify non-physical backhaul in a market where flow-direction are changing. Moreover, non-physical backhaul capacity has a similar nature as the one of other interruptible products. The differences are the type of physical infrastructure or the conditions for interruptions. The use of a different approach for non-physical backhaul capacity appears to affect Network Users differently.

Moreover, pricing non-physical backhaul capacity at marginal cost will force TSOs to offer much larger discounts compared to other interruptible products. This opened a debate on whether this contradicts the rule set out in Article 14(1)(b) of Regulation (EC) 715/2009 saying that the price of interruptible capacity shall reflect the probability of interruption[64]. Apart from the rule established by Article 14(1)(b), Regulation (EC) 715/2009 does not foresee the requirements for non-physical backhaul capacity pricing. The CAM NC which supplements and forms an integral part of the Regulation (EC) 715/2009 does not foresee the rules for its pricing either. However, it should be noticed that ACER, in its legal assessment on this topic, concluded that interruptible capacity and virtual backhaul are different and only interruptible capacity is considered governed by Art. 14.

Administrative burden: As sub-option 1 and 2, making more specific rules on publicly available information to be provided, would put a greater administrative burden on TSOs.

Conclusion: Implementing a harmonised approach as the one in sub-option 3 to the pricing of interruptible capacity, as well as, of non-physical backhaul products will facilitate market integration and may strike the right balance between different stakeholders' opinions on the topic.

[64] *Analysis of decision document for refined Draft Network Code on Harmonised Transmission Tariff Structures for Gas for Stakeholders Support Process, ENTSOG, 7/1172014*

Publication requirements

Increased transparency on transmission tariffs

Results of the public consultation: Most respondents have agreed that well-timed and appropriate information about reference price methodology and tariff setting is needed in advance in order to optimize their booking strategies. Furthermore almost 50% of respondents in the SSP believe that, not only the binding reference price but also an accurate and simplified gas network model, should be published in order to allow the replicability of tariff calculation. Among these, DEPA, E.On, EDF, EDF Trading, EFET, Energie-Nederland, Energy UK, ENI, Eurelectric, Gazprom and SSE. For instance, EFET (European Association) and E.On (Shipper- Germany): *"[…] we are concerned […] TSOs releasing only a "simplified" tariff model and that "sensitivity analysis" enabling network users to estimate the possible evolution of tariffs can be published as a substitute to the model."*

Facilitating competition: Information provision is a key stepping stone for the development of an integrated and harmonised EU gas market. The provision of a simplified model or a sensitivity analysis will enable Network Users to make better decisions about tariff evolutions and therefore helps them in optimizing their portfolio positions. Publicly available information will help to create a level playing field and foster cross-border trade and market liquidity.

Transparency and non-discrimination: The provision of tariff related information is fundamental to let Network Users make informed decisions on their bookings. It means that market participants operate on a level playing field.

Administrative burden: Under this option, TSOs are supposed to have additional information obligations where sufficient information is not provided yet. Even though the information can be promptly available, TSOs may incur in a variety of potential costs mostly related to higher publication and consultation requirements.

Conclusion: The option sets out minimum requirements for information provision that are needed to implement in order to let Network Users have a better informed decision making process.

Publication of binding tariffs and tariff setting year

Sub-option 1: No harmonization of tariff setting year + publication of indicative reference prices with 30 days of notice period prior to auction

Results of the public consultations: A key request from the market was to have information relating to tariffs prior to the commencement of capacity auctions. The requests have included for instance the publication of binding tariffs as well as multipliers and seasonal factors prior to the capacity auction as mentioned in the topic related to publication requirements. In particular, 40% of the respondents (36% Shippers and 4% Traders) asked for the publication of binding reference price before the auctions. The main concern regards the term "indicative" as a potential barrier to full transparency. In fact, EDF (Network User - France): *"EDF would have rather preferred the publication of the binding reference price instead of the indicative one. We recall that this information is of paramount importance to enable shippers to develop commercial booking strategies and to prevent any bias towards short-term booking".* ENI SpA (Shipper - Italy): *"[…] with respect to reserve prices, we do not consider sufficient to have "indicative prices" prior to the annual capacity auctions in March, because it still leaves too much uncertainty to network users to define their booking strategies".*

Facilitating integration and competition: Under this policy option, a further attempt to define the minimum lead time for dissemination of information needed for conducting the auction is envisaged. This will increase market transparency and may thus have a positive impact on the network; however, this policy option does not specify any set of rules regarding the harmonisation of the tariff setting year nor foresee the publication of binding reference prices before the commencement of the auction asked almost unanimously by all the stakeholders involved in consultation process. Economic impacts are thus related to a possible shifting in Network Users behaviour towards ST capacity products hampering and limiting the possibility to optimize their booking strategies.

Transparency and non-discrimination: With a misalignment between capacity and tariff setting year, Network Users are supposed to bid partially or totally blind in the auctions. Publishing tariffs, only after an auction process is completed would force Network Users to shift their preference toward short term capacity products. However, the publication of binding reference price for the upcoming gas year prior to commencement of auctions may introduce additional costs and tariff instability. If reference prices are published prior to the annual auctions, some TSOs will not be able to reflect under-or-over recovery of the current tariff year into the reference price causing potential cross-subsidies and more volatile tariffs across years.

Administrative burden: The administrative burden is supposed to be limited as no harmonisation of the tariff setting year is foreseen. The publication of just indicative reference prices (and binding multipliers) with a notice period of 30 days prior to the yearly capacity auction is expected to have some relevant impact on TSOs also considering the current situation.

Conclusion: Under this sub-option network users are supposed to bid partially, or totally in blind in the capacity auction. This will cause uncertainty and hinder NUs' possibility to define a proper booking strategy.

Sub-option 2: No harmonisation of tariff setting year + publication of binding reference price moving capacity auction in July

Results of the public consultations: This option is more in line with the requests collected during the public consultation process. As mentioned before, a key request was to have information relating to tariffs prior to the commencement of capacity auctions.

Facilitating integration and competition: This policy option will still be consistent with the non-harmonisation of tariff setting year. In fact, independently from tariff setting years, Network Users will be able to bid at the yearly capacity auction knowing ex-ante the reference price and solving the main issue raised by Stakeholders regarding the possibility to benchmark different gas routes and to compare tariffs across different E/E zones.

Transparency and non-discrimination: As mentioned, a key request from stakeholders involved in the consultation process was, indeed, to have information relating to tariffs prior to capacity auctions. Although the previous option foresees that binding multipliers and seasonal factors will be published before the auction period, reference prices will remain at indicative level. A further attempt in the harmonisation may be pursued through the publication of binding reference prices and moving auction in July. This will enhance transparency across Network Users as binding reference prices together with multipliers and seasonal factors will be published before the capacity auction enabling Network Users to optimize their booking strategies accordingly. However, if reference prices are published prior to the annual auctions, some TSOs will not be able to reflect under-or-over recovery of the current tariff year into the reference price, causing potential increase in cross-subsidies and more volatile tariffs across years. In addition, due to the tariff publication prior to the yearly capacity auction, the exact amount of the yearly capacity booked for the next gas year during the auction could not be taken into account by tariff calculation anymore. Also, the time point of tariff calculation will be shifted so that, the bigger time gap between relevant tariff period and calculation of binding tariffs could have an impact on the quality of estimations of the project components of allowed/ target revenues.

Administrative burden: Under this option, a change in CAM auction calendar would be required and evaluated before the implementation. Also some TSOs may require some initial changes in order to facilitate such process. On the contrary, the enforced transparency might reduce the effort for the participation of auctions and this can be translated into a more efficient costs structure among Network Users.

Conclusion: This option addresses all the core issues raised by stakeholders however, the publication of binding reference prices for the upcoming gas year prior to commencement of auctions may introduce additional costs and tariff instability. A change in CAM auction calendar would be required to be consistent and compliant with the provisions of the policy option.

Changes in tariffs/ mitigating measures

Gliding path system and grand-fathering of contracts with fixed tariffs before TAR FG

Results of the public consultations: Mitigating measures have been asked to address any possible impact and, in particular, a one-off capacity reset clause have been requested during the SSP by 58% of respondents (42% shippers and 17% traders). Among the consulted stakeholders E.ON, EDF, EDF Trading, Edison, EFET, Eurogas, ENI advocate for the introduction of a one-off capacity reset option. In addition, a number of Stakeholders have raised concerns regarding the application of the TAR NC to the existing contracts and the possible discrimination between existing and future contracts.

Facilitating competition: A gliding path system allows a smoother application of the new regulation, however, some stakeholders believe that changes in tariffs resulting from the implementation of the TAR NC have a greater impact on existing long term capacity holders than on new short term capacity holders. Thus, a gliding path system, that will be applied equally to all contracts in place will, on one hand, limit and reduce potential tariff instability while, on the other hand, it may not be perceived by the market as the right tool to balance any possible effect and drawback.

Transparency and non-discrimination: The implementation of the new regulation could lead to changes in the level of tariffs faced by some users even if mitigating measures will be implemented. In this context, allowing for a gliding path, where the expected changes in tariffs will be smoothly absorbed over 5-10 years, is in principle transparent and non-discriminatory, under the hypothesis that the new tariff structure has a higher cost-reflectiveness and hence lower discrimination degree. Moreover, even if a safeguard has been introduced for contracts based on a fixed price regime, this sub-option should not introduce discrimination. In fact, in a floating price regime, when the contract was concluded, it was already envisaged that the price would change in the future.

Administrative burden: This sub-option will require additional calculation in order to define and agree the gliding path from the baseline scenario to the new tariffs resulting after the application of TAR NC. Anyhow, the extent of the possible changes or the distributional effect will not be known fully until NRAs and TSOs during the consultation procedures will finalize their choices on the main topics.

Conclusion: The extent of possible changes or the distributional effect will not be known fully until NRAs and TSOs will finalize their choices on the above mentioned topics. Direct and indirect costs that TSOs and market participants may incur will be strictly linked to the final tariff structure applicable in each Member States, which in turn depends on a combination of different options and factors. In any case, a gliding path system may guarantee a smoother application of the new regulation avoiding spikes and instability in tariff setting.

6.2.2 Social Impacts

Social impacts are limited. Indirect impacts are more likely to arise.

Mutual objectives among EU measures are to obtain broader impacts on markets integration, while achieving both market liquidity and the convergence of wholesale prices.

The social impacts under policy Option 2 can be, thus, defined indirectly in terms of more liquid market and cross-border competition and consequently lower gas prices. However, tangible benefits through lower wholesale prices are linked to the existence of effective competition on the retail market, as well as, the extent of government interference in the price setting, for example through taxes or by means of price regulation.

At this stage, no significant impacts on job rights, job equality or job health and safety are expected.

6.2.3 Environmental Impacts

The mere implementation of the Option 2 is not supposed to impact the environment. However, the measures proposed under this policy option will foster transparency, market integration and competition. This will mitigate indirect environmental impacts as described under the baseline scenario.

In a low-carbon economy prospective, a higher use of gas may bring positive externalities regarding environmental impacts. In this context, the policy Option 2 by improving and fostering liquidity and cross-border trade can make gas a more competitive resource compared to coal. In addition, a more transparent and competitive landscape can reduce inefficiency and waste in fuel gas thanks to a better allocation of flows within the system.

6.3 Option 3: advanced level of harmonisation through technical EU rules on transmission tariff structures for gas

6.3.1 Economic Impacts

Reference price methodology

Results of the public consultations for the overall topic: There was a general support to harmonise the reference price methodologies allowed to calculate tariffs across EU Member States, as well as, E/E split and, the usage of secondary adjustments, including those for storage facilities. However, a strict harmonisation goes well beyond what Stakeholders have commented during the consultation process.

Choice of the reference price methodology

Postage Stamp as the only reference price methodology allowed

Facilitating competition & transparency and non-discrimination: Although a unique methodology may not fit well in all circumstances, the Post Stamp methodology may foster competition and enhance transparency across network users thanks to the embedded simplicity of the approach. In addition, where flows are not predictable, Postage Stamp methodology might be opportune, because it is not possible to ensure real cost reflectivity due to complexity and to the fact that flow patterns are not predictable anymore. Furthermore, often the locational signal for investment in storages, gas fired power plants and big industrial consumers are not driven by the locational signal of the gas network tariffs but rather by other factors.

The positive impacts related to a higher level of transparency and tariff predictability need to be evaluated taking into account also the situation where a unique methodology may be detrimental for cost-reflectivity and non-discrimination. A Postage Stamp methodology for costs allocation between entry and exit points might create inefficiencies in some systems and may not encourage the efficient use of the network.

Administrative burden: Although the majority of the TSOs are already applying the Postage Stamp, this policy option may be particular onerous for those TSOs that are expecting to change the reference price methodology.

