

Underlying Drivers and Barriers for Solar Photovoltaics Diffusion in Energy Transition Latecomers: The Case of Vietnam

Thang Nam Do, Australia National University, +61468393007, thang.do@anu.edu.au
Paul Burke, Australia National University, +61261256566, paul.j.burke@anu.edu.au

Overview

Despite having considerable potential for solar energy, Vietnam was slow in adopting solar photovoltaics (PV). Recently, however, Vietnam has remarkably increased its installed capacity of solar photovoltaics, from 10 MW in 2018 to over 4,500 MW by June 2019. With this, Vietnam has overtaken Thailand to have the largest solar PV capacity in Southeast Asia. Vietnam's solar boom can be largely attributed to an introduction of a feed-in tariff (FIT) of US\$93.5 per MWh under Prime Minister Decision 11/2017/QĐ-TTg dated 11/4/2017 (Nguyen, 2019). However, this FIT is only a direct driver. Vietnam also witnessed substantial changes in socioeconomic settings that function as indirect drivers and the overcoming of barriers (Baulch, Do, & Le, 2018; Needfjes, 2017; Thanh Tu Tran, 2016; Urban, Siciliano, Wallbott, Lederer, & Nguyen, 2018; Zimmer, Jakob, & Steckel, 2015). These include increasing electricity demand associated with industrialisation and urbanisation, the government's energy and climate change policies, increasing public awareness about and demand for environmental quality, international influences via energy financing and technical assistance, and rapid solar PV technology and market development. These important factors have not yet been thoroughly studied to identify underlying drivers as well as barriers for further diffusion of solar PV.

This paper aims at providing insights into the rapid solar photovoltaics diffusion in Vietnam by answering two main questions:

- 1) What are underlying drivers of the recent solar PV boom in Vietnam?
- 2) How can solar PV be further developed?

Methods

The paper uses a political economy analysis framework based on a case study approach. Economic, social, and institutional dimensions are analysed to identify drivers and barriers of the solar PV diffusion (Burke et al., 2019). Three criteria of cost-effectiveness, equity and institutional feasibility (IRENA, 2012) are then employed to determine potential policy instruments for further promoting solar PV in Vietnam. Data sources are drawn from reviewing academic and non-academic documents including government reports and non-governmental publications. This literature review is supplemented by semi-structured interviews of policymakers, representatives of international organizations and non-governmental organisations and experts from university and research institutions.

Results

It is found that decreasing solar PV costs and the government's enabling policies such as a solar PV tax exemption and private sector promotion were supporting factors for understanding the effectiveness and efficiency of Vietnam's FIT. With respect to triggering factors, the government's determination to ensure sufficient local electricity supply to cope with increasing power demand and delays in coal and gas power development projects, together with increasing public demand for local environmental quality, are the two main underlying drivers of the introduction of the FIT. Other drivers include the government's green economy policy and reduced fossil fuel subsidies. To a lesser extent, advocacy for renewable energy from international organisations and climate change policy have played catalyst roles in solar energy development. To further tap its solar PV potential, Vietnam needs to overcome regulatory, technical and financial challenges with locally tailored policies to provide a more enabling environment for solar PV development. Among potential policy instruments, a carbon emission fee is found to be highly relevant.

Conclusions

Several policy implications are drawn from this study. First, domestic socioeconomic factors can be more dominant than international and climate change related factors in driving energy transition. Second, the transition to renewable energy in developing countries can be highly influenced by public demand for better environmental quality. Third, a policy mix comprising incentives for renewable energy development as well as a carbon tax and fossil subsidy

removal is needed for ongoing successful diffusion of renewable energy. Fourth, latecomers in energy transition can leapfrog by taking advantage of rapidly decreasing renewable energy costs and increasing public support for clean energy deployment. These implications could be relevant at both national and international energy transition policy discussions.

References

- Baulch, B., Do, T. D., & Le, T. H. (2018). Constraints to the uptake of solar home systems in Ho Chi Minh City and some proposals for improvement. *Renewable Energy*, *118*, 245-256. doi:10.1016/j.renene.2017.10.106
- Burke, P. J., Widnyana, J., Anjum, Z., Aisbett, E., Resosudarmo, B., & Baldwin, K. G. J. E. P. (2019). Overcoming barriers to solar and wind energy adoption in two Asian giants: India and Indonesia. *Energy Policy*, *132*, 1216-1228.
- IRENA, I. R. E. A. (2012). *Evaluating policies in support of the deployment of renewable power*. Retrieved from <https://www.irena.org/publications/2012/Oct/Evaluating-policies-in-support-of-the-deployment-of-renewable-power>
- Needfjes, K. D., Thi Thu Hoai. (2017). *Towards a Socially Just Energy Transition in Viet Nam: Challenges and Opportunities*. Retrieved from Hanoi, Vietnam: <https://www.fes-asia.org/news/towards-a-socially-just-energy-transition-in-viet-nam/>
- Nguyen, T. P. (2019, 17/07/2019). Solar power a victim of its own success. *Vietnam Investment Review*. Retrieved from <https://www.vir.com.vn/solar-power-a-victim-of-its-own-success-69350.html>
- Thanh Tu Tran, S. F., Toshihiko Masui. (2016). Realizing the Intended Nationally Determined Contribution: The Role of Renewable Energies in Vietnam. *Energies*, *9*(18). doi:DOI:10.3390/en9080587
- Urban, F., Siciliano, G., Wallbott, L., Lederer, M., & Nguyen, A. D. (2018). Green transformations in Vietnam's energy sector. *Asia & the Pacific Policy Studies*, *5*(3), 558-582. doi:10.1002/app5.251
- Zimmer, A., Jakob, M., & Steckel, J. C. (2015). What motivates Vietnam to strive for a low-carbon economy? - On the drivers of climate policy in a developing country. *Energy for Sustainable Development*, *24*, 19-32. doi:10.1016/j.esd.2014.10.003