



**THE ENERGY (SOLAR PHOTOVOLTAIC
SYSTEMS) REGULATIONS, 2019**

(Pursuant to Section 10a(iii) of the Energy Act, 2019)

REGULATORY IMPACT STATEMENT

DECEMBER, 2019

Issued by the Energy and Petroleum Regulatory Authority

1. THE ENERGY(SOLAR PHOTOVOLTAIC SYSTEMS) REGULATIONS, 2019

The Energy (Solar Photovoltaic Systems) Regulations, 2019 have been developed within the provisions of Section 10 of the Energy Act, 2019 and constitute regulations to the same Act. They are a revision of the existing Energy (Solar Photovoltaic Systems) Regulations, 2012, gazetted on 28th September, 2012 via Legal Notice No. 103.

2. INTRODUCTION

Access to electricity is an essential input to the social, economic and political transformation of a country. However, sustainable supply of electricity in Kenya has been hindered by inter alia, high costs of extending the national grid to some of the underserved areas, negative environmental impacts associated with fossil fuels and the diminishing natural resources. Solar photovoltaic (PV) technology presents an opportunity of reducing overreliance on fossil fuels by contributing to the electricity mix and directly electrifying communities distant from the existing grid at a comparatively lower cost. This is through deployment of both utility scale solar PV projects and off-grid applications such as solar home systems, solar mini-grids and solar water pumping systems.

Deployment of solar PV technologies requires a robust policy and regulatory framework that supports use of quality solar PV products and provides for capacity development of the solar installers. Kenya's solar PV industry is currently regulated through the Energy (Solar Photovoltaic Systems) Regulations, 2012. The Regulations were developed under provisions of the Energy Act, 2006 (now repealed). The Energy and Petroleum Regulatory Authority, together with other stakeholders, undertook to review the current regulations to address gaps identified in the six years of implementation and align them with the Energy Act, 2019. Presented herein is a Regulatory Impact Statement of implementation of the draft Energy (Solar Photovoltaic Systems) Regulations, 2019. The