Conclusion: Setting a fully harmonised approach with unique and pre-defined reference price methodology with no mean of possible deviations does not appear feasible and does not match stakeholders' concerns emerged during the consultation process.

Entry/Exit split

50/50 entry exit split without exception

Facilitating competition & transparency and non-discrimination: Also foreseeing a unique E/E split at 50-50%, with no possible deviation could be a step back for several E/E systems. For some E/E systems, in fact, this option could be strongly unbalanced and could lead to potential cross subsidizations. In general 50-50% split should be justified and supported by specific characteristics of the network, for example where the capacity of entry and exit points is similar.

Administrative burden: This option does not impose additional administrative burden.

Conclusion: Having a fully harmonised approach could increase transparency; however, this may introduce severe situations of cross-subsidisation and discrimination between different types of Network Users, as a unique E/E split may not fit well across all EU Member States.

Adjustment of the outcome of the reference price methodology

Benchmarking as the only adjustment allowed

Facilitating competition & transparency and non-discrimination: Compared to Option 2, in this case, only benchmarking would be allowed as a potential reason to modify the outcome of the reference price methodology, thereby limiting the possibilities of arbitrary and unpredictable changes in the tariff setting. In addition, this option in coherent with the one on the reference price methodology. In fact, by using the forecasted booked capacity, re-scaling is not per se necessary in Postage Stamp methodology.

Administrative burden: This option does not impose additional administrative burden.

Conclusion: This sub-option introduces limited benefit compared to option 2, where only 3 different secondary adjustments (including benchmarking) are foreseen together with a clear and transparent approach to follow. In fact, listing and narrowing the number of allowed secondary adjustments and the additional transparency requirements as included in the policy option 2, may already answer to stakeholders' concerns.

Storage E/E tariffs

Sub-option 1: No adjustment of the outcome of the reference price methodology

Facilitating competition & transparency and non-discrimination: This policy option does not allow to price differently transmission tariffs for storage facilities from the reference price calculated as the output of the reference price methodology. In this case, although harmonization and simplification across EU Member States will be enhanced, several positive externalities will not be recognised and this may hamper the competitive position of storage facilities compared to other alternative sources (e.g. LNG).

Administrative burden: This option does not impose additional administrative burden.

Conclusion: As already mentioned, storage facilities are different to other entry and exit points in that they do not represent a net source of supply or demand but rather shift consumption from one period to another. By not considering any discount or different treatment it will hamper the construction and the future development of new facilities undermining also security of supply.

Sub-option 2: Zero-E/E tariffs to storage facilities

Compared to the previous alternative, this sub-option foresees the opposite approach by setting a free of charge E/E tariff for storage facilities. This measure would ensure a full competitive use of storage facilities across Member States and, from a theoretical point of view, this condition may enhance EU security of supply. However, some facilities across Europe are not close to the relevant gas consumption zone and a zero tariffs may be detrimental in terms of cost-reflectivity. Thus, also in this case, but for the opposite reason, the solution outlined does not provide any additional benefit compared to option 2.

Multi-TSO Entry/Exit zones

One single ref. price methodology applied jointly

Facilitating competition & transparency and non-discrimination: This option differs from the one analysed under *Chapter 6.2.1 – Multi-TSO Entry/Exit zones* by the fact that in this case no transitional period is allowed. Thus, any impact before highlighted is still valid but, as no transitional period is foreseen, NRAs won't be able to allow the separate application of the reference price methodology in those situations where it would be needed or more appropriate.

Conclusion: A fully harmonized approach, without considering different temporary measures, may limit NRA possibility to take into account, at least during the initial phase, national and/ or specific circumstances.

Multipliers and seasonal factors

One unique multiplier to be applied to all short term capacity products

Results of the public consultations: While Stakeholders strongly support the harmonisation of multipliers range across EU Member States, foreseeing a fully harmonised approach with a unique value for all short term capacity products would most likely gather less support.

Facilitating competition: Multipliers (and seasonal factors) impact the balance between tariff stability and trade stimulation. In option 2, by allowing a range for short term capacity products, NRAs, in deciding the value of the multipliers, may be able to answer to different needs. In fact, NRAs may in some circumstances, favour long-term stability, and the promotion of investment by setting higher multipliers, while in other circumstances favour trades and cross-border competition lowering multipliers the value.

On the contrary, this will not be possible under this sub-option as it foresees very prescriptive rules possibly undermining competition and the efficient use of the network. Thus, any harmonisation beyond those key rules that are set out in Option 2 would not provide any major benefits in achieving the identified objectives.

Transparency and non-discrimination: It is not clear whether setting out fixed multipliers would have any further positive impact on this issue beyond option 2. Predictability and simplification will be enhanced, however, this should be weighted against the negative effects caused by setting a fixed multiplier instead of a bandwidth. A range rather than a fixed value could better address different interests between TSOs and NRAs as:

- Their expectations for congestion at the IPs;
- The desire to encourage short term trading and price arbitrage;
- Their willingness to accept some risk of revenue under-recovery at the IP.

Moreover, by allowing for a range rather than a fixed value, possible cross-subsidization and discrimination between network users having contracted yearly and non-yearly standard capacity products may be reduced thanks to the fact that NRAs have the possibility to choose the appropriate value.

Administrative burden: Providing the same value of multipliers across all EU TSOs should reduce the administrative burden. The current consultation with NRAs is now not needed under this policy option. On the contrary, it is expected that a stricter approach towards the full harmonization may have a scarce feasibility as well as a difficult implementation.

Conclusion: A fully harmonised approach with a unique fixed multiplier may simplify the current situation between Member States, however, a bandwidth rather than a single value can be useful for the NRAs to re-act on certain specific circumstances or to take into account national strategies.

Fixed vs. floating price at IPs and Revenue Reconciliation

Sub-option 1: floating price approach

Results of the public consultation: The floating payable price approach has been strongly supported by ACER, but almost the majority of the Stakeholders asked for a mandatory fixed approach as well. This policy option will hardly find the full support of the stakeholders

Facilitating competition: Foreseeing a unique approach to the payable price will facilitate the integration toward a harmonised internal gas market. However it may not represent a strong incentive to commit on the long term. This might affect TSO's objectives to achieve a buffer of long term capacity ensuring their financial stability in order to be able to bring foreword their investments in new capacity. Also the commitment for incremental capacity (and the economic test) will be undermined by foreseen the floating approach only. Stakeholders have strongly indicated that uncertainty with floating tariffs would discourage them from purchasing long-term capacity.

Transparency and non-discrimination: A floating price approach ensures that all network users will pay the same price for the same product and guarantee that the risk of future revenue under or over recovery is shared evenly between NUs. In particular, smaller players and new entrants will be benefitted as often they are not able or willing to commit on the long-term. Although a level playing field may be put in place, there might be a decrease in LT commitments and this may lead to tariff instability and possibly increase for captive consumers due to potential under recovery.

Administrative burden: Limited administrative costs are expected, as several TSOs are currently applying a floating payable price regime.

Conclusion: Under the floating price approach, in a revenue cap regime, the risk of future under or over recovery is evenly shared between all network users. The payable price will be determined by the underlying reference price methodology and based on the level of allowed revenue, the price will be adjusted accordingly striking the right balance between cost reflectivity and cross-subsidisation. However, if fixed mechanisms will not be allowed, network users' might not be willing to conclude long-term contracts as they might not be able to manage their margin risk due to unknown changes in transmission tariffs. Furthermore, they do not have any advantage to book long term as all network users will pay the same price at the end.

Sub-option 2: fixed price approach + commodity charge for revenue reconciliation

Results of the public consultations: Fixed regime has been strongly supported by the Stakeholders during the public consultation. However, their support has been carried out considering the possibility to have both the floating and the fixed pricing regime for LT capacity products. Since this policy option foresees only the fixed regime together with a commodity charge for revenue reconciliation, it cannot be easily supported by the market.

Facilitating competition: The most significant difference between the previous sub-option where a floating price regime is envisaged relates to the different way

in which each NU shares exposure to the risk of future increases in allowed revenues and/or the risk of future revenue under/ over recovery. Under a fixed price regime users who book capacity in advance are protected from changes to the reference price between the time of booking and the time of use. The discrimination between network users could undermine competition if higher charges are concentrated on future users or those booking short term[65].

Transparency and non-discrimination: The fixed price approach will increase shippers' long term commitment, however, the link with commodity charge for under recovery may introduce severe cases of cross-subsidisation. The majority of transmission costs are driven by capacity. Therefore, using commodity to reconcile under recoveries would generate cross-subsidies between the different kinds of users. For instance, an industrial consumer would be more exposed to the commodity charge because of its flat load profile. In addition, commodity charge may create some inefficiency in the system. A commodity charge require a contribution only when gas flows in the system, whereas a capacity based charge would require a contribution even if the network is not used but capacity is secured to provide the optionality to flow. In largely unconstrained systems a commoditisation of transmission tariffs should not create particular issues however, when shippers choose to flow less gas, or none at all – even though they have booked capacity – their contribution to network cost recovery will be very low or zero. This means that the historical network costs will increasingly be socialised through the commodity charge.

Moreover, under a fixed price approach, users who booked capacity in advance are protected form changes to the reference price between the time of booking and the time of use and therefore do not have their charges scaled to meet changes in the allowed revenue during the reconciliation of the regulatory account. Depending on how far and by how much capacity is booked ahead of the year of use and depending on average changes in allowed revenues over time, the fixed price approach has the potential to lead to a significant rebalancing of charges between existing and future network users.

Administrative burden: Since most part of the TSOs are currently adopting a floating regime some efforts will be required to implement a completely different approach. However, limited administrative burden is expected for Network Users.

Conclusion: Introducing a fixed regime in combination with commodity charge for revenue recovery would trigger distributional effects among users depending on the load factor and the time of bookings and may shift revenue reconciliation and charging uncertainty from capacity to commodity. This sub-option has not only limited attractiveness from a network user prospective but it is against the objectives highlighted in Chapter 4 as it may introduce cross-subsidisation between network users.

[65] *Assessment of Policy Options Justification document for Framework Guidelines on rule regarding Harmonised Transmission Tariff structures, ACER 31/03/2014*

Pricing of interruptible capacity

The reserve price set to the marginal costs and the payable price determined through the auction premia

Results of the public consultations: During the consultation process conducted by ENTSOG, few stakeholders have raised the possibility to set default zero reserve price in all auctions for Interruptible capacity. In the case of auctions other than day-ahead ex-ante discounts may be applied instead of the default zero price. This would also ensure a proper implementation of the Oversubscription & Buy Back mechanism as requested by the CMP guidelines.

Facilitating competition: Pricing of interruptible capacity has numerous interrelations with other NCs. Under the CAM NC, interruptible capacity can be offered when firm capacity is sold out the day-ahead. In addition, pricing of interruptible capacity should be consistent with alternative congestion management measures, in particular the oversubscription and buy back mechanism. Compared to option 2 where the pricing of interruptible capacity is based on already existing practices, the proposed policy option foresees that the reserve price for all interruptible capacity would be set to marginal costs and the payable price will be determined through the auction procedure. Any positive reserve price for interruptible capacity products may reduce the incentive to make firm capacity available. For day-ahead products, on the contrary, a default zero reserve price should maximize the incentive on TSOs to release firm capacity and to oversell it since they have to offer interruptible day-ahead products only when all firm capacity is sold out.

Transparency and non-discrimination: Under specific circumstances, this option may introduce cross-subsidisation among network users. In the situation where sold firm capacity is not used and cannot be re-sold, NUs who booked interruptible capacity will flow gas with no probability of interruption but they will not contribute to the cost recovery assuming there is no extra premium from the auction (i.e. uncongested IP or route).

Administrative burden: The administrative burden on network users is expected to diminish as a result of this option as all systems would provide the same rules for pricing of interruptible capacity products. However, the vast majority of the TSOs may require some initial changes to their system in order to facilitate such a process.

Conclusion: The policy option foresees a more ambitious approach regarding the pricing of interruptible capacity. Although this would be more coherent with other provisions included in CAM and CMP, several changes are expected to take place considering the current situation. Moreover, some provisions are needed to reduce any extent to introduce cross-subsidisation among network users.

Publication requirements

Increased transparency on transmission tariffs and transmission costs

Results of the public consultations: Most of the respondents have agreed that well-timed and appropriate information about reference price methodology and tariff setting is needed in advance in order to optimize their booking strategies. Furthermore, almost 50% of respondents in the SSP believe that not only the binding reference price but also an accurate and simplified gas network model should be published in order to allow the replicability of tariff calculation.

