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Challenges to Energy Security

The vast majority of Small Island Developing States (SIDS) are net energy importers of fossil fuels and have historically been so (Timilsina & Shah, 2016; Niles & Lloyd, 2013). Being heavily economically indebted, fuel importation takes a decisive toll on national budgets – for example, Palau (28% of GDP), Guyana (21%) and Maldives (19%) (2013 data, Raghoo et al., 2018). The main energy utilization continues to be power generation and transportation sectors. Many islands with tourism and hospitality dependent economies require high energy intensities to sustain these industries and others such as manufacturing and agriculture.

Current State of Affairs

Despite the Covid-19 pandemic, SIDS continue striving to address their energy challenges and foster sustainable economic development pathways. Renewable energy technologies combined with steadily improving energy efficiency can achieve transformational socio-economic impacts (Timilsina & Shah, 2016; Shah et al., 2021). That said, the gap between fossil fuel dependency and more diversified energy portfolios or even full renewable transition is significant. The total installed capacity of renewables from all SIDS accounted for approximately 5.3GW at the end of 2019, of which about 30% was installed since 2014. These new installations include more than 1.1 GW of solar photovoltaics, 380 MW of wind, 60 MW of hydropower, and 215 MW of bioenergy.

Aterridge and Savvidou (2019) analyzed whether energy aid to tackle climate change supported more renewable energy deployment and found that it was unevenly spread between SIDS, on a total and a per capita basis, with little correlation between the allocations made to individual countries and either their income or energy access gaps; improvements in electricity access still with low disbursement rates, suggested implementation problems. In sum, throwing more finance at the challenge has not been an answer.

While there remains significant work to do, there has been increased acknowledgement by the international community that the clean energy transition in SIDS can be accelerated through both technical and financial cooperation:

Opportunities and Barriers

Still, due to SIDS’ small size, renewable energy projects also tend to be relatively small and may not attract ideal developers. The expected pipeline of future renewable energy projects also becomes limited, with

most considered as stand-alone, reflective of high costs and low financial sustainability. There is also limited access to financing security or guarantees that pose risks for renewable energy deployment by the private sector. Limitations in credible and reliable energy data for planning and forecasting also makes investors uneasy to commit (Ioannidis et al., 2019).

Most SIDS are theoretically able to leverage a number of renewable energy technologies well suited to limited space, their geology and climate. Solar and wind energy are the usual suspects and well justified (Timilsina and Shah, 2016). For example, Jamaica is continually expanding wind energy, starting with 20.7 MW in 2004 to 62.7 MW in 2016, accounting for six percent of the grid’s installed capacity. Hydropower also holds potential in mountainous islands as do some already cultivated biofuels feedstocks such as coconut palm oil (Kuang et al., 2016). Ocean, tidal, and wave energy may also have good potential. Geothermal energy is being actively developed in some tectonically well positioned islands such as those of the Eastern Caribbean (Koon et al., 2021).

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Atteridge A & Savvidou G (2019). Development aid for energy in Small Island Developing States. Energy, Sustainability and Society, 9:10, 1-16.