

## ABSTRACT

Pakistan is an energy deficient country, however, it has a huge untapped potential. Renewable energy sources play an immense role in electricity generation, and nowadays there is surge in solar power production. So, the number of firms in the solar sector has drastically increased. This research assesses the existing technological capabilities of the solar firms in Sindh, Pakistan for their entry in the Global Value Chain (GVC) of the solar sector. Furthermore, this research explores the evolution of the solar sector in Sindh, Pakistan through an investigation of institutional development. Additionally, it evaluates the technological capabilities of solar firms located in the province of Sindh through using the technological capabilities audit tool (Bessant, Rush & Hobday, 2000). Moreover, the audit tool divides firms into four levels and contains nine stages of technological capabilities. For the evolution of solar sector, the data has been collected from the reports and policies, and for the assessment of technological capabilities of solar firms, a questionnaire survey was utilized for 50 firms working in Sindh. According to the data analysis, Pakistan Council of Renewable Energy Technologies (PCRET), Alternative Energy Development Board (AEDB), and National Electric Power Regulatory Authority (NEPRA) have played an enormous role in the evolution of solar sector. Moreover, the data reveals that 90 percent of the solar firms are in Level 3, and remaining 10 percent are Level 2 firms. However, there was absence of Level 1 and Level 2 solar firms. The results of this study depict that amelioration in technological capabilities is required, and the firms in Sindh, Pakistan especially lag behind in linking to the external sources. Therefore, the solar firms in Sindh, Pakistan can enter in the GVC through devising policies and discrete plans to develop external link for this sector to grow.

**Keywords:** Technological Capabilities, Solar Sector, Global Value Chain, Pakistan, Firm