Facilitating completion & transparency and non-discrimination: In this case, all cost parameters leading to the calculation of tariffs, such as Revenue Asset Base (RAB), operational expenditures, WACC, efficiency targets, re-evaluation of assets and date of activation of assets will be published along all the information under sub-option 1. This will further increase transparency and awareness on tariff derivation and it will let network users pursue a better informed decision making process. In addition, this information is also important for shippers when committing in the long-term for incremental capacity.

Administrative burden: The administrative burden, on the other hand, will be substantially higher as extra (and in some cases commercial) information should be made publicly available to all network users.

Even if the information can be promptly available, TSOs may incur in a variety of potential costs mostly related to higher publication and consultation requirements.

Conclusion: The option increases the level of requirements and information that TSOs should provide to all network users. However, it foresees higher costs and goes a step beyond from what have been collected during the consultation process, where stakeholders asked for transparency on tariff derivation and tariff setting that can still be reached through the solution analysed under option 2.

Publication of binding tariffs and tariff setting year

Sub-option 1: Tariff setting year aligned with gas year with publication of binding reference price prior to capacity auction

Results of the public consultations: A key request from the market was to have information relating to tariffs prior to the commencement of capacity auctions. The requests have included for instance the publication of binding tariffs as well as multipliers and seasonal factors prior to the capacity auction. However, during the consultation conducted by ENTSOG[66] for the impact assessment, Stakeholders have demonstrated limited appetite for harmonisation of tariff setting year.

Facilitating competition: This option goes a step further the requests collected during the public consultation process and foresees, beyond the changing of the capacity auction period from March to July and the publication of binding reference prices before the commencement of the auction, the harmonisation of the tariff setting period to October-September *(gas year)* across all EU Member States.

If the tariff setting will be harmonized then the impact on TSOs and in general on market participants will vary depending on their current situation. In particular, for some TSOs, the tariff year is currently aligned with the accounting year. This would mean additional costs and difficulty with the annual closing of accounts related to a different accounting year and the resulting regulatory reconciliation. Changes in the tariff setting year raise also additional costs for adjusting the legal and regulatory framework. DSOs could also be impacted by the harmonisation if the change of tariff setting period for TSOs would lead to a misalignment with the tariff setting period for DSOs[66] and the electricity networks.

Transparency and non-discrimination: Having identical tariff setting period across EU Member States along with the publication of binding reference prices as well as multipliers and seasonal factors will foster transparency and reduce possible cross-subsidies in the market.

Administrative burden: This policy option will incur in the same costs highlighted for option 2 but extra cost and time may be needed as some TSOs are expected to change their tariff setting period to be compliant with the new provisions. Moreover, in case of a shift of the tariff setting year from Jan-Dec to Oct-Sept also the annual statement period would probably have to be adjusted accordingly. For some TSOs this would be difficult or impossible (i.e. if under IFRS or other international standards). As such, this would lead to double costs for auditors and additional administrative burden. In addition, there will be an impact on network users such as storage operators and DSOs who have tariffs that interact with TSOs tariffs.

Conclusion: The full harmonization is achieved by the fact that in each country the reference price would be referred to the gas year, from October to September, and the auction period will be moved to July. This will strongly enhance network users' awareness on tariff evolution as well as transparency in the market. However, the harmonisation of the tariff setting year together with the required change of the capacity auction calendar may find some resistance

[66] *Impact Assessment: Harmonization of the Tariff Setting Year, 7/11/2014*

both from TSOs and NRAs, as well as, from other market participants (DSOs, shippers, traders and storage operators).

Sub-option 2: Tariff setting year aligned with calendar year with publication of binding reference price prior to capacity auction

The economic impact of this sub-option is close to the previous one. The difference is that in this case, the harmonisation of the tariff setting year across Member States will be aligned with the calendar year (Jan-Dec). Currently, there are more TSOs that apply a tariff setting year aligned with the calendar year. However, the final impact on the market will vary depending on the effect also on other market participants. For instance, depending on what period of time would be chosen for harmonisation, it could impact over 1000 DSOs[66]. Thus, a lower burden from the TSOs can be offset by a higher cost borne by DSOs or other market operators.

Changes in tariffs/ mitigating measures

Sub-option 1: One-off capacity reset

Results of the public consultations: Several Stakeholders have considered the mitigating measures foreseen in the TAR NC insufficient to address any possible impact the new regulation may introduce in the market. In their responses to the SSP process, the one-off capacity reset clause has been broadly requested.

Facilitating competition & Transparency and non-discrimination: The reason why some Stakeholders have asked for a reset clause is because they believe that the current market environment will have a greater impact on long term capacity holders than on new short term holders, as they will not be able to benefit from short term profiling, resulting in distorting competition.

CAM and CMP have significantly changed the way available capacity is allocated and how existing capacity can be used. When most of long term capacity portfolios where booked, the allocation rules of first come first served, made it impractical to rely on short term bookings. The CAM NC significantly improved the offer of short term capacities. Moreover, the CMP introduced the DA UIOLI measure which restricted the flexibility and therefore the value of existing capacities. This situation, together with the current decline in gas demand, may indeed, increase the burden on long term capacity portfolios, since short term capacities shippers/wholesalers can always decide not to book if this is not worth it.

A lot of LT capacity portfolios are currently out of the money because they are more than sufficient to support all gas flows without additional short or medium term capacities, leading to zero or very low spread. This means that the cost of capacity is hardly reflected in the markets, even though actors do use capacities to move gas across Europe through swap contracts. Indeed, LT holders do nominate their capacities to capture the practically zero spread. This could create an implicit free-riding of capacities by players swapping gas to the detriment of LT holders. In this context, very few actors are currently gaining from the current market condition because of the zero spread and this has an impact on the attractiveness of the gas market.

On the other hand, a reset clause will have a number of impacts on TSOs and on the market. The introduction of a one-off capacity reset option may indeed lead to instability in the market as the economic risk of cross-border gas traders would be transferred to TSOs and captive domestic costumers, causing potential revenue under-recovery and consequent tariff increases and financial burden of captive costumers. Moreover, several transmission investments across EU have been underpinned by long term capacity bookings; in case of a one-off reset option, Network Users would be able to step back from their original commitments without assuring any capacity rebooking, and this can potentially lead to the emergence of stranded assets. This could be translated into a devaluation of the TSO's business on the capital market undermining the ability to invest in the network and leading to an increase in the cost of financing.

Moreover, there is likely to be an ongoing impact on tariff stability because substantially lower LT bookings and higher ST bookings could make estimating capacity sales more difficult. In addition, if less overall capacity is booked due to the free surrender of LT capacity, with capacity re-bookings being based on ST capacity at a lower level, than the tariff costs for customers that are unable to reduce their bookings will increase. This could increase cross-subsidies between different users and result in non-cost reflective redistribution of costs (in particular for users unable to hand back capacity).

Administrative burden: This option would require agreement between NRAs, TSOs and market participants on the part of the capacity that can be handed back and on the notice period that should be in any case before tariffs are computed in order to avoid "cherry picking" returns by Shippers. Thus, giving the number of actors involved, this would cause significant administrative costs that may be translated into a possible barrier in the implementation of the policy option.

Conclusion: The market is in the process of considerable change and the implementation of the TAR NC will bring further changes as well. However, given its importance and the magnitude of possible impacts, the reset clause is a topic that goes beyond tariff structures and the legal possibility to address it in a network code. Therefore, the topic needs to be further analysed and could only be addressed by changing the Gas Regulation itself.

Sub-option 2: Stop-loss clause

Results of the public consultations: From the consultation conducted by ENTSOG, some stakeholders have asked that a stop-loss clause should be included into the TAR NC.

Facilitating competition & Transparency and non-discrimination: A stop-loss clause will prevent that long term holders of capacity will bear unreasonable rise on an individual tariff that could be either linked to the application of the new regulation on tariff or linked to any other reason (e.g. socialisation of an investment only on a limited number of points). In this context, the clause would act as a deterrent to prevent that one individual contract could face an excessive rise as already foreseen, for instance, in the German and Belgian regulations. In relation to the threshold considered of 30%, it is 50% higher of mitigating measures currently included in the code and far exceeds the levels of tariff increases ACER is expecting to see in future. Thus, tariff instability caused by the early termination of specific contracts are supposed to be limited and anyhow related to special events.

Administrative burden: Changes due to this policy options are not particularly costly in term of administrative burdens. TSOs, shippers and network users are not supposed to incur in particular burdens related to the implementation of this measure.

Conclusion: Whilst such a mechanism differs from the one-off capacity reset, it would provide a protection to existing capacity holders against bearing the risk of unreasonable tariff rises brought about as a consequence of implementing the TAR NC, or for any other reason. Except from few Member States, this option is not currently in place, thus some resistances both from TSOs and NRAs could be found limiting its implementation.

6.3.2 Social Impacts

Social impacts can be very similar compared to the option 2. A market that would reflect the competition and transparency will lead to less cost for the system and generate positive impacts along all the chain. Option 3 aims at alleviating any possible elements of non-harmonization in the tariffs approach among EU, however in some topics it seems to be forced in a non-natural direction. No relevant social impacts are expected.

6.3.3 Environmental Impacts

The environmental impacts of the policy option 3 can be defined indirectly in terms of more liquid market and cross-border competition and consequently lower gas prices and are closed to the one proposed under option 2.

7. EVALUATION OF OPTIONS

7.1 Comparing the policy options

The final impact on different types of network users is complex and hard to evaluate. The analyses performed in the Impact Assessment have shown that any adjustment of the current tariff structures across Member States is not supposed to lead to structural changes in the actual gas flows while a re-distributional impact between Network Users is more likely to occur, although with different magnitude and consequences.

Under policy option 1, the *do nothing* policy option, economic, social and environmental impacts are negative (i.e. loss up-to 1.5 billion euros in 2013[67]) or in few occurrences equal to zero, as the problems identified under chapter 3 will remain and might worsen. Option 2 may bring some positive externalities in terms of enhanced transparency, liquidity, non-discrimination and facilitating cross-border trades. Option 3 is expected to further facilitate competition and, although the current complexity will be substantially reduced, TSOs are supposed to implement a higher number of changes leading to potential increase of the administrative burden as well as a lower stakeholders' support.

Social and environmental impacts are marginal and are expected to lead to indirect effects, if any.

The next table summarizes the possible economic, social and environmental impacts of each policy option analysed, as well as, the support from market participants involved in the process.

Table 11: Final scoring of the various options on the impact assessment criteria

Assessment criteria	Economic			Social	Environ-mental	Public consultation support
	Facilitate Competition	Transparency and non-discrimination	Administrative Burden			
Option 1: no further EU action – BAU	-	-	-/0	0	0	-
Option 2: basic EU rules	+	++	0	0/+	0/+	+
Option 3: advanced EU rules	++	+	0/+	0/+	0/+	-

[67] *ACER/CEER Annual Report on the Results of Monitoring the Internal Electricity and Natural Gas Markets in 2013*

Each policy option is assessed also considering the specific objectives[68]. In order to thoughtfully perform this analysis we assessed each option by:

- **Effectiveness** in guaranteeing that the gas transmission tariff structures will achieve the specific objectives defined in Chapter 4.2;
- **Efficiency** in achieving the specific objectives;
- **Coherence** with the overarching objectives of the legislator, and the extent to which they are likely to limit trade-offs across the economic, social and environmental domain.

Table 12: The table compares the policy options in terms of their effectiveness, efficiency and coherence of responding to specific criteria

Specific Objectives	Option 1	Option 2	Option 3
Facilitate trade and competition through a well-functioning and transparent wholesale market	-	+	++
Avoid cross-subsidies and undue discrimination between NUs ensuring cost-reflective transmission tariffs	-	++	+
Provide incentive for investments and maintain or create interoperability for transmission networks	0	++	+
Improve transparency in the gas market	-	+	++

As described, the currently adopted approaches in tariff structures across EU Member States may lead to sub-optimal use of the system (in particular where there are a large number of TSOs operating in the same entry-exit zone and/or there are multiple entry points), as well as it will not be coherent with the identified specific and operational objectives. Option 1 is thus neither an effective nor an efficient policy option. On the contrary, it would be highly feasible as it would not require any effort to be implemented.

The level of harmonisation in Option 2 would in principle strike the right balance between cost-reflectivity and cross-subsidy across EU Member States. It addresses the issues of tariff stability and predictability leaving enough autonomy to the NRAs in order to take into account local circumstances and peculiarities. It would be also feasible as in most of the cases the policy option goes in the direction highlighted by market participants even if some room for improvements still exists.

Option 3 is the most ambitious option. Although it is highly coherent with the objectives, it may introduce severe cases of cross-subsidies and may reduce cost-reflectivity as uniform rules may not fit well in all circumstances. It is also the least feasible as major changes are required and very limited support from the market has been achieved.

