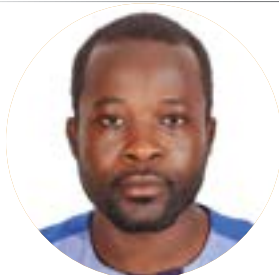


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Transition pathways towards 100% sustainable electricity generation for UK using demand and supply-side determinants. Achievable in Italy and Ghana

In recent years, Ghana has made significant progress in provision of electricity to the citizenry. On the otherhand, Italy has seen consistency in the provision of stable electricity nationwide over decades with increase in electricity consumption bill. Despite achieving such milestones, nearly 30% of Ghana's population have no to limited access to sustained electric power as at 2019. Decision makers in the energy sector are baffled by two issues; providing access to electricity for everyone, and building a climate-resilient energy system. Household adoption of renewable energies, particularly from solar, and cultivation of energy conservation practices, are two implementation-ready measures. The levelized cost of solar energy is unattainable for the average income earner in Ghana, and Ghanaians are also known to waste energy due to improper handling of the limited energy supplied. Thus, the viability of implementing subsidized solar energies and conservation measures must be evaluated, but such research is rare. Here we leverage the electricity power subsidization the government of Ghana implemented during the coronavirus-induced lockdowns [in April-September of 2020] and citizenship participation interviews, to assess viability of subsidizing solar energy, for average household income earners, in Kumasi metropolis in Ghana. We adopt probabilistic sampling methods to select 1700 households that bought electric power from 100 sampled vendors. We track the patterns of electric power demand of the 1700 households for a period of six months prior to the subsidization policy (i.e., October 2019 - March 2020) and the six months during which the policy was implemented (i.e., April - September 2020). The tracking was done without the consent of the sampled households; this helped minimize biases such as respondents exaggerating the amount of electric power demanded. We conducted formal interviews on the sampled households for extra data that were used to control for other biases such expansion in family size during the selected timelines, addition of electronic gadgets hitherto absent in the house, etc., all of which could alter demand. We adopt contingency valuation to assess households' willingness to pay for the difference in levelized cost of solar energy should the government subsidize it. We find that the subsidization policy along with the cap in electric power consumption required for households to access the full benefits therein caused respondents to decrease their power consumption by 7% [on the average]. A whopping 83% of the respondents are willing to pay, on monthly installments, the gap between the total cost of solar panels and subsidies the government would provide. We find that their willingness is driven by the prospects of access to uninterrupted electric power supply, contribution to saving the environment and improvement in wellbeing. Thus, government subsidies guided by well-designed outlines, could help Italy and Ghana transform their electric power system in favor of improving human wellbeing and a sustainable green energy system in Italy and Ghana.

Keywords—domestic electric power demand, energy conservation, energy subsidization, average income earners, willingness to pay, coronavirus pandemic, Italy, Ghana.

Biography

Godfred Kwabena Brantuo Adjei A young professional with BA. Economics degree and extensive knowledge in Mathematics, Statistics, Geography, Research, Qualitative and Quantitative data analysis and forecasting. Has 10+ years of work experience specifically in Research/data Analysis and Business Management. Has achieved much success in Business proposal writing, conducting full research/projects for firms and businesses and business forecasting. Has also succeeded in playing key managerial roles as the CEO of Hub KBS co. ltd (www.hubkbs.com) and as a Research assistant at Hayfords Law Company. The use of critical thinking, innovation, Information Technology, and research/data analysis skills helped in recommending the most effective and efficient mode of publicity to Upswing Music Company in 2017 which brought much improvement in sales after the company using my research findings and recommendations.

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