Infrastructures for natural gas
The challenges of internationalization

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The European natural gas infrastructure is facing the challenge of adapting itself to an increasingly international pattern of supply and demand, while the coordination of transactions is getting more and more complex. New patterns of trade are evolving, reflecting the consequences of the gradual development of an intra-European gas market. Developments on the demand and supply side, suggest a need for significant investments in pipelines, supplying gas from far away, but also in the midstream infrastructure interconnecting countries and connecting facilities like liquefied natural gas terminals and underground storage facilities to the existing networks. A (potential) lack of transmission capacity into and between the several consuming regions will dampen competition, causing higher gas prices and reducing the security of supply. This chapter aims contributing to an informed discussion about regulatory approaches that go beyond the notion of just a imposing liberalized market.

Whilst gas demand in Europe increases, its indigenous production is in decline. More and more gas will have to be imported from remote sources, mostly using long distance pipelines but also via liquefied natural gas (LNG). At the same time, a pan-European market for natural gas is expected to develop, which leads to new movements of gas in addition to the traditional flows from production direct to markets. Liberalization of the gas market has brought its own dynamics and requirements for infrastructure. Finally, the issue of security of supply has moved up on the policy agenda, promoting diversification and new infrastructure. Accommodation of these developments requires a significant expansion of the current European Union (EU) (interstate) transmission network for natural gas in the coming decade.

Yet, investments in transmission capacity materialize only slowly and are lacking support from, and coordination between, regulators and transmission system operators (TSOs). In its Gas Market Outlook (2008), the International Energy Agency (IEA) concludes that ‘in marked contrast to North American pipeline investment, investments in internal connections and new supply projects in Europe continue to
lag’. The result is that today, it is hardly possible to book cross border capacity for next year on any frontier in Europe.

Insufficient transmission infrastructure in the EU hinders potential suppliers to compete for market share. It may also frustrate investments in gas production and upstream transmission outside the EU, gas storages and LNG terminals. It therefore hampers the development of an integrated EU-gas market and negatively affects security of supply, while the ultimate goal of the liberalization has been to create an EU-gas market with free trade and competition throughout the EU, to the benefit of EU’s citizens.

This chapter addresses the main impediments to the development of the EU gas transmission network and notably its cross-border transit dimensions, inside and around the EU, focusing on the situations where market players have expressed an interest and willingness to pay. It will also offer recommendations on regulatory and coordination issues to overcome these problems.

Investments in cross border transmission

Investments in pipelines have significant economies of scale. TSOS organize open seasons, under which interested potential users are invited to make long term reservations of capacity, to attract as many customers as possible to create an optimal scale. These open seasons also help to treat potential users in a non-discriminatory manner. Open seasons in Europe attract significant market interest. While there are willing investors and shippers prepared to give long term capacity commitments, particularly cross-border investments have difficulties to materialize. Stakeholders can relate to the way gas transmission is regulated, and to the complicated and slow decision-making processes the main obstacles.

New transmission infrastructure is capital intensive. Once a pipeline is built, its costs are sunk. Consequently, the dominant risk of an investment in gas transmission is the market risk, that is, the risk that insufficient capacity will be contracted and/or the risk of tariffs that are too low and that do not allow for an adequate return on investment. According to elementary economics, this risk should be borne by the investor who decides to build the pipeline, who in turn will seek ways to manage and contain part of these risks by means of assurances from future users. By means of long-term capacity contracts, investors are able to reduce their market risk. This principle of shared risks has been the cornerstone of the successful and rapid development of the gas industry in Europe in the last decades. However, this was before tariffs became the domain of regulation. Nowadays, tariffs are regulated, and uncertainty over future regulatory actions poses a serious additional risk for investors (and for users). Indeed, regulators set new tariffs every 3 to 5 years. This
regulatory risk has become an important part of the investor’s risk.

Transmission companies apply market-based investment criteria

Unbundling has separated the transmission operations from the supply activities. In the past, investments in transmission were carried out by integrated companies and were made to support of commodity transactions along the gas value chain on the basis of integrated business economics.