[68] *For further details please refer to Chapter 4.2 – Specific Objective*

7.2 The preferred policy option

The impact assessment evaluates three different policy options according to key topics relevant to define gas transmission tariff:

- Option 1: **no further EU action (baseline scenario)**:
  - Key topics are defined at national level -- in each Member State the decision-making process on tariff structure is demanded to local NRA or TSO(s);
  - Limited harmonisation across different EU Member States potentially leading to different level of cost reflectivity and cross-subsidization;
  - Limited level of overall transparency.

- Option 2: **Basic level of harmonization through technical EU rules on transmission tariff structures for gas.** Key improvements in harmonisation and transparency of gas market are:
  - Limited number of methodologies to calculate tariffs;
  - Common approach to foster short term trades and foster liquidity;
  - Improved transparency through data publication requirements.

- Option 3: **Advanced level of harmonization through technical EU rules on transmission tariff structures for gas.** According to this policy option a full harmonization of tariff structures across EU Member States is envisaged. As option 2, the aim is to foster a well-functioning, efficient and open internal gas market by promoting competition, cross-border trade and market integration but without allowing for national arrangements or local specificities.

The option 1 – no further EU action/ BAU scenario – considering the replies to the various Public Consultation undertaken by ACER and ENTSOG will not lead to the required harmonization that can be the basis for a well-connected and well-functioning internal energy market.

Even though option 1 may at the outset be perceived as being less onerous than to implement harmonised transmission tariff structures, it could create significant inefficiencies in policy development. Moreover, Option 1 would not foster the cross-border trades, liquidity and the optimal usage of the network hindering the development of competitive gas price. This is crucial also considering possible environmental impacts the usage of different sources as coal, can have in terms of more polluting power generation facilities.

The implementation of the Third Energy Package will not, in itself, solve the issues outlined in the problem definition. Transmission tariff structures adopted at national level could only contribute to the integration of the European gas market if sufficiently coordinated. Considering also previous evidences, high-level voluntary coordination between Member States has been rarely observed also because of lack of incentives. A purely national development may simply not be enough.

Option 3 goes a step further compared to the option 2 and foresees well detailed and harmonised rules on transmission tariff structures for gas. Even though there is a general support by stakeholders to harmonise the rules on transmission tariff structures across Member States, this option may appear in some cases disproportionate compared to the objectives of the legislator. On the other hand,

the introduction of the same rules for all TSOs could be beneficial for competition especially when these rules are suitable for all types of networks considering also different topologies and national specificities.

In most of the cases, option 2 may strike the right balance between costs and benefits of implementing harmonised rules on transmission tariff structures across Member States. This option is also more coherent with Stakeholders' request collected during ACER and ENTSOG consultation process. It will indeed facilitate gas market integration and cross-border trades by removing the main differences in transmission tariff structures but still providing room for national circumstances and peculiarities. However, as mentioned before, in few cases, option 2 and option 3 have limited differences, thus, the desired outcome could still be obtained by looking at some alternatives where an advanced level of harmonization through technical EU rules on transmission tariff structures for gas is foreseen. A summary of the preferred policy option is provided in the next table.

Figure 29: Summary of the preferred policy option

Topics	Option 2 – basic level of harmonization
1. Reference Price Methodology	**Choice of the reference price methodology:** • Sub-option 4: Only two reference price methodologies described in the NC – Post. Stamp and CWD **Entry Exit split:** • 50/50 Entry exit split as default rule unless otherwise set or approved by the NRAs **Adjustment of the outcome of the reference price methodology:** • Limited number of secondary adjustments **Storage Entry/Exit tariffs:** • Sub-option 1: Individual NRA decision on necessity of adjusting the outcome of the reference price methodology based on harmonized criteria **Multi-TSO Entry/exit zones:** • Sub-option 1: One single ref. price methodology applied jointly but separate application allowed for transitional period under specific conditions
2. Multipliers and seasonal factors	• Sub-option 2: One single range for all short term capacity products after a transitional period
3. Payable price at IPs and Revenue Reconciliation	• Floating price as default rule with fixed under specific circumstances
4. Pricing for interruptible capacity	• Sub-option 3: Interruptible capacity and non-physical backhaul capacity based on ex-ante discount
5. Publication requirements	• Increased transparency on transmission tariffs
6. Publication of binding tariffs and tariff setting year	• Sub-option 2: No harmonisation of tariff setting year + publication of binding reference price prior to capacity auction
7. Changes in tariffs/mitigating measures	• Gliding path system and grand-fathering of contracts with fixed tariffs before TAR FG

8. MONITORING AND EVALUATION

Core indicators of progress in the field of improved gas transmission tariff structures across EU Member States are:

- Stakeholder assessment of robustness of decision making and overall process associated with establishment of tariff methodology;
- Assessment of availability of all models and data to enable replication of actual tariffs;
- Stakeholder assessment of information availability to enable tariff predictions;
- Pass/fail compliance with cost allocation test
- Revenue Reconciliation parameters and outcomes
- Multipliers applied by each TSO

Article 9(1) of the Gas Regulation tasks ACER with the monitoring of all the Networks Codes. ACER can be assisted by ENTSOG where needed on the basis of article 8(9). The individual TSOs are obliged to cooperate through ENTSOG according to article 4. Article 41 of the Gas Directive 2009/73/EC foresees very broad monitoring rights and duties for NRAs.

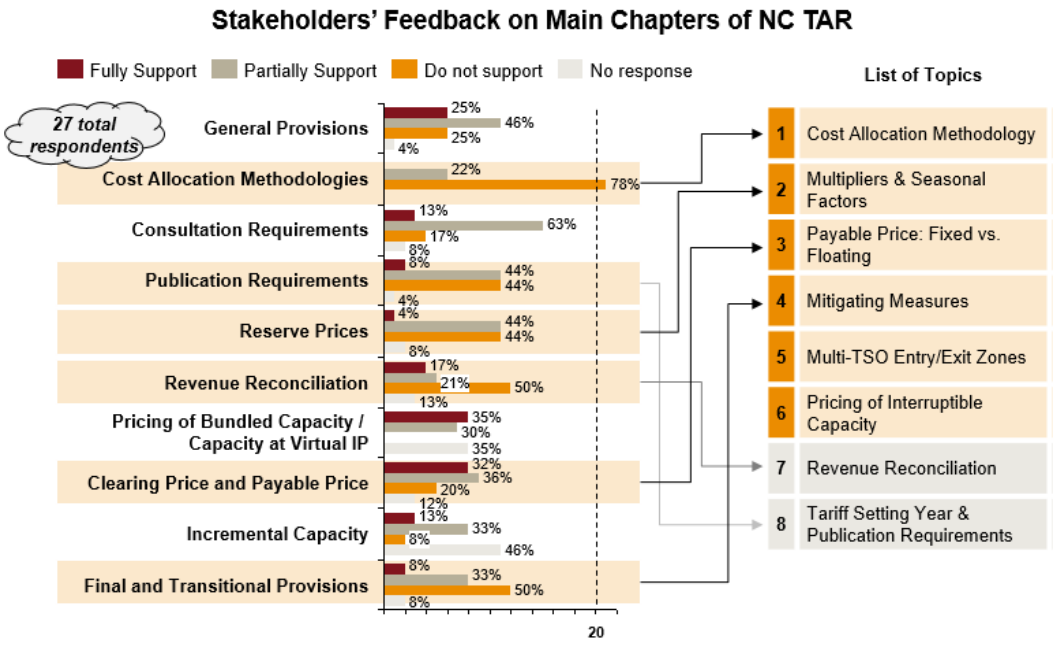
It is therefore foreseen that the Network Code on transmission tariff structures for gas is subject to the general ACER and ENTSOG monitoring obligations concerning Network Codes with the aim of ensuring that a correct and full implementation of these legislative initiatives contributes to the completion of the EU internal energy market.

9. ABBREVIATIONS

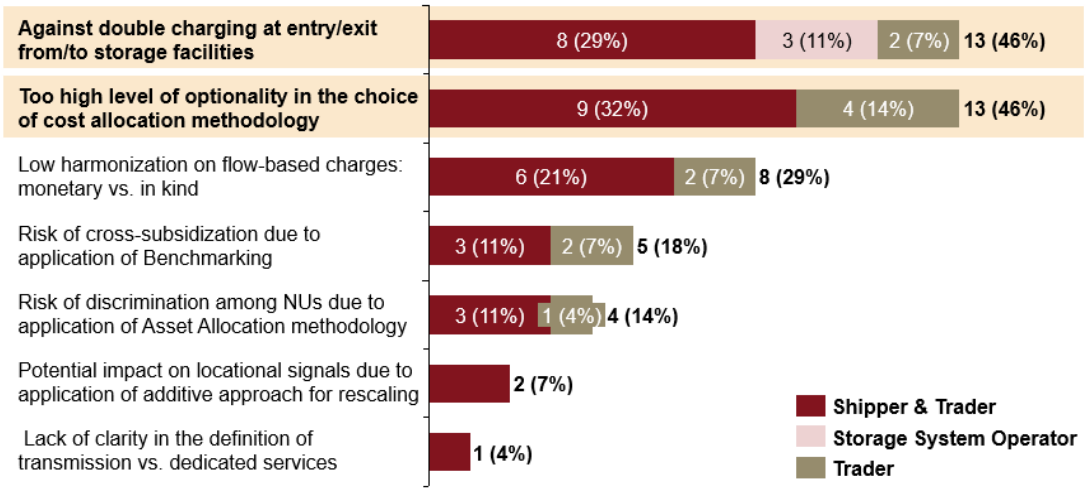
ACER	Agency for the Cooperation of Energy Regulators
BAU	Business as Usual (Baseline)
CAM	Capacity Allocation Mechanism
CRRC	Complementary Revenue Recovery Charge
CEER	Council of European Energy Regulators
CMP	Congestion Management Procedure
CWD	Capacity Weighted Distance
DSO	Distribution System Operator
ENTSOG	European Network of Transmission System Operators for Gas
E/E	Entry/Exit
EC	European Commission
EU	European Union
FG	Framework Guideline
GTM	Gas Target Model
INCR	Network Code Amendment on Incremental Capacity
IP	Interconnection Point
ISO	Independent System Operator
ITC	Inter-TSO Compensation
ITO	Independent Transmission Operator
LNG	Liquefied Natural Gas
LT	Long Term
MSs	Member States
NC	Network Code
NC BAL	Network Code on Balancing of Transmission Networks
NC CAM	Network Code on Capacity Allocation Mechanism in Gas Transmission System
NC TAR	Network Code on Harmonised Transmission Tariff Structures for Gas
NRA	National Regulatory Authority
NU	Network Users
NWE	North-West Europe
OS	Open Season
OU	Ownership Unbundling
PWC	PriceWaterhouseCoopers
SoS	Security of Supply
SSP	Stakeholder Support Process
ST	Short Term
TSO	Transmission System Operator
TYNDP	Ten Year Network Development Process
VIP	Virtual Interconnection Point
VP	Virtual Point

ANNEX A – SUMMARY OF STAKEHOLDERS FEEDBACK

Feedbacks from stakeholders contributed to delineate several alternative options. A summary of these feedbacks is provided as follows[69].

