

IMPROVING REGULATION OF GAS INFRASTRUCTURE INVESTMENT

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OVERVIEW

For reasons of growing gas demand, as well as a shift in the supply pattern of gas (for example the nearing depletion of UK and Dutch gas fields in Europe) large additional investment is needed in gas infrastructures such as gas pipelines, LNG facilities and gas storage facilities. In this contribution we focus on investment in these types of assets. Common criteria to evaluate gas infrastructure investment from the perspective of public economics are efficiency (i.e. affordability of gas supply) and effectiveness (i.e. timely realization of supply). Whether certain gas infrastructure investment optimally meets these (and possibly other) criteria depends on the institutional environment and the process followed in realizing investment projects. We refer to this as the institutional or regulatory design. This covers technical regulatory aspects such as access regulation, type of tariff regulation (tariff conditions), unbundling requirements, but also procedural aspects. The main goal of this contribution is to identify improvements in the institutional and regulatory design affecting gas infrastructure investment.

METHODS

The main outcome of our research is a framework that assists policy-makers and regulators in deciding upon the institutional and regulatory design of gas infrastructure regulation with the goal of improving the value of investment for society as a whole. This framework has been constructed on a number of different methods. Firstly, we have performed a literature analysis on the regulation of infrastructures and the impact on investment. This involved different streams in literature such as neoclassical economic theory, incentive theory [1], and transaction cost economics [2]. In scanning relevant literature we have included relevant literature in other, in some aspects similar, infrastructure sectors such as electricity and ICT). Optimal investment in case of electricity and gas transmission has been analyzed by [3] and [4]. The literature analysis also involved a documentation of different regulatory approaches adopted in different jurisdictions around the world, for example the voter-based expansion of electricity transmission lines in Argentina and the merchant based financial transmission rights approach in some US electricity markets. Secondly, we have performed case study analyses of specific gas infrastructure investment projects [5, 6, 7].

RESULTS

We have successfully integrated the information gathered through different methods into a framework that is able to assist public decision-making on the design of regulation and regulatory processes for gas infrastructures. The framework can be validated by application to both the case study projects as well as other real-life gas infrastructure investment projects. For each gas infrastructure in a particular jurisdiction with a certain market the framework provides explicit guidance in designing regulation and the investment decision-making process. Recommendations for specific jurisdictions vary dependent on a number of important

parameters. These for example include the degree of market power on the gas wholesale market, the degree of competition for infrastructure services (a natural monopoly does not necessarily imply there is need for strict regulation [8]), the relative meshedness of the gas infrastructure (which is related to the degree of external network effects), the valuation of policy-makers for the sometimes conflicting goals of affordability and security of supply. Also the technicalities matter: the optimal design of regulation and regulatory procedures differs for international pipeline connections, national pipeline connections, large-scale gas storage facilities and LNG import and export facilities. Using this framework we can analyse the current regulatory regime in the European Union and identify the options for improvement. This results in different improvement options for different type of gas infrastructures.

CONCLUSIONS

We are able to draw conclusions on both a methodological level as well as a policy and regulatory decision-making level. On the methodological level we have demonstrated that our developed framework is successful in analysing gas infrastructure investment decision-making and identifying improvements in both content of regulation and the regulatory process. The framework was validated by case studies of gas infrastructure expansion projects in the UK and the Netherlands, and by general regulation on EU level. With respect to existing gas infrastructure expansion regulation, both content and process-wise, we have identified numerous improvements. We for example conclude that there is considerable scope for higher degree of customer involvement in investment decision-making. Moreover, there is a tendency for regulatory authorities to ‘micro-manage’ in regulating infrastructure investment projects. This gives rise to the question of responsibility for infrastructure operations. The goal of an optimal level of infrastructure investment may be unattainable despite the micro-management approach. Given the asymmetric impact of under- and overinvestment in gas infrastructures (the social cost of too little investment is larger than the cost of too much investment) it is recommended that regulatory authorities strive for a ‘good enough investment level’ and develop regulation and regulatory procedures accordingly.

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