

Technological Learning and Construction Costs of Gas Pipelines

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Increasing demand for clean fuels requires the development of natural gas industry. One of key issues for gas industry development is the costs for constructing or expanding the pipeline network. For that reason, it is important to look at cost reduction potential and factors that influence cost development for constructing gas pipelines. The overall goal of this paper is to provide a solid basis for estimating cost requirements for future gas pipeline development. This paper reviews the costs of existing gas pipelines in the United States and Europe and examines the impact of technological learning and other factors on construction costs. This paper demonstrates that gas transmission cost data for the USA for 1955-1970 suggest that the learning rate was around 30%; for each doubling of capacity costs were cut by 30%. From 1970 to 1985 any learning that might have occurred was counterbalanced by other factors such as overcapacity. Data on construction cost for onshore pipelines in the USA for 1985 to 1998 does not support the learning hypothesis. Costs remained more or less stable and were affected by the types of gas pipelines, economies of scale, and population density. For offshore pipelines the learning rate was around 24%. As for European gas pipelines, investments per cubic meter are subject to economies of scale with respect to the volume but not necessarily with respect to the length. In terms of recommendations for the planning of new gas infrastructures in Eurasia the evidence in this paper suggests that learning effects can be expected in the near future certainly if pipelines are built in the same geographical area as the offshore evidence from the USA shows. Any learning effects will, however, have to be balanced by other factors such as economies of scale, types of pipelines, and population density.