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# Underground cables versus overhead lines: Do cables increase social acceptance of grid development? Results of a contingent valuation survey in Germany

**Roland Menges[1], Gregor Beyer**

*Department of Macroeconomics, Institute of Management and Economics,*
*Clausthal University of Technology, Julius-Albert-Straße 6, 38678 Clausthal-Zellerfeld, Germany.*

**ABSTRACT**

Transmission network development plans have led to protests throughout Germany. Many studies present underground cables as a means to increase public agreement to transmission line construction. This paper investigates this thesis reporting results of a Contingent Valuation study conducted in late 2012 in four regions of Germany, which are affected by transmission line development in different ways. In an analysis of 1,003 household responses a majority of households favour underground cables (about 60%). Willingness-to-pay (WTP), however, changes the significance of the result as almost 50% of the households voting for underground cables are not willing to accept an increase in electricity prices to finance cable projects (free riders). Also, households stating a positive WTP for regional cables do not acknowledge larger supra-regional underground cable projects with higher WTPs in 60% of cases. This further underlines that cables are not supported unconditionally.

The empirical results presented in this paper need to be interpreted cautiously because of low response rates and non-representative samples that are typical for mail surveys. Based on the WTP-evaluation described, however, the thesis that cables increase acceptance of grid development has to be rejected.

***Keywords:***

Willingness-to-pay,
free-riding,
underground cables,
grid development,
contingent valuation,
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## 1. Introduction

Since the first development plans for the German electricity transmission network ("Netzentwicklungsplan") have been published after the nuclear meltdown in Fukushima 2011, the expenditure of German transmission capacities has attracted much public attention. Public discussion centers on the questions where and to what extent new transmission lines ought to be constructed. Another controversy revolves around two rivaling technological approaches: Local protest movements demand for overhead-lines to be replaced by underground cables and delay administrative approvals and construction works in many cases throughout Germany [1].

Based on case studies and stakeholder statements international studies conclude that the negative impacts from overhead lines necessitate the use of underground cables, although an energy policy perspective suggests that anticipated advantages related to cables are of temporary nature and might materialize to a lesser extent

* Corresponding author, e-mail: roland.menges@tu-clausthal.de