Achieving Sustainable Electricity Through Renewable Energy Development in the Gambia: Regulatory and Policy Considerations

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1 Introduction

The sustainable development goals (SDGs) has been adopted by international community as a world vision agenda to bring about sustainable global development by the year 2030. This international development agenda (2030 Agenda), adopted in 2015, consists of 17 broad aims. These vary from eradicating poverty and hunger, energy, promotion of health and well-being, gender equality, combating climate change to revitalising global partnership for sustainable development [1]. Among these 17 goals is the call to ensure access to affordable, reliable, sustainable and modern energy for all. This is the goal seven of the SDGs (SDG 7) [1]. Vital to achieving SDG 7 is the appeal to increase significantly the share of renewable energy (RE) in the global energy mix and it relies upon 'enhance international cooperation to facilitate access to clean energy research and technology, including RE, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology' [1].

The year 2020 marks the fifth year into the 15-year goal plan of the 2030 Agenda and the general question being observed thus far is whether the global community is on course to achieve the SDGs by 2030. More specifically, can SDG 7 be achieved by least developing countries such as The Gambia by 2030? Recent data show that the world is making progress towards achieving SDG 7, but will fall short of meeting the targets by 2030 at the current rate of ambition [2]. It is projected that 92% access rate would be reached by 2030 [2]. Without sustained and improved policies and strategies, it is estimated that 650 million people will be without access to electricity in 2030 with 89% of those living in Sub-Saharan Africa [3, 4]. Africa as a whole has the richest solar resources in the world but has only installed 5 gigawatts (GW) of solar photovoltaics (PV), which is less than 1% of global capacity [5, 6]. Can Gambia through its RE policy and law development provide access to affordable, reliable, sustainable electricity to its citizens? In order to attempt an answer to this question, an examination of the Gambian RE legal, regulatory and policy frameworks have to be conducted and the issues therein examined. The purpose of this paper thus is to examine whether The Gambia can achieve its RE development target from regulatory perspective. Following this introduction, Sect. 2 presents the electricity outlook of Gambia. Section 3 takes an overview of the Gambian RE law and policy while Sect. 4 examines regulatory issues that are impeding the achievement of the country's RE development goals. Conclusion and recommendations are drawn in Sect. 5.

2 The Electricity Outlook in Gambia

The Gambia is the smallest country on mainland Africa. It is situated in West Africa on the Atlantic coast and surrounded by Senegal. The main source of energy supply in The Gambia is biomass (wood-fuel and charcoal). However, the main energy sources for electricity production in the country is heavy fuel oil (HFO) and diesel oil that are mostly imported into the country [7]. Due to the importation of these energy products for the production of electricity in the country, The Gambia has one of the highest electricity tariffs within the sub-Sahara Africa [7, 8]. Current electricity tariff is at $0.26/ kilowatt hour (kWh)

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A. Sayigh (ed.), *Sustainable Energy Development and Innovation*, Innovative Renewable Energy,
https://doi.org/10.1007/978-3-030-76221-6_66

[9]. Foreign exchange is also a major contributing factor to the high electricity tariff; and the country, due to import dependency, is susceptible to price volatility in global oil prices.

The World Bank reports that 'The Gambia's inadequate energy supply is a binding constraint on inclusive growth and competitiveness, and businesses in general often report unreliable and expensive electricity as one of the major constraints of growth, especially hotels, who are forced to depend on expensive backup generators' [10]. There is a wide gap between installed capacity and available electricity supply in the country. Installed capacity countrywide is 99 megawatts (MW) of which 55 MW is available. For the greater Banjul area, installed capacity is 88 MW yet 45 MW remains available [9]. Electrification in The Gambia has an estimated rate of 35% for a population of 2.1 million people [9]. For the Banjul area, 60% of the population has access to electricity whereas only 6% has access in the outlying provinces such as in the North Bank and Central River regions [11]. The perennial inadequacy of electricity supply in The Gambia has led to widespread blackouts, with some parts of the greater Banjul Area and other provinces throughout the country reporting only 2–3 hours of power per day [8]. Insufficient electricity supply and frequent blackouts continue to hinder effective governance and impede private sector growth, and hence, economic and social growth are being stifled [12].

