

Temporary Workers in Energy Construction Projects: Exploring Causes and Effects

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Temporary workers provide a substantial contribution to construction projects in the energy sector. We explore why they are so prevalent and what are the implications of employing temporary workforce for energy projects.

The total global energy investment is estimated to be USD 1,500 billion (IEA, 2020). A sizeable amount of this figure contributes to construction projects which, for example, employ nearly 499,000 workers in the US (USEER, 2020). Although it is difficult to estimate the incidence of temporary workers in energy construction projects, it is safe to assume that companies in the energy sector are increasingly relying on temporary workforce, in line with global trends (OECD, 2020).

At the firm-level, hiring more temporary workers can be a very tempting option, especially for small companies. For example, consider a small supplier in the energy industry that just won a project from a client, so large that they cannot fulfil it with their current resources. Not knowing whether the supplier will be able to win more contracts once that project is finished, they may hire temporary staff for the duration of the project.

Academic literature investigated the employment of temporary workers in relation to demand and supply uncertainty (Milner and Pinker, 2001), cost reduction and competition (Allan, 2002), entrepreneurial growth (Cardon, 2003), and access to training (Finegold *et al.*, 2005). Although the topic is of current relevance to practice, academic contributions on temporary

workforce in construction projects or in the energy sector are very limited.

For this reason, we investigated the causes leading to the employment of temporary workers in energy construction projects and the effects of hiring temporary workforce for these projects. In our analysis, we considered both construction workers and shop-floor operatives involved in the manufacturing of components employed in the construction of energy plants. From the analysis, we excluded highly skilled professionals involved in consultancy and engineering support for these projects.



As our study is exploratory in nature, we investigated this subject with the help of a group of 8 subject experts, most of which working for companies involved in energy construction projects. We employed the hybrid Delphi technique which involved virtual discussion and interaction among the experts, followed by questionnaires to validate the results (Landeta, 2011).

Findings

The experts highlighted that uncertainty is the main cause leading to the employment of temporary workers in energy construction projects. They also identified the role of labour supply agencies in facilitating the hiring of temporary workforce.

Key causes

The experts identified the following main causes leading companies to employ temporary workers in energy projects:

- *Market uncertainty is a key reason for employing temporary workers.* In particular, the tender mechanism to award contracts commonly employed in the sector can contribute to making the demand more uncertain.
- *Supply uncertainty can play a role in steering companies towards the employment of more temporary workers.* This is particularly true for those workers who are required for specific technical roles that can be in short supply.
- *Outsourcing the workforce recruitment activities to an external labour supply agency facilitates the use of temporary workers.* Agencies benefit from economies of scale which allow them to focus on the recruitment of workers with specific skillsets.

Effects of using temporary workers

The effects of the use of temporary workers are diverse. Our conversations with the experts primarily focused on company growth, productivity, and workers' skills. The experts identified the following main effects arising from the employment of temporary workforce in energy projects:

- *Employing temporary workers can enhance short-term growth.* Temporary workers can help companies increase their workforce to match the expansion of a growing sector. Managing and integrating temporary and permanent employees seems key in achieving this objective.

- *Employing temporary workers may weaken long-term productivity.* Routinely training and re-training new starters can be one of the reasons for this issue.
- *Employing temporary workers may disincentivise investment in the workers skills.* Companies are not incentivised in providing training and development beyond the immediate needs of the temporary employment. However, the experts emphasised that, because of stringent quality and safety requirements, temporary workers involved in energy projects must spend a significant amount of time in training, which may be provided by contractors.

We also discussed with the experts the effects of employing temporary workers on the costs and the quality of energy construction projects. However, the implications of hiring temporary workforce on costs and quality seem less clear.

Previous literature, including Milner and Pinker (2001), supports expert opinion on the causes for hiring temporary workers. Although the literature highlights that companies employ temporary workers to reduce costs (Allan, 2002), this insight was not reinforced by our conversations with the experts. The expert opinion on the effects of temporary workers on growth and skills seems consistent with the literature (Cardon, 2003 and Finegold *et al.*, 2005).



In summary, we identified some of the causes leading to the employment of temporary workforce and the implications of hiring temporary workers with a specific focus on energy construction projects. More research is needed to better understand the relationships among these factors and identify implications for practice.

Future research potential

We outline some directions for future research.

At the firm-level, academics could develop models to link the uncertainty arising from the tender mechanism to award contracts and the employment of temporary workers. The models can inform decision-making on contract design and workforce employment.

At the sector-level, academics could investigate the relationship between the employment of temporary workers and the growth and productivity of companies operating in the energy sector. In analysing this relationship, academics should also consider the level of investment in the training of temporary workers, both necessary and vocational. The results of these studies can inform organisations' strategic decisions on workforce employment.

At the regional or national level, academics could explore the implications of temporary employment on the workers' ability to gain the skills required for career advancement. The results of these studies can inform policymakers.

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References

- Allan, P. 2002. The contingent workforce: challenges and new directions. *American Business Review*, **20**(2): 103-110.
- Cardon, M. S. 2003. Contingent labor as an enabler of entrepreneurial growth. *Human Resource Management*, **42**(4): 357-73.
- Finegold, D., Levenson, A., and Van Buren., M. 2005. Access to training and its impact on temporary workers. *Human Resource Management Journal*, **15**(2): 66-85.
- IEA 2020. *World energy investment 2020*. IEA, Paris. Available at: <https://www.iea.org/reports/world-energy-investment-2020>
- Landeta, J., Barrutia, J. and Lertxundi, A. 2010. Hybrid Delphi: A methodology to facilitate contribution from experts in professional contexts. *Technological Forecasting & Social Change*, **78**(9): 1629-1641.
- Milner, J.M. and Pinker, E.J. 2001. Contingent labor contracting under demand and supply uncertainty. *Management Science*, **47**(8): 1046-1062.
- NASEO and EFI 2020. *2020 U.S. energy & employment report*. NASEO and EFI. Available at: <https://www.usenergyjobs.org/s/USEER-2020-0615.pdf>
- OECD 2020. *OECD employment outlook 2020: worker security and the COVID-19 crisis*. OECD Publishing, Paris. Available at: <https://doi.org/10.1787/1686c758-en>

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