

Factors Affecting the Diffusion of Energy Efficient Technologies

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Introduction

Due to the escalating population and the resulting increase in energy use, the world is faced with the challenge of energy crisis. To mitigate this energy crisis, further innovation, with successful adoption and diffusion of energy efficient technologies is imperative. A review of available literature indicates that the expected trend towards higher efficiency in energy consumption has not been achieved in spite of innovations and improvements made through energy efficient technologies. This imbalance points towards the lack of proper adoption and diffusion of these technologies. Some of the market barriers and market failures which might theoretically impede the diffusion of new technologies have been investigated in this research.

Goal and Objectives

The goal of this research is to identify and analyze the various factors that influence the diffusion of energy efficient technologies. This research revisits the methods that have been previously used to determine responsible factors in other diffusion processes. Once the factors have been identified, it became evident that some factors could be improved and will then act as accelerators in the diffusion process. Then again, other factors tend to remain as barriers, which can be reduced to some extent, but will never be fully removed. The research investigates the reasons behind these factors and identifies the root cause of the problem and categorizes them within three groups – financial, informational, and behavioral factors.

Conclusion

After analyzing all the factors and looking into the causal relationship of those factors with the diffusion of energy efficient technologies, it can be concluded that financial cause guides most of the factors. As a result only continuous motivation for research and development to find answer for the diffusion of energy efficient technology will not serve the purpose. To make it effective, economic motivations in the form of escalating price of energy and diminishing price of technological alternative due to innovation should be introduced in the market. Along with the economic incentives, policies and Government mandates also play critical role in the diffusion of energy efficient technologies. However, due to the diverse nature of market failure it will not be wise to depend only on one policy instrument to achieve the cost effective diffusion of energy efficient technologies. A precise package of policy instruments will be more effective to overcome the market failures and facilitate the successful diffusion of energy efficient technologies.