To improve accessibility to electricity and the security of its electricity supply, The Gambia is turning to renewable energy sources (RES) to diversify and bolster its energy supply sources for electricity production. RE represents a tremendous opportunity for The Gambia, but it is currently underexploited. The government, however, intends to utilise the RES potential for electricity production. In this regard, the nation in 2005 adopted a policy instrument—the Energy Policy (2005)—setting the targets for RE integration into the nation's energy mix for electricity production. In 2018, The Gambian Government adopted its National Development Plan (NDP) 2018–2021 [9], which sets the national agenda and goals—including RE targets—to be achieved by the end of 2021. To provide both legal and regulatory environments within which policy goals for RE will be achieved, The Gambian RE law—*Renewable Energy Act 2013* (RE Act 2013) was adopted in 2013 [13].

3 The Gambian RE Law and Policy

3.1 Energy Policy (2005)

The objectives of The Gambian Government concerning the energy sector and the RE sub-sector are contained in the Energy Policy (2005). The primary objective for RE development is to 'ensure the promotion and utilisation of renewable energy in support of sustainable development in the country' [7]. To achieve this overarching aim, the following specific objectives are to be achieved:

- Promoting the utilisation of renewable forms of energy such as solar, wind and biomass.
- Promoting the use and develop, to the extent possible, a domestic production capacity for RE fuels and technologies.
- Ensuring the sustainable supply of RE fuels/device/technologies at competitive prices through private sector participation [7].

3.2 The Gambia National Development Plan (NDP) 2018–2021

The goal set by the Gambian Government regarding RE integration in its NDP is to increase the share of RE in total electricity generation from 2% to 40% between 2018 and 2021 [9]. According to the NDP, the government aims to achieve its RE target by the use of appropriate technology, research and development and other efficient measures. RE, according to the government represents an area of tremendous opportunity for The Gambia and as such, it is committed to promote the development of RE and will actively work to increase the RE share in the national energy mix. The government says it will prioritise RES in order to have a balanced energy mix [9].

3.3 Renewable Energy Act 2013

The Gambian *Renewable Energy Act 2013* (RE Act 2013) was passed by the President and National Assembly in December 2013 to set the 'legal, economic and institutional basis to promote the use of renewable energy resources and for connected matters' [13] in bid to achieving the nation's RE target. Crucial to the achievement of RE target, the RE Act 2013 specifically

instructs the Ministry (responsible for energy) to 'recommend middle and long-term national targets for the use of RE resources in electricity generation, which may include targets related to geographic location and diversity' [13]. In addition to the RE Act 2013, the production of electricity for RES is promoted in the *Electricity Act, 2005* of The Gambia [14]. As part of the objectives of The Gambian Electricity Act, Article 3(l) encourages the production of electricity through the use of RE.

3.4 Regulators

The regulatory agencies responsible for the regulation and implementation of the RE Act 2013 are the Ministry of Petroleum and Energy, the Public Utilities Regulatory Authority (PURA) and the National Water and Energy Company (NAWEC). The Ministry, serving as the policy regulator is primarily responsible for overseeing the overall implementation of the RE Act 2013. This is firmly established under section 19 of the Act. The PURA, serving as the economic regulator, is responsible for formulating feed-in tariff (FIT) rules and managing the 'Renewable Energy Fund' which is established under section 5 of the RE Act 2013 [13]. Occupying the role of the technical regulator, NAWEC is predominantly responsible for determining the safety and technical capability of the grid to connect electricity generated from RE resources [13]. It is also to undertake such reporting duties as are required by this Act, in particular section 18(2) of the RE Act 2013.