Nowadays, unbundled transmission companies have to act as standalone entities. Consequently, investments in transmission should be based on their own merits and will be executed only if rewards and risks of the specific investment are balanced. The shareholders in Europe, generally private, require that the reward-risk balance and revenues are market based. Regulated returns based on assumptions made by national regulatory authorities (nras) about investment risks may not be sufficient to attract investments, if these investors judge the risks to be higher than assumed by the nra.

Also, transmission companies have less market insights than the integrated company of the past. Transmission companies know very well the past and current gas flows, but what about the future? This stresses the importance of allowing shippers and tsos to enter into long-term capacity commitments, as the former parties will have a better market insight due to their involvement in the commodity and transport market.

Investments and regulation

Since nras set transmission tariff methodologies and have responsibilities for tariff-adjustments, they have a dominant impact on the economics of a pipeline project, and regulation may easily become a determining and even prohibitive factor in two situations: first, when nras give insufficient support to an investment at the outset; and second, when the risk of future changes in rules and regulations, imposed during the economic life of the investment, is considered to be a substantial market risk.

Current (regulated) tariffs are often not sufficient to cover the costs of an investment. Consequently, a positive investment decision will not be taken, unless the nra makes it economically viable by allowing increases of some (particular the transit) or all of the current transmission tariffs. This is however a complicated decision for a nra, because usually, only some shippers/stakeholders will benefit from the investment, while other shippers and/or stakeholders, even those who are negatively affected by the investment, have to pay (part of) it. Lengthy regula-
tory decision processes with the risk of court appeal by harmed shippers and other stakeholders are the result.

A second issue is the handling of market risk. In the EU, NRAs usually apply a system of revenue regulation for transmission companies. According to this method, the revenues for a TSO are fixed in relation to its regulatory asset base and operational costs. This revenue capping causes however a shift of the market risks from the investor to the users. After all, with fixed revenue, less contracted capacity in certain pipelines will automatically result in higher tariffs in other pipelines. Hence the equation

\[ c_s \times t = r \]

where \( c_s \) is sold capacity, \( t \) tariff and \( r \) revenue. So, managing the market risk is no longer a matter between the investor and the user(s) of new infrastructure. The risk is put on all shippers. Thus, in the end, it becomes the responsibility of the NRA to make a judgment about a new investment, for which he has neither the responsibility nor the skills.

These problems are even more complex when the investment concerns cross border or transit capacity. Different national regulatory regimes, combined with national focuses by the NRA, make decisions about cross-border arrangements difficult, also because they may easily lead to conflicts between different national interests. Why should local shippers and consumers suffer the imposition of higher tariffs and thus pay (part of) the investment bill to enable international shippers and producers to transit gas to other countries? And why should NRA (applying revenue cap regulation) put the burden of market risk of such transit investments on the shoulders of local shippers and consumers?

Emphasis on asset sweating creates the wrong mindset

So far, the liberalization process has paid little attention to investments in new infrastructures. Asset sweating was the main paradigm, and NRAs have concentrated on cost efficiency and lowering tariffs and promoting trade and competition in the market place. Developing capacity allocation mechanisms, but more so applying entry–exit systems for transmission tariffs were resulting regulatory approaches. Certainly, entry–exit systems, with virtual hubs, helped the development of trading and are of primary importance for the market. Yet, they also cause cross subsidies between short distance and long distance cross border transports, thus (unintentionally) leading to cross subsidies between national and cross border transmission.

Controllable costs of gas transmission are relatively a minor portion of the over-
all cost for consumers. It is also questionable whether higher capacity utilization rates should be seen as a measure of the success of liberalization, as it ignores the reality of an evolving EU gas market. Developments associated with market liberalization and competition and the provision of choice to consumers, producers and shippers, which could benefit the performance of the market, should lead to a decrease in the usage of gas transmission capacities. Combined with the reduction in current supplies from depleting sources within the EU, which is likely to lead to redundancy in old supply systems, these developments would actually suggest that lower pipeline utilization should be seen as the measure of a successful transition of the EU market into a competitive market with short-term transactions. This line of thinking is supported by the experience in the United States (US), where utilization has decreased and which is seen as the most liquid and competitive gas market in the world.

