

Analysis of Incentives for Electricity Generation from Solar Energy in Turkey

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Extended Abstract

The increasingly use of energy have triggered need for energy resources. Traditional sources used to product energy have rapidly depleted in the whole world. Also, some of these resources due to emission of harmful gases have caused great harm to the environment. Thus, countries have sought alternative energy sources. Renewable energy sources have become preferred because they are both renewable and friendly with the environment (Yenneti, 2015: 994). Worldwide, widely used renewable energy resources are wind, water, sun, geothermal, biomass and so on (Herche, 2017: 592). Since almost every country has at least one of these sources, the increasing use of these resources will also contribute significantly to the countries' energy supply security. Studies are being carried out to make renewable energy sources available in daily life all over the world. The costs of the technology in this area are being tried to reduce to the commercially viable levels. Therefore, various supports (for example, feed-in-tariffs, shares with commercialization of certificates, capital subsidies, auctions, and net metering etc. (Aquila et. al., 2016: 1090)) are being provided to producers and consumers that use renewable energy sources, to reduce costs and to promote use (Alizamir et al., 2016: 52). Various incentives are also given in Turkey to benefit from the advantages provided using renewable energy resources. One of these incentives is feed-in-tariffs which are price-based policies. They are combined with a purchase obligation on utilities. And, these policies affect the cost of renewable energy per kWh generated (Rio & Gual, 2006: 995). Thus, a variety of facilities are being provided to expand the use of renewable resources, also both to manufacture domestically equipment needed for energy production from these sources and to increase the share of renewable resources in consumption. For this purpose, it is required not only feed-in-tariffs but also administrative procedure, grid connection, etc (Rio & Gual, 2006: 1000).

The aim of the study is to determine whether the incentives for electricity production from solar energy, one of the renewable energy sources, are adequate in Turkey. Electricity generation from solar energy is widely seen in countries such as China (Zhao et. al., 2016), Germany, Spain (Rio & Gual, 2006) and Italy. Incentives in those countries are compared with Turkey's incentive mechanism, and it is investigated by using the calculations related to the cost of solar panel installation, its lifespan and payback period in Turkey. And, it is examined whether incentives provided to increase this technology deployment have reached the desired level. Therefore, it seems that incentives provided in the field of

solar energy have not yet reached the sufficient level in terms of both producers and consumers in Turkey. In the short run, they should be increased to reduce costs which it is necessary for the implementation of the projects. Because the incentives compensate for the cost disadvantages (Tamas et. al., 2010: 4043). In the long run, the high level of incentives may be reduced thanks to cost advantage of solar power technology deployment.

References

- Alizamir, S. & F. Vericourt & P. Sun (2016), "Efficient Feed-In-Tariff Policies for Renewable Energy Technologies", *Operations Research*, 64(1), 52-66.
- Aquila, G. & E.O. Pamplona & A.R. Queiroz & P.R. Junior & M.N. Fonseca (2016), "An overview of incentive policies for the expansion of renewable energy generation in electricity power systems and the Brazilian experience", *Renewable and Sustainable Energy Reviews*, 70, 1090-1098.
- Herche, W. (2017), "Solar Energy Strategies in the US Utility Market", *Renewable and Sustainable Energy Reviews*, 77, 590-595.
- Rio, P. & M.A. Qual (2006), "An Integrated Assessment of the Feed-in Tariff System in Spain", *Energy Policy*, 35, 994-1012.
- Tamas, M.M. & S.O.B. Shrestha & H. Zhou (2010), "Feed-in Tariff and Tradable Green Certificate in Oligopoly", *Energy Policy*, 38, 4040-4047.
- Yenneti, K. (2015), "Industry Perceptions on Feed in Tariff (FiT) Based Solar Power Policies - A Case of Gujarat, India", *Renewable and Sustainable Energy Reviews*, 57, 988-998.
- Zhao, Z. & Y. Chen & R. Chang (2016), "How to Stimulate Renewable Energy Power Generation Effectively? - China's Incentive Approaches and Lessons", *Renewable Energy*, 92, 147-156.