4 Regulator, Legal and Policy Issues

4.1 Lack of Regulatory Measures

The RE Act 2013 under Section 19 instructs the Minister to make regulations for the implementation of the law and under Section 20, the Minister is to work closely with the NAWEC on such aspects that pertain to electricity generation. Essential to the instructions in both Sections 19 and 20 is the adoption of the proposed Biomass Strategy by the Minister following the conduct of an impact assessment a year after the RE Act 2013 come into effect. At the time of writing, such a strategy is yet to be adopted. It may be assumed at this point that the impact assessment of the use of biomass for electricity generation is yet to take place. While this is only an assumption, it helps to throw light on the zero rate of RE integration in the country's electricity generation mix [9]. Energy mix for electricity production in the Gambia is 100% HFO [9]. Section 15(3) of the RE Act 2013 bars projects generating electricity exceeding 1 MW from biomass energy from benefiting from feed-in tariffs or any other incentives until such a time when the impact assessment on biomass is undertaken by the Energy Ministry. This is a serious deterrent to generating electricity from biomass sources to bolster electricity access in the country since project investors whose electricity production from biomass may exceed 1 MW may feel discriminated against and ultimately decide against investing in the RE sector. It is important to note at this point that the Ministry is yet to make any regulations to give effect to the various provision of the *RE Act 2013*. When the RE Act 2013 is compared to similar RE laws in the same geographical region (sub-Saharan Africa) such as the Ghanaian *Renewable Energy Act 2011* (RE Act 2011) [15], regulatory measures are quite limited and are not addressed to any specific aims or objectives. For instance, unlike the regulatory mechanism in the Ghanaian RE sector where the law defines specific objectives for which legislative instruments are to be adopted in implementing the provisions of the RE Act 2011, it is not the case in The Gambian RE sector. Under section 19 of the RE Act 2013, the Ministry of Petroleum and Energy is only to make regulations for the implementation of the Act without identifying specific aims to which regulations are targeted.

4.2 Weak Licencing Regime

The Gambian RE Act 2013 provides for a permitting process for the facilities or projects producing electricity from RES. The RE Act 2013 contains a title called 'streamlined permitting', which essentially aims to make the application and process of issuing permits to renewable electricity project operators as smooth as possible. Section 16 of the RE Act 2013, for example, instructs the Ministry (of Petroleum and Energy) to issue clear guidelines for application processing and to collaborate with other ministries in simplifying permitting process regarding such things as environmental impact land use and water use. The streamlined permitting title of the RE Act 2013 does not, however, provide qualification standards for obtaining a licence or

permit, conditions under which a permit may be awarded to a renewable electricity producer, the duration of a permit, conditions for renewal and more importantly, the agency responsible for the issuance of licences. The law only mandates the Ministry, working with other agencies, to issue clear and simple guidelines on the processing of applications but not the power to issue permits. In fact, the RE Act 2013 does not elect or grant the power to award licences to any of the regulatory agencies in the RE sector of The Gambia. This raises the question of clarity in the responsibilities of the regulatory agencies in the Gambian renewable energy sector.

The Gambian RE Act, in comparison to the Ghanaian RE law, lacks depth when it comes to its licensing regime. The Ghanaian RE Act 2011, for example, has provision for the requirement for licences, specifying in details the qualification, conditions for grating, conditions for the suspension or cancellation, conditions for renewal, the responsible authority and a mechanism for settling disputes. All of these are missing in the Gambian RE law. In effect, there is no licensing regulation in the Gambian RE sector.

4.3 Ineffective Regulation

The issue of ineffective regulation in the Gambian regulatory regime pertains to non-performance by the elected regulatory agencies in the RE sector. As mentioned earlier the Minister for Petroleum and Energy has failed to conduct the biomass strategy impact assessment as instructed in section 15 of RE Act 2013. Besides this, the Minister is yet to adopt any regulations to implement the feed-in tariff provisions of the Act. Section 11(1) of the RE Act 2013 provides that a feed-in tariff (FIT) system is to be established to help accelerate the development of RE.

Prior to the adoption of regulations implementing the feed-in tariff provision, the RE Act 2013 instructs the PURA to formulate, with the approval of the Minister for Petroleum and Energy, feed-in tariff rules that shall conform to the conditions stipulated under section 11(3) of the RE Act 2013 within 6 months of the law coming into force. Such feed-in tariff rules are yet to be formulated and made accessible. It may be argued that the Minister cannot adopt necessary regulations implementing section 11 of the RE Act 2013 because the PURA has not yet formulated the rules needed for the feed-in tariff system to come into effect. At this point, it is not clear whether the PURA has simply failed to formulate the required rules, or it might have done so but has not met the approval standards of the Minister. What is certain in any case is that there is not an existing feed-in tariff system in place to support the development of renewable electricity in The Gambia.