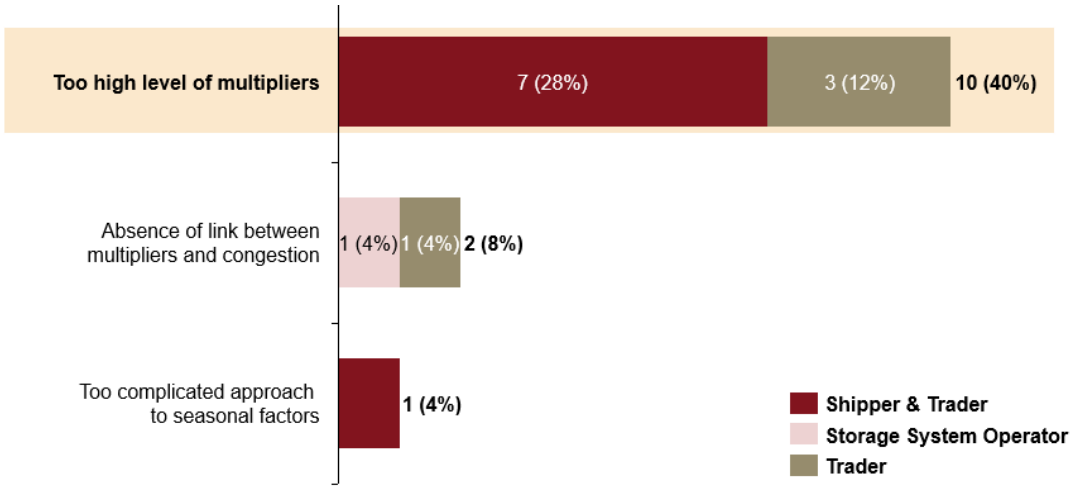


<u>Reference price methodology</u>

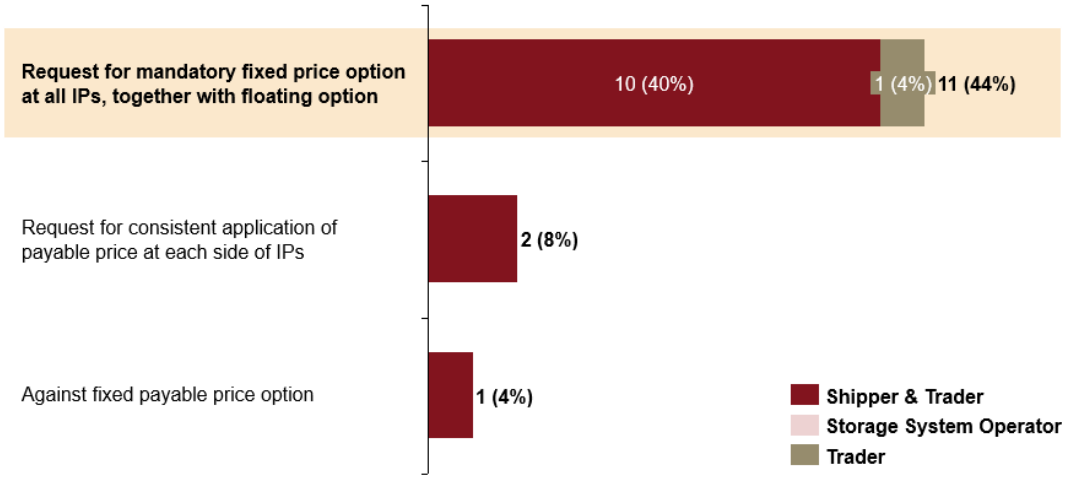


[69] *Result from the consultation conducted by ENTSOG with the SSP.*

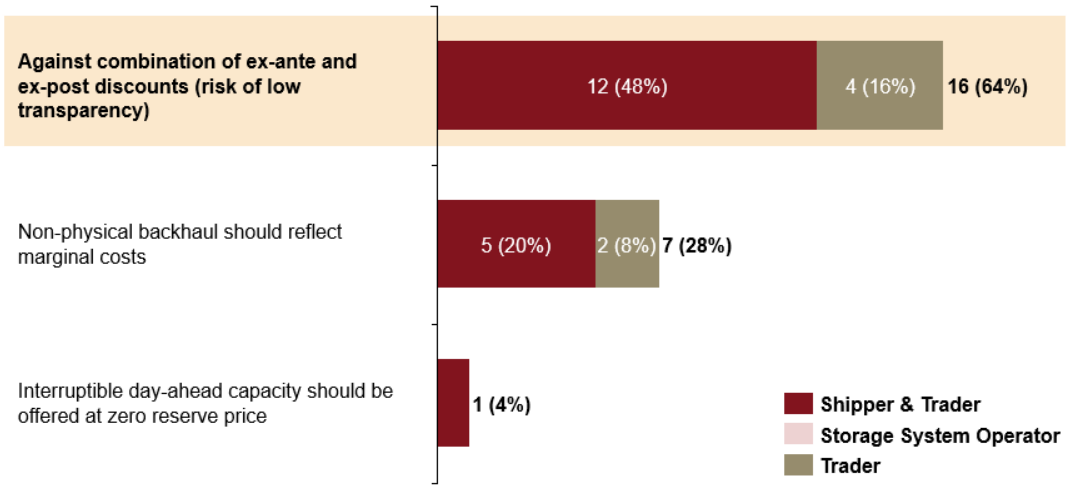
Multipliers and seasonal factors



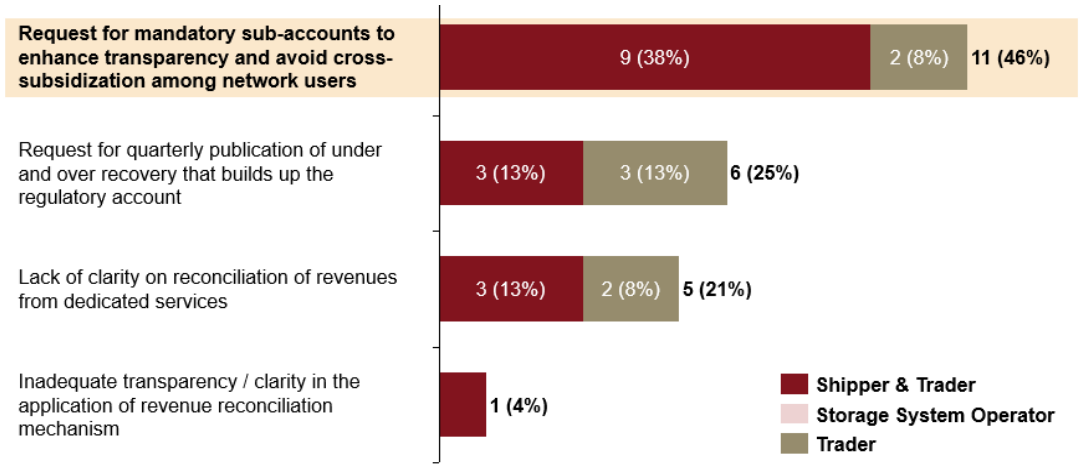
Payable price: fixed vs floating



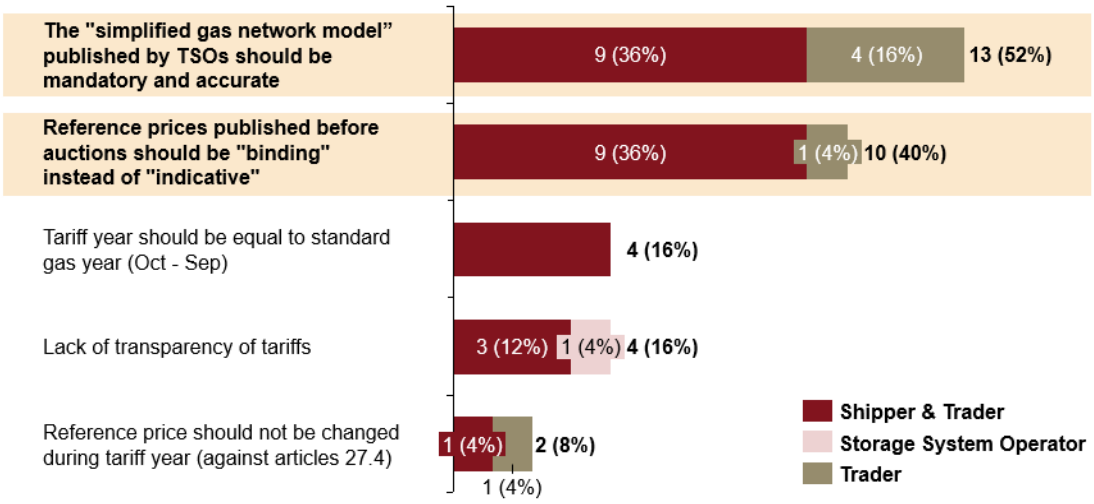
Pricing of interruptible capacity



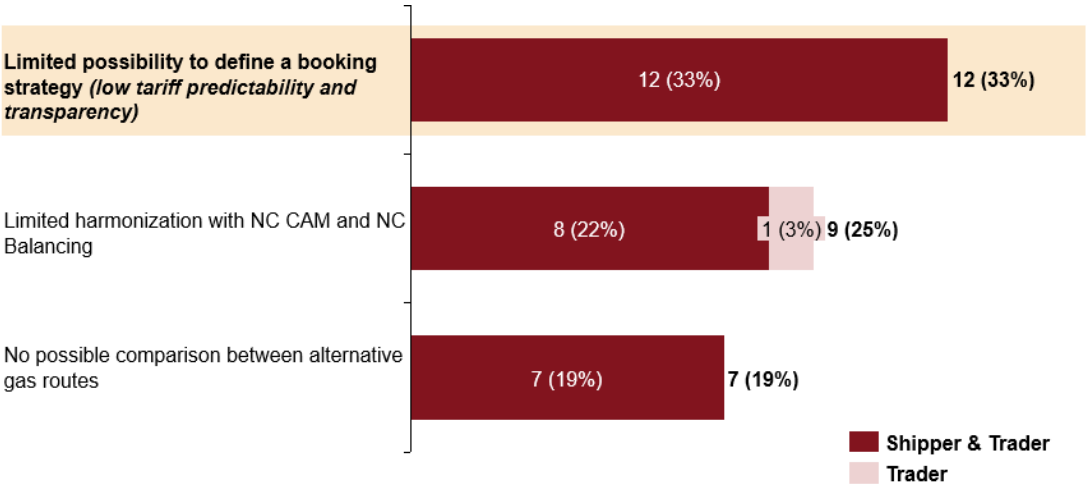
Revenue reconciliation mechanism



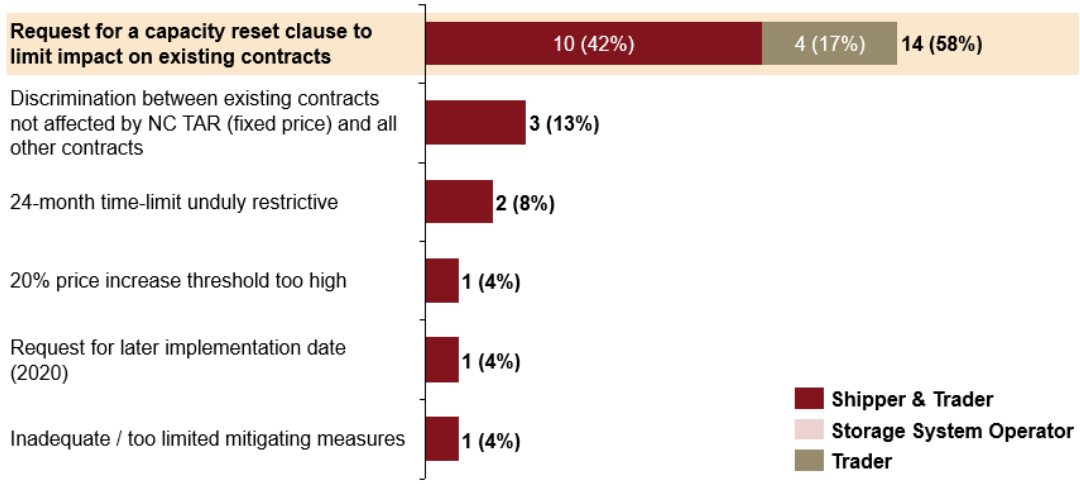
Publication requirements



Tariff setting year



Mitigating measure



ANNEX B – ANALYSIS OF ANSWER TO QUESTIONNAIRES

Strategy& and PwC issued two tailored questionnaires to both European NRAs (through ACER) and TSOs (through ENTSOG) in order to build a detailed description of the baseline scenario on the current tariff regime and methodology applied in each country, including any analysis of the existing institutional and regulatory limitations and peculiarities.

Assumptions

- Finland and Estonia are exempted from Regulation (EC) No 715/2009;
- A single questionnaire has been collected for Premier Transmission Limited and for Belfast Gas Transmission for the scope of this work, as they are assumed to be the same entity;
- BBL has been associated to NL;
- Hungarian TSO Magyar Gas Transit has not been considered
- No response was received from the TSOs of Latvia, Luxembourg, Lithuania and Reganosa of Spain.