Is there any lessons from the United States?

Investments in (interstate) infrastructure in the US are abundant. The US gas market is seen as the most liquid and competitive gas market in the world. Although the situation in the US differs from the one in the EU, it is worthwhile to compare both markets. While in the EU, NRA concentrate on cost efficiency, the federal US Energy Regulatory Commission (FERC) has as objective the 'promotion of the development of a strong and reliable energy infrastructure'. In the US, regulated returns and tariffs are such that they make investments attractive for transmission companies. On the other hand, in the US, the investors who share it with shippers by means of long-term capacity contracts take the market risk. Voluntarily, shippers and transmission companies may enter in non-regulated contracts with the objective to lower the costs along the gas chain and sharing the benefits with the transmission investor. Long-term transmission contracts are seen by FERC as sufficient proof that investments are in the interest of the consumers. This allows FERC to play a supportive role in the licensing processes and supports voluntary dedicated long-term contracts between pipeline companies and shippers.

Where from here?

The lack of investments in new gas infrastructures cannot be attributed to the market; it is an issue of regulatory design. The successes of the various open seasons processes demonstrate clearly the willingness of market participants to enable investments in new transmission capacity. However, the economics of these invest-
ments tend to be flawed by an inappropriate regulatory framework, imprisoned by its revenue and tariff setting practices, risk allocation and regulatory decision making processes. This is also demonstrated by the experience in the us where, under comparable circumstances, significant investments in the regulated transmission industry are taking place.

In order to overcome the present regulatory risks and flaws in the regulatory system, we have the following four recommendations. First, the risks and rewards for new cross border investments in transmission infrastructures should be for the market participants. Tariffs for new cross-border pipelines should be sufficient to make investments in new transit capacity economically attractive and take into account the duration of the capacity booked. Applying tariff adjustments at the time of new investments, based on Iruc, that is, reflecting actual capital expenditures (including economies of scale), and translating these costs into perpetual (that is, fixed, possibly indexed) tariffs in entry–exit-systems should be sufficient and rewarding for these investments.

Second, applying the non-discrimination principle in entry–exit tariff methodologies in a way that would be in the interests of the wider community of eu consumers, would allow to make distinctions in exit tariffs between international and regional users, facilitating effective cross-border flows in the eu gas market, including options for tsos transit-competition.

Third, (standardized) long-term transmission capacity contracts with fixed (indexed) tariffs should be allowed as a sound basis for investments in transmission capacity. Often these will underpin long term commodity contracts, which should be considered as essential instruments in enhancing long-term supply security for the eu. In order to allow the necessary flexibility for market parties throughout the value chain non-standardized, customized transmission contracts should be offered by tsos as well, under appropriate regulatory conditions in line with competition law.

Fourth, the Agency for the Cooperation of Energy Regulators (acer) as the new body for the cooperation between nra, should clearly get a straightforward mission to promote the development of a strong and reliable energy infrastructure in the eu energy market. Amending its mandate in that sense, acer should also get the necessary powers to intervene in cross-border issues in the wider interest of eu consumers.

These recommendations would imply a conversion of the current regulatory system to a set of rules that ‘promotes the development of a strong and reliable energy infrastructure’.1 This should lead to an environment where investments in

1. This is one of the main stated objectives of the us Federal Regulation and Oversight of Energy.
Cross border transmission infrastructure, sought by shippers, are facilitated. None of these recommendations is totally without problems; but these are not insuperable and small relative to the expected benefits, which would enhance the trading of gas in the EU, promote competition and add to the security of supply. Consumers would be the winners. We believe that these recommendations as to their content could be applied in the context of the exemption regime under article 36 of the new EU Gas Directive. Especially when cross-border projects are involved, the application of the article 36 requires a coordinated and mutually consistent approach by the NRAs involved. Additional interpretive guidelines from ACER to support NRAs and EU Commission decision-making would however be very helpful. As to the role and mandate of ACER, the present regulation, as it is already seen as a first step in the direction of a more effective regulatory system for intra-EU infrastructures, should however be amended and exploratory discussions and considerations could start already right now.

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Note

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