4.4 Lack of Regulatory Assessment

Since the enactment of the Gambian RE Act in 2013, there has not been assessment of the regulatory measures to determine if regulation of the nation's renewable sector is effective or not. A regulatory fitness assessment of the regulatory bodies and the various regulatory mechanisms needed in regulating the RE sector could provide necessary information pertaining to whether regulatory goals can be achieved, a restructuring of the regulatory agencies may be necessary or if regulatory measures may need adjustments so that goals could be achieved [16].

In fact, section 4(2) of the RE Act 2013 provides that the Ministry of Petroleum and Energy is to prepare and submit an annual report on the progress towards the achievement of the RE target to the Cabinet. These reports are also to include a review of the performances of the incentives provided in the Act. This clearly provides a basis for conducting regular regulatory assessment, particularly the support schemes under the regulatory structure. Nevertheless, such an assessment has never been undertaken. This, predominantly, might be as a result of the persistent lack of regulatory instruments that are needed to implement the various aspect of the Act, such as the absence of feed-in tariff system and its rules.

4.5 Investment Risk

RE projects require considerable financial investment and this acutely exposes investors to higher risk if the project fails to be successful [17]. It is also thought that investments in RE projects for generating electricity are based on public financial support [18]. Likewise, investments that are based on support schemes primarily rely on the policies and regulations of a country's RE sector and the ability of regulators to sustainably implement those support systems [19, 20]. In this sense, regulatory risks such as changes to regulatory goals and activities expose investors to higher degree of uncertainty in the market.

The Gambian Government's intended approach to attracting private investment into its RE sector is mainly through the provision of support schemes in the regulatory systems. Except for tax exemptions and breaks, feed-in tariff is the main support mechanism in the Gambian RE market. Since The Gambia does not have a feed-in tariff system currently in place, an investment into a renewable electricity project in the country would certainly be an extremely risky undertaking with no guarantee of return on the investment. This is because the nation's transmission and distribution system operator, NAWEC, would not be able to purchase the renewable electricity at a guaranteed fixed price that is established to ensure that project investors would be able to recoup their investment cost and if possible, with fair profit margins. Potential renewable electricity producers cannot be certain of guaranteed payment without an established and working feed-in tariff, which is presently the case in the Gambia.

4.6 Infrastructure Issues

Infrastructure deficiencies could be another impeding factor to integrating renewable electricity into the national generation mix in the Gambia. According to the Gambian Government, a quarter of grid electricity transmission was lost in 2017 [9] through inefficient transmission systems and aged electricity infrastructure and is expected to increase to 29% in 2018 [21]. These losses increase the cost of electricity supply on a per kWh basis. The current Gambian national grid system is aged and underdeveloped. This poses technological and technical capabilities issues for the system and may therefore not be able support uptake of renewable electricity. Infrastructure inadequacies also imply that it is not likely for investors to put money into renewable electricity projects knowing that additional capacity from those projects cannot be integrated into the nation's transmission and distribution lines.

4.7 Overambitious Policy Goals

It is the aim of the Gambia government to increase the integration rate of RE into the total electricity generation mix from less than 2% in 2018 to 40% by the end of 2021 [9]. While this is a laudable idea, it appears to be an overambitious aim. Due to present technological and technical impediments to uptake renewable electricity because of outdated grid systems and substantial financial investment needed to upgrade them [9], it is highly improbable that an integration rate of 40% could be achieved in the space of 3 years. In fact, the African Development Bank Group reports that The Gambia had 100% HFO energy mix for electricity generation as of the end of 2018 [22].