Reference price methodology:

Choice of the reference price methodology

Table 13: Reference price methodology adopted by EU TSOs[70]

Country	# of TSOs	Primary reference price methodology					
		P. Stamp	Virtual Point	CWD	Matrix	Asset Alloc.	Other
Austria	2		✓(2)				
Belgium	1			✓			
Bulgaria	1	✓					
Croatia	1	✓					
Czech Republic	1					✓	
Denmark	1	✓					
Estonia	1	✓					
Finland	1						✓
France	2			✓(2)			
Germany	12	✓(11)		✓(Ontras)			
Greece	1				✓		
Hungary	2	✓(2)					
Ireland	1						✓
Italy	2				✓(2)		
Latvia	1	✓					
Lithuania	1	✓					
Luxembourg	1	✓					
Netherlands	2						✓(2)
Poland	1	✓					
Portugal	1				✓		

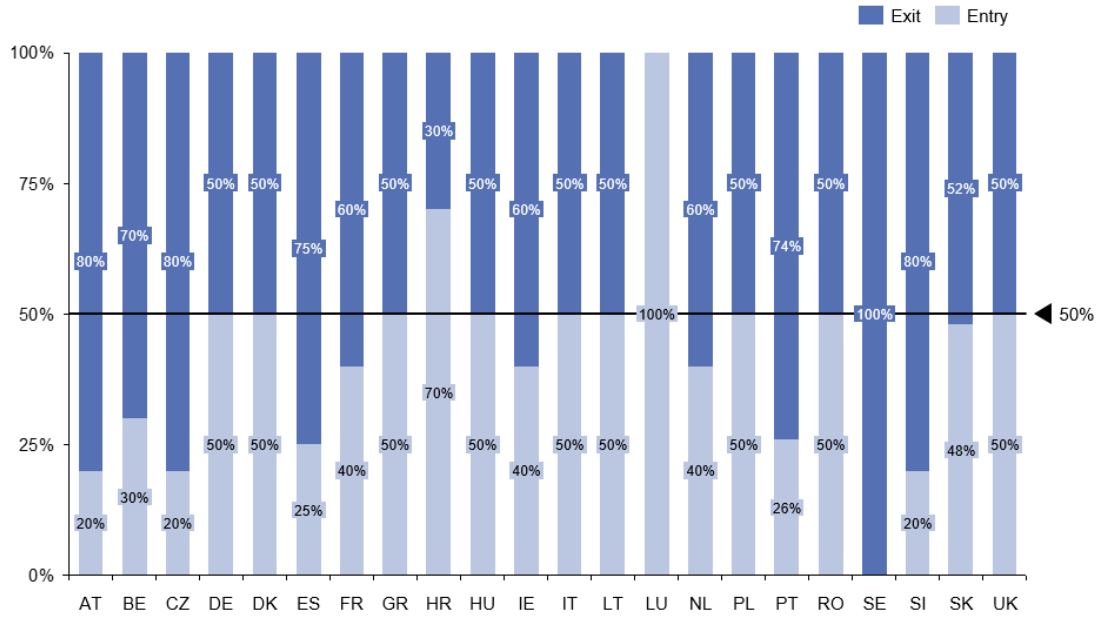
[70] *A single questionnaire has been collected for Premier Transmission Limited and for Belfast Gas Transmission for the scope of this work, as they are assumed to be the same entity; one questionnaire has been collected for Hungary. No response was received from the TSOs of Latvia, Luxembourg, Lithuania and Reganosa of Spain..*

Other Reference price methodology: ***Gasum Oy (FI):*** *deregulation from EU's 3rd energy package;* ***Gaslink (IE):*** *postalised charging regime at domestic exit points;* ***Gasuine Transport Services (NL):*** *based on distance, primarily visible in the exit tariffs;* ***BBL (NL):*** *exempted from tariff and revenue regulation*

Country	# of TSOs	Primary reference price methodology					
		P. Stamp	Virtual Point	CWD	Matrix	Asset Alloc.	Other
Romania	1	✓					
Slovakia	1				✓		
Slovenia	1				✓		
Spain	2	✓(2)					
Sweden	1	✓					
UK	4	✓(3)	✓(NatGrid)				
TOTAL	46	28	3	4	6	1	4

Entry/ Exit split

The majority of EU Countries apply an entry/exit tariff model. Only Bulgaria, Estonia, Finland and Latvia are currently using a different approach.



Country	# of E/E zones	Tariff Model	
		Entry-Exit	Other
Austria	1	✓	
Belgium	2	✓	
Bulgaria	*NA* (1 in progress)		✓(Commodity charge in Exit)
Croatia	1	✓	
Czech Rep.	1	✓	
Denmark	1	✓	
Estonia	*NA* (only exit zones)		✓(Common tariff only in Exit)
Finland	*NA*		✓
France	3	✓	
Germany	2	✓	
Greece	3	✓	
Hungary	1	✓	
Ireland	1	✓	
Italy	1	✓	

Country	# of E/E zones	Tariff Model	
		Entry-Exit	Other
Latvia	***NA***		✓
Lithuania	**1**	✓	
Luxembourg	**1**	✓	
Netherlands	**1**	✓	
Poland	**3**	✓	
Portugal	**1**	✓	
Romania	**1**	✓	
Slovakia	**1**	✓	
Slovenia	**1**	✓	
Spain	**1**	✓	
Sweden	**1**	✓	
UK	**1**	✓	
TOTAL	**-**	**22**	**4**

The majority of European countries (20 out of 22) apply charges at both entry and exit points. However, there is a great variation in the split between revenues recovered at both points. 9 countries apply a 50/50 split, 11 rely more on exit points while the remaining 2 countries apply a 100%/0% (Luxembourg) and 0%/100% (Sweden) respectively. As a general trend, it could be noted that 21 out of 22 countries recover half or more of the revenue from exit points, in particular higher percentages of exit split can be found in transit countries.

Secondary adjustment

The application of the secondary adjustment is currently defined at national level and different types of adjustment are applied.

Table 14: Application of secondary adjustment

Country	Application of Secondary Adjustments	
	Typology	Comments
Austria	**Equalization**	
Belgium	**Equalization**	Embedded in the reference price methodology
Bulgaria	***Envisaged***	Rescaling; Equalization
Croatia	-	
Czech Rep.	**Rescaling + Equalization**	
Denmark	**Not specified**	The approved cost methodology is not limited to a specific time period and it is very broad; tariff adjustment within the methodology may take place and do not necessarily require specific approval
Estonia	**-**	Not applied
Finland	**-**	Not applied
France	**Equalization**	Equalization, in order to foster the hub liquidity and the competition between the shippers
Germany	**Not specified**	The reference price methodology is not specified, thus is not possible to say if an adjustment is done after the application of the reference price methodology or if the adjustment is still part of the reference price methodology
Greece	**Not specified**	A % of the cost of one exit zone can be passed to another zone according to i) the cost of assets of that exit zone servicing another exit zone and ii) the quantity of gas transmitted through an exit zone but servicing another exit zone.

Country	Application of Secondary Adjustments	
	Typology	Comments
Hungary	**Not specified**	To incentivize the entry tariff of storage and for technical reasons the entry of domestic production is lower than the import tariff
Ireland	**Not specified**	Standard inflation (HICP), WACC review mechanism
Italy	**Rescaling**	In order to meet allowed revenues
Latvia	**-**	
Lithuania	**-**	
Luxembourg	**-**	
Netherlands	**Benchmarking**	A 5% deviation is allowed up or down per entry/exit, in the end the allowed revenues should add up to the same amount and tariff benchmark in case of competition (latter has not been used)
Poland		
Portugal	**Equalization/ Rescaling**	Entry tariff for IPs with Spain and LNG terminal are equalized and only the entry price from the Storage facility remains different Regarding the exits, although the reference price methodology gives different capacity exit prices for 8 regional zones a common average value is adopted. Besides this, the rescaling is applied in order to achieve the AR
Romania	**Not specified**	The NRA has the possibility to make any necessary adjustments to tariffs in case that major errors have been discovered or in case of a negative impact to final customers or gas market.
Slovakia	**-**	Not applied
Slovenia	-	Not applied
Spain	**Equalization**	Tariffs from all entry points into the transmission network are equalized. There is an integrated exit tariff from the transmission and distribution network which is charged at exit points from the distribution network. At exit IPs tariffs are equalized
Sweden	**Equalization**	If justified some specific costs can equalized among the network users
UK	**Rescaling**	Commodity charges are used to meet shortfall between entry capacity sales revenue and allowed revenue. Exit Capacity is subject to rescaling to eliminate under- or over-recovery

Multi-TSO Entry-Exit zone

Country	Inter-TSO compensation and market evolution	
	ITC mechanism	Comments
Austria	✓	An inter-TSO-compensation is set to cover the allowed cost of all the TSOs on the basis of the fixed booking situation
Belgium	*Under discussion*	The Belgian/Luxembourger IP will disappeared in the future, a cooperation is being discussed between the 2 TSOs
Germany	*Envisaged*	In 2017, Germany plans to establish an ITC
Italy	✓	There is one and the same methodology per E/E zone but there are several TSOs, therefore the ITC aims at re-distributing revenues according to allowed revenues
Luxembourg	*Under discussion*	The Belgian/Luxembourger IP will disappeared in the future, a cooperation is being discussed between the 2 TSOs
Spain	✓	No inter-TSO compensation mechanism, but the "Settlement process" has a similar objective.

Storage E/E tariffs

In order to take into account the benefits that storage facilities may bring into the system most of the countries (13 out 20) currently apply at least a discount in entry or in exit tariffs for storage facilities. However, approaches discounts and their rationale are very heterogeneous. In Denmark, Spain and Sweden both Entry and Exit tariffs from/to storage facility are free of charge while in Czech Republic, Romania and Slovakia no discount is envisaged.

Country	Storage Discount (Storage E/E= Discount * E/E tariff)	
	From Storage to Network	From Network to Storage
Austria	Free of charge	Highly discounted
Belgium	No discount	Free of charge
Bulgaria	70%	70%
Croatia	No discount	90%
Czech Rep.	No general discount applied	No general discount applied
Denmark	Free of charge	Free of charge
France	85%	85%
Germany	No discount applied by most of TSOs	No discount applied by most of TSOs
Hungary	-	-
Ireland	No discount on capacity change	No discount on capacity change
Italy	Applied when costs are allocated to each pipeline (14%)	Applied when costs are allocated to each pipeline (14%)
Latvia	-	-
Netherlands	25%	25%
Poland	80%	80%
Portugal	No discount	Free of charge
Romania	No discount	No discount
Slovakia	No discount	No discount
Spain	Free of charge	Free of charge
Sweden	Free of charge	Free of charge
UK	No discount on capacity charge, free of charge from commodity charge	No discount on capacity charge, free of charge from commodity charge
Estonia	No storage facility	
Finland		
Greece		
Lithuania		
Luxembourg		
Slovenia		

Multipliers and seasonal factors

The figures below show the situation in 2013 for monthly multiplier. The arithmetic average across summer months is 1.29, in winter months is 1.98 while across the whole year is 1.64.

Figure 30: Monthly Multipliers in 2013 (April-Sept.) – Seasonal factors included (if any)

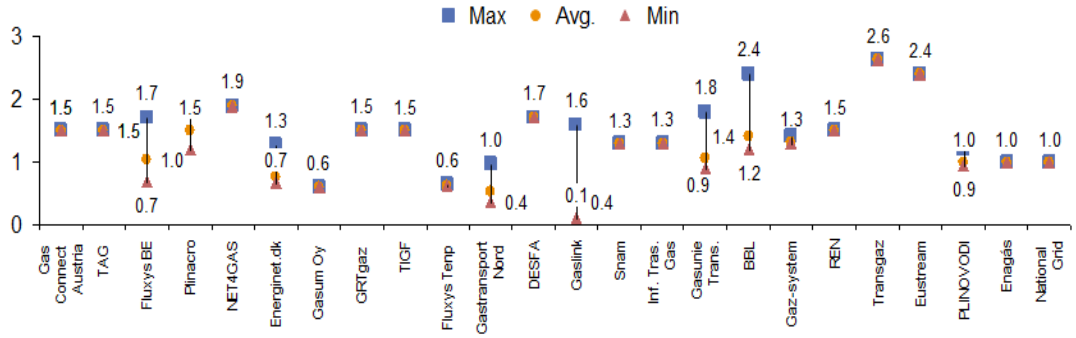
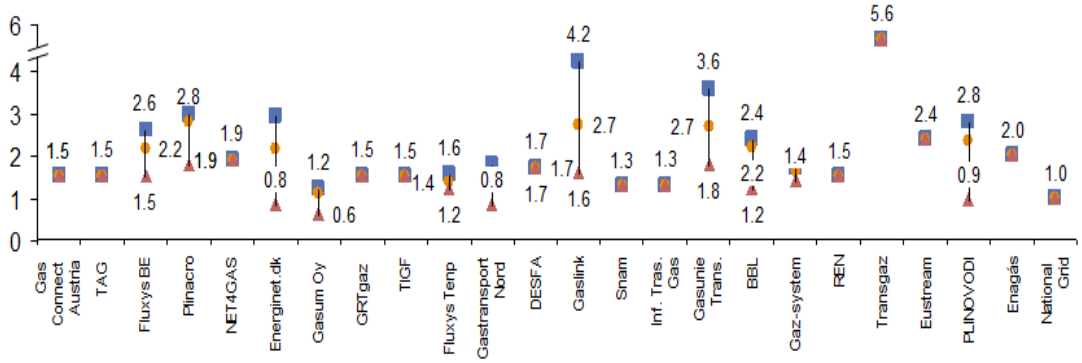


Figure 31: Monthly Multipliers in 2013 (Oct.-March) – Seasonal factors included (if any)



For daily multipliers, the arithmetic average across summer months is 1.9, in winter months is 3.1 while across the whole year is 2.47.

Figure 32: Daily Multipliers in 2013 (April-Sept.) – Seasonal factors included (if any)

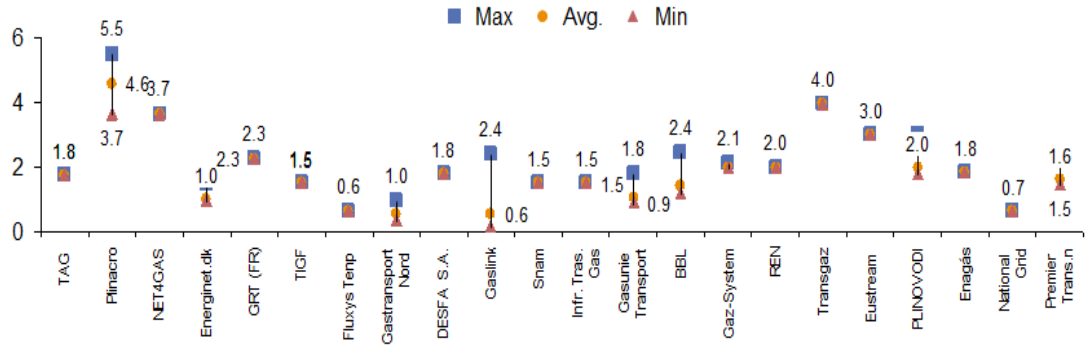
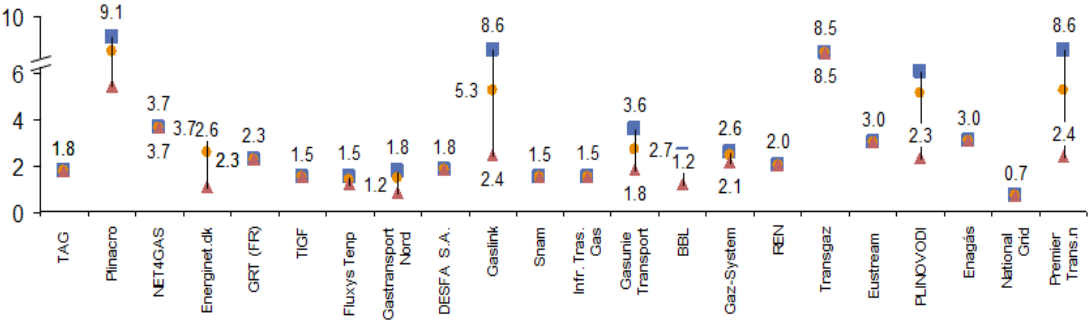


Figure 33: Daily Multipliers in 2013 (Oct.-March) – Seasonal factors included (if any)



Payable price: fixed vs. floating

Most of the EU TSOs (30 out of 45) are currently applying a floating payable price approach. A fixed approach is used in 6 cases while a mixed approach is applied by Czech Republic, Estonia, Finland and National Grid (UK). No such definition is applicable in Estonia and Sweden.

Country	Payable price approach			Missing TSOs
	Floating	Fixed	Mixed	
Austria	✓(2)			
Belgium	✓			
Bulgaria		✓		
Croatia		✓		
Czech Rep.			✓	
Denmark		✓		
Estonia			✓	
Finland			✓	
France	✓ (2)			
Germany	✓ (12)			
Greece	✓			
Hungary	✓(2)			
Ireland	✓			
Italy	✓ (2)			
Latvia				1 (Latvijas Gaze)
Lithuania				1 (AB Amber Grid)
Luxembourg				1 (Creos)
Netherlands	✓ (GTS)	✓(BBL)		
Poland	✓			
Portugal	✓			
Romania	✓			
Slovakia		✓		
Slovenia	✓			
Spain	✓ (Enagas)			1 (Reganosa)
Sweden				Not applicable[71]
UK	✓(2xPremier Transp.)	✓(IUK)	✓(National Grid)	
TOTAL	31	6	4	4 (5)

[71] *Regulation for payable price and pricing of interruptible capacity is only applicable for interconnection points. Sweden has one interconnection point in Dragör but due to existing Swedish legislation (Swedish Natural Gas Act 2005:403) it is not subject to booking procedures by network user*

Pricing of interruptible capacity

Most EU Member States apply an ex-ante discount (23 TSOs out of 45). 10 TSOs are currently applying an ex-post discount. Finland and Ireland do not provide interruptible capacity while no such definition is applicable in Estonia and Sweden.

Country	Approach to Interruptible Capacity		Discount applied
	Ex ante discount	Ex post discount	
Austria		✓(2)	-
Belgium	✓		20% interruptible capacity Level 1, 40% "interruptible capacity Level N
Bulgaria		✓	-
Croatia		✓	-
Czech Rep		✓	-
Denmark	✓		Ellund Exit: 10%, Dragør Entry: 5%, Dragør Exit: 5%
Estonia	No interruptible capacity		-
Finland	No interruptible capacity		-
France	✓ (2)		50%
Germany	✓ (12)		Vary according to the TSOs (Min ~10% - Max ~40%)
Greece	✓		50%
Hungary	-		-
Ireland	No interruptible capacity		-
Italy	✓ (2)		10% interruptible capacity level 1 20% interruptible capacity level 2
Latvia	-		
Lithuania	-		
Luxembourg	-		
Netherlands	✓ (2)		30%
Poland		✓	-
Portugal	✓		28%
Romania		✓	-
Slovakia		✓	-
Slovenia		✓	-
Spain	✓ (Enagas)		50%
Sweden	Not applicable[72]		
UK	✓ (National Grid)		100% (only interruptible product sold is daily capacity)

[72] *Regulation for payable price and pricing of interruptible capacity is only applicable for interconnection points. Sweden has one interconnection point in Dragör but due to existing Swedish legislation (Swedish Natural Gas Act 2005:403) it is not subject to booking procedures by network user*

Revenue reconciliation mechanism

Most EU Member States (19 out of 26) apply a revenue cap approach in terms of revenue reconciliation. Italy and Poland are the only countries where a mixed approach is currently in place while Portugal uses a revenue cap approach based on economic incentives. Lithuania and Slovakia apply a price cap regime while Bulgaria and Latvia a cost-plus (under review).

Country	Price Control Mechanism			# of years over which rev. reconciliation is spread
	Revenue Cap	Price Cap	Other	
Austria	✓			**4**
Belgium	✓			**No fixed period**
Bulgaria			✓ **(Cost plus)**	**-**
Croatia	✓			**4**
Czech Rep			✓ **(Mixed approach Revenue-Price cap)**[73]	**1**
Denmark	✓			**1-3**
Estonia	✓			**Not applicable**[74]
Finland	✓			**7**
France	✓			**4**
Germany	✓			**5**
Greece	✓			**3**
Hungary	✓			**-**
Ireland	✓			**1**
Italy			✓ **(Mixed approach Revenue-Price cap)**	**4**
Latvia			✓ **(Cost plus)**	**-**
Lithuania		✓		**-**
Luxembourg	✓			**-**
Netherlands	✓			**1(time lag t+2)**
Poland			✓ **(Cost plus)**	**-**
Portugal	✓ **(Econ. incentives)**			**2**
Romania	✓			**1**
Slovakia		✓		**-**
Slovenia	✓			**3**
Spain	✓			**1-5**
Sweden	✓			**4**
UK	✓			**2**
Total	**19**	**2**	**5**	**-**

[73] *Revenue cap regime is applied on the domestic transmission while the price cap on the transit*
[74] *For household gas customers during 3 months following year*

Publication requirements

The regulatory period and the lead time between tariff setting/publication and its applicability differ among EU Member States. For the former there is a minimum of 1 year and a maximum of 5 years while for the latter a minimum of 1 weeks and a maximum of 24 weeks.

Country	Public availability of reserve prices	Lead time between tariff setting and its applicability
Austria	✓	**~ 14 weeks**
Belgium	✓	**2 weeks**
Bulgaria	×	**Min 1 week**
Croatia	✓	**2 weeks**
Czech Rep.	✓	**~ 4/5 weeks**
Denmark	✓	**~8/10 weeks**
Estonia	×	**4-12 weeks**
Finland	×	**-**
France	✓	**8 weeks**
Germany	✓	**10 weeks**
Greece	✓	**24 weeks**
Hungary	✓	**2 weeks**
Ireland	✓	**4 weeks**
Italy	✓	**4 weeks**
Latvia	×	**4 weeks**
Lithuania	✓	**4 weeks**
Luxembourg	×	**~ 8 weeks**
Netherlands	✓	**~2 weeks**
Poland	✓	**2-6 weeks**
Portugal	✓	**2 weeks**
Romania	✓	***No fixed lead time***
Slovakia	✓	**18 weeks**
Slovenia	✓	**4-6 weeks**
Spain	✓	***No fixed lead time***
Sweden	×	**2 weeks**
UK	✓	**8 weeks**

Tariff setting year

In most Member States, tariffs are set annually, although mostly within a multi-year regulatory period. Yet, the start of the tariff setting year varies substantially. According to the table below, four choices have been observed in EU Member States:

- 1st January until the 31st of December *(solar year)* (14 out of 26);
- 1st October until the 30th of September (*gas year)* (6 out of 26);
- 1st of July until the 30th of June (1 out of 26);
- 1st of April until the 31st of March (1 out of 26);
- For EE, FI and PL no information has been collected, in Latvia is currently under review.

Country	Tariff Setting Year	
	Tariff setting year	Tariff validity
Austria	**Jan – Dec**	**4 years**
Belgium	**Jan – Dec**	**4 years**
Bulgaria	**Jan – Dec**	**No fixed period**
Croatia	**Jan – Dec**	**3 years (until 2016)**
Czech Rep.	**Jan – Dec**	**1 year**
Denmark	**Oct – Sept**	**1 year**
Estonia	**Not defined**	**No fixed period**
Finland	**-**	**-**
France	**Apr – March**	**1 year**
Germany	**Jan – Dec**	**1 year**
Greece	**Jan – Dec**	**4 years**
Hungary	**Oct – Sept**	**-**
Ireland	**Oct – Sept**	**5 years**
Italy	**Jan – Dec**	**1 year**
Latvia	**Under review**	**-**
Lithuania	**Jan – Dec (until 2016)**	**5 years**
Luxembourg	**Jan – Dec**	**1 year**
Netherlands	**Jan – Dec**	**1 year**
Poland	**Not defined (current: Jan – Dec)**	**1 year**
Portugal	**July – June**	**1 year**
Romania	**Oct – Sept**	**1 year**
Slovakia	**Jan – Dec**	**5 years**
Slovenia	**Jan – Dec (until 2016)**	**3 years**
Spain	**Jan – Dec**	**1 year**
Sweden	**Oct – Sept**	**-**
UK	**Oct – Sept**	**1 year**

ANNEX C – REFERENCE PRICE METHODOLOGY

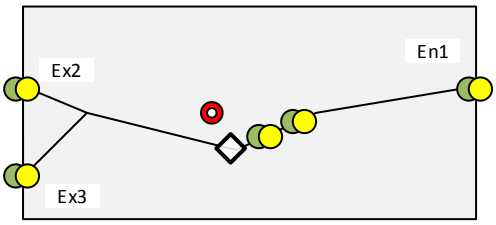
For the proper understanding of the analyses it is necessary to list a number of important assumptions carried out in the model. Those assumptions are based on the study and interpretation of the documents published by ACER and ENTSOG[75], and they helped to represent synthetically the larger and more complex systems adopted by the TSOs. Thus **none of the specific peculiarities of each TSO could have been strictly considered**. For the purpose of this study for the impact assessment it brings simplification without losing of generality. In particular:

- The simplified network representation used in the simulation is based on the identification of the most relevant Entry and Exit points: depending on network typology, some domestic points have been aggregated;
- Some existing contractual peculiarities have been not considered;
- Some particular combinations of Entry and Exit points have not been considered or differently managed;
- The average weighted distance is calculated using proportions based on the technical capacity;
- The Entry Exit Split is an output for the CWD (Variant B) and for the Virtual Point (Variant B);
- For Virtual Point based methodology (Variant A and B), a reference Node and reference entry and exit points have been identified;
- Tariffs reported in the text are calculated considering the path distances;
- The matrix approach for all the countries is based on the same *Standard Investment Cost Matrix* in relation to distances and pipeline types;
- Secondary adjustments, when needed, have been applied to meet the allowed revenues.