It is certainly not impossible to achieve such a feat, but the chances of it being achieved considering all the factors—inefficient regulation, ageing infrastructure, financial and technical constraints—seems unlikely. A modest, yet realistic and achievable target may prove to be a catalyst for attracting investment into the sector. The reason is that, should The Gambian Government fail to deliver a 40% RE integration by 2021 – moving the goalpost as it was, investors may tend to believe that the government is not committed to its RE developmental target for the nation and may deter prospective investors from investing into the RE sector.

5 Conclusion and Recommendations

This paper aimed at examining the regulatory issues in the Gambian RE developmental agenda. The Gambian Government aims to increase and integrate the share of RE into the country's total electricity generation mix from 2% to 40% between 2018 and 2021. It is also the goal of the government to increase the percentage of the population with access to electricity from 35% to 60% by 2021 through renewable electricity [9]. By achieving this RE integration target, increasing the share of the population with access to affordable and sustainable electricity, the Gambian Government hope to fulfil its commitment to SDG 7 under the Agenda 2030 agreement [1].

While policy, regulatory and legal objectives have been established by the Gambian Government regarding the development of RE for electricity generation, a number of key issues that have the potential to impede any efforts by the country towards achieving its integration targets have been identified and examined in this paper. This paper shows that the current lack of regulatory measures and tools by any of the elected regulatory agencies in the sector such as the feed-in tariff system and the biomass strategy means that the various sections of the RE Act 2013 that need to be implemented for the effective

functioning of the RE law are not implemented. Connected to the issue of lack of regulatory measures is the issue of non-performance by the regulatory agencies in the Gambian RE sector. The PURA is yet to prepare FIT rules as prescribed by the law, the Minister has also failed to conduct the required biomass strategy impact assessment necessary for the adoption of the biomass strategy regulatory tool as instructed in section 15 of RE Act 2013. The licensing regime of the regulatory framework in the Gambian RE sector also appears to be weak and lacking details such as the requirement for licences, conditions for granting, conditions for the suspension or cancellation, conditions for renewal, the responsible authority and a mechanism for settling disputes.

The examination of the Gambian RE sector development has also shown that there has not been an assessment of the regulatory framework since the country adopted its RE Act since 2013. While the section 10(1) of the RE Act 2013 specifically instructs the regulatory agencies to provide an annual progress report including an assessment of regulatory measures to the Cabinet, no such assessment has been conducted and hence, no progress report has been made nor recorded since 2013. There is also a high investment risk and uncertainty associated with the present regulatory issues in the Gambian renewable energy market. The FIT support system is the only government's designed approach to attract private investment into the sector. However, the feed-in tariff system is yet to be instituted. Hence, any project investment in the sector would undoubtedly be an extremely risky venture with no guarantee of return on such investments. The issue of an overambitious integration target might be a deterrent to attracting investment into the nation's renewable energy market. This is in consideration of the fact that the current infrastructure, technical and technological inadequacies in the country's entire electricity sector and the significant financial investments needed to address them implies that a renewable electricity integration rate of 40% by 2021 from zero in 2018 is highly improbable.

In going forward, the Gambian Government should seek to hold regulatory agencies accountable for failing to perform their mandated duties under the RE Act 2013. The lack of regulations necessary for the effective implementation of the specific provision of the RE law means that the overall objective of the RE Act is in danger of not being achieved and may subsequently render the law ineffectual. Accountability and performance of the regulators may send a signal to prospective investors that the Gambian Government is committed to the policy goals of the RE sector. This also helps to improve credibility and trust in the institutions in the regulatory framework [16].

Although the Gambian Government in an attempt to provide access to affordable, reliable, sustainable electricity for all of its citizens in the shortest possible time, has set an overambitious RE integration goal, it has failed to attract investment into the market. A more realistic and easily achievable goal would help attract private investment in the country's RE sector. It would be recommended that a revised RE integration target should be set following a thorough assessment of current regulatory measures and policy strategies to achieve policy goals. In addition, an updated integration target could perhaps have a timeframe that extends to at least 2030. This will coincide with the target year of SDG 7 of the 2030 Agenda. Essentially, a new and separate RE policy document with updated targets and strategies to achieving those targets with a more realistic time period might be necessary and may help boost private investment into the Gambian RE market.

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