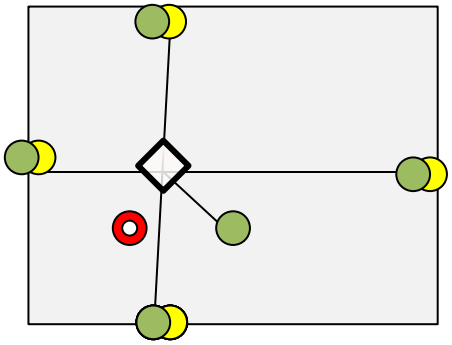
[75] *The model is based on many of documents provided by ACER and ENTSOG accompanying the FG TAR and NC TAR. Particular reference should be made to "Tariff Methodologies: Example" (2013).*

Figure 34: Simplified Network Representation

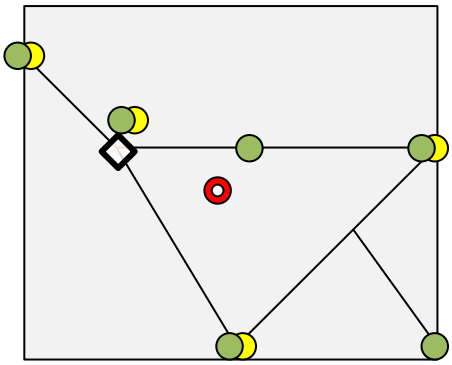
Simplified gas network for TSO A



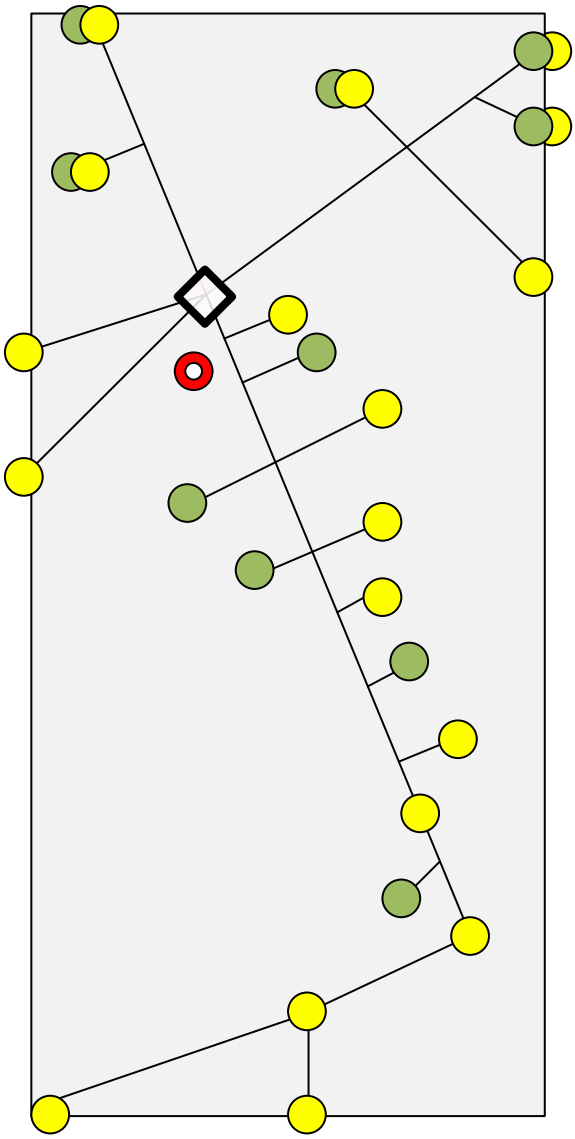
Simplified gas network for TSO B



Simplified gas network for TSO C



Simplified gas network for TSO D



Postage Stamp	
Capacity Allowed Revenues	$All.Rev. \times Cap.Split$
Revenues in Entry	$Cap.All.Rev. \times En.Split$
Revenues in Exit	$Cap.All.Rev. \times Ex.Split$
Entry Tariff	$\frac{En.Rev.}{Tot.En.Bk.Cap. + Tot\ En.Bk.Storage\ (\propto\ ^{76})}$
Exit Tariff	$\frac{Ex.Rev.}{Tot.Ex.Bk.Cap. + Tot\ Ex.Bk.Storage\ (\propto)}$
Entry Storage Tariff	$En.Tariff \times \propto$
Exit Storage Tariff	$En.Tariff \times \propto$

CWD - A	
Capacity Allowed Revenues	$All.Rev. \times Cap.Split$
Revenues in Entry	$Cap.All.Rev. \times En.Split$
Revenues in Exit	$Cap.All.Rev. \times Ex.Split$
Distance Matrix	$[\boldsymbol{km}]$ *"airline or path"*
Proportion on Booked Cap. En	$\frac{Bk.Cap.En_i}{Tot.En.Bk.Cap.}$
Proportion on Booked Cap. En	$\frac{Bk.Cap.Ex_i}{Tot.Ex.Bk.Cap.}$
Average Distance for each point	$\forall\ Point, \sum [\boldsymbol{km}] \times Prop.on\ Cap._i$
Weight for each point	$\frac{Bk\ Cap._i \times Avg.Dist_i}{\sum Bk\ Cap._i \times Avg.Dist_i}$
Revenues in each En. Point	$Rev.En\ \times Weight_i$
Revenues in each En. Point	$Rev.Ex\ \times Weight_i$
Entry Tariff in each point	$\frac{Rev.En_i}{Bk.Cap\ En_i}$
Exit Tariff in each point	$\frac{Rev.Ex_i}{Bk.Cap\ Ex_i}$

[76] $\propto$ is the discount for storage facility if any.

CWD - B	
Capacity Allowed Revenues	$All.Rev. \times Cap.Split$
Revenues in Entry	$Cap.All.Rev. \times En.Split$
Revenues in Exit	$Cap.All.Rev. \times Ex.Split$
Distance Matrix	$[\boldsymbol{km}]$ *"airline or path"*
Proportion on Booked Cap. *(No matter if En. or Ex.)*	$\frac{Bk.Cap._i}{Tot.Bk.Cap.}$
Average Distance for each point	$\forall\ Point, \sum [\boldsymbol{km}] \times Prop.on\ Cap._i$
Share of cost in Entry	$\frac{Bk\ Cap._i \times Avg.Dist_i}{\sum Bk\ Cap.En_i}$
Share of cost in Exit	$\frac{Bk\ Cap._i \times Avg.Dist_i}{\sum Bk\ Cap.Ex_i}$
Revenues in each En. Point	$Rev.En\ \times Share\ of\ Costs_i$
Revenues in each En. Point	$Rev.Ex\ \times Share\ of\ Costs_i$
Entry Tariff in each point	$\frac{Rev.En_i}{Bk.Cap\ En_i}$
Exit Tariff in each point	$\frac{Rev.Ex_i}{Bk.Cap\ Ex_i}$

VP - A	
Daily or Average Peak Flow in each point	$Flow_i$
Choice of a relevant NODE in the network	
Distance Matrix of each point from the NODE	$[\boldsymbol{km}]$ *"airline or path"*
Flow Distance Matrix	$Flow_i \times [\boldsymbol{km}]$
Sum of Flow Distances	$\sum Flow_i \times [\boldsymbol{km}]$
Determination of ***d*** factor. *d* equals the max flow in entry and exit.	$Split_{En} \cdot \frac{\sum max(0,\ En_i + d)}{Number\ of\ En} = Split_{Ex} \cdot \frac{\sum max(0,\ Ex_j - d)}{Number\ of\ Ex}$
Flow Distance Matrix corrected for ***d***	$Flow_i \times [\boldsymbol{km}], \forall\ \boldsymbol{d}$ **Flow distances might be negative after the modification**
Tariff in each point	$Flow_i \times [\boldsymbol{km}], \forall\ \boldsymbol{d}, \boldsymbol{Ann}, \boldsymbol{Exp}$ Flow distance multiplied by the annutisation and expansion factors
Rescaling Tariffs	Negative Tariff are increased to 0. Other tariff are rescaled in order to meet the Allowed Revenues

VP - B	
Geographical position on the map for each point	$[\boldsymbol{Lat}, \boldsymbol{Long}]$
Proportion on Technical Cap. *(No matter if En. or Ex.)*	$\frac{Tech.Cap._i}{Tot.Tech.Cap.}$
Weighted Geographical position on the map for each point	$[\boldsymbol{Lat}, \boldsymbol{Long}] \times Proportion$
Geographical position on the map for VP	$\sum[\boldsymbol{Lat}, \boldsymbol{Long}] \times Proportion$
Radians conversion of all the coordinates	
Distance for each point from the virtual point	ARCCOS(SIN(LatitudePoint1) x SIN(Average Latitude) + COS(LatitudePoint1) x COS(Average Latitude) x xCOS(AverageLongitude-LongitudePoint1)))*6378,137 *with 6378,137 = equatorial radius in kilometres*
Choice of two REFERENCE points (1 En. and 1 Ex)	
Ratios between distances (Entry)	$\frac{Dist.VP(En._i)}{Dist.VP(En._{Ref})}$
Ratios between distances (Exit)	$\frac{Dist.VP(Ex._i)}{Dist.VP(Ex._{Ref})}$
Total CWD in En.	$\boldsymbol{a} = \sum Dist\,VP\,(En_i) \times Proportion$
Total CWD in Ex.	$\boldsymbol{b} = \sum Dist\,VP\,(Ex_i) \times Proportion$
Total CWD	$\boldsymbol{a} + \boldsymbol{b}$
Entry Split	$\frac{\boldsymbol{a}}{\boldsymbol{a}+\boldsymbol{b}}$
Exit Split	$\frac{\boldsymbol{b}}{\boldsymbol{a}+\boldsymbol{b}}$
Revenues in Entry	$Cap.All.Rev. \times En.Split$
Revenues in Exit	$Cap.All.Rev. \times Ex.Split$
Tariff in the reference point En.	$Rev.En \times \sum \frac{Dist.VP(En._i)}{Dist.VP(En._{Ref})} \times Bk.En_i$
Tariff in the reference point Ex.	$Rev.Ex \times \sum \frac{Dist.VP(Ex._i)}{Dist.VP(Ex._{Ref})} \times Bk.\ Ex_i$
Entry Tariff in each point	$T.En._{ref} \times \frac{Dist.VP(En._i)}{Dist.VP(En._{Ref})}$
Exit Tariff in each point	$T.Ex._{ref} \times \frac{Dist.VP(Ex._i)}{Dist.VP(Ex._{Ref})}$

MATRIX	
Distance Matrix	$[\boldsymbol{km}]$ *"path"*
Standard Investment Matrix	$[\boldsymbol{Full\ Matrix\ Cost}]$
Capacity of pipeline derived from the Technical capacity	$[\boldsymbol{Pipeline\ capacity}]$
Unit transport cost matrix. Cost/km	$[\boldsymbol{UTC}] = [\boldsymbol{Full\ M}] \times [\boldsymbol{Pipeline\ capacity}]$
Transport cost Matrix	$[\boldsymbol{TC}] = [\boldsymbol{UTC}] \times [\boldsymbol{km}]$
Minimization to find tariff in each point	$\min \sum (T_{En} + T_{Ex} - [TC])^2$
Tariff rescaling	Tariffs are rescaled to meet the allowed revenues
Second tariff rescaling	Tariffs are rescaled to meet the correct balance as for the En. and Ex split in the allowed revenues

Cost Allocation TEST	
Identification of the Capacity reserve to Domestic Market	
Identification of the Capacity reserve to Cross-Border Market	
Selection of Domestic Exit Point and their Capacity	
Selection of Cross-Border Exit Point and their Capacity	
Revenues in Entry Domestic	$a = \sum T_{En,i} \times Cap._{Dom,En,i}$
Revenues in Entry Cross-Border	$b = \sum T_{En,i} \times Cap._{CB,En,i}$
Revenues in Exit Domestic	$c = \sum T_{Ex,i} \times Cap._{Dom,Ex,i}$
Revenues in Exit Cross-Border	$d = \sum T_{Ex,i} \times Cap._{CB,Ex,i}$
Tot Revenues Domestic	$a + c$
Tot Revenues Cross-Border	$b + d$
Cost drivers Identification	$Tech\ Cap._{Ex,i} \times \sum [\boldsymbol{km}] \times Prop.\ on\ Cap._{Ex,i}$
Total Cost on Domestic	$\sum Tech\ Cap.\ Dom._{Ex,i} \times \sum [\boldsymbol{km}] \times Prop.\ on\ Cap.\ Dom._{Ex,i}$
Total Cost on Cross-Border	$\sum Tech\ Cap.\ CB._{Ex,i} \times \sum [\boldsymbol{km}] \times Prop.\ on\ Cap.\ CB._{Ex,i}$
Ratio Domestic	$\alpha = \frac{a + c}{Tot\ Cost\ Dom}$
Ratio CB	$\beta = \frac{b + d}{Tot\ Cost\ CB}$
TEST	$\left\| \alpha - \beta \right\| \Big/ \frac{(\alpha + \beta)}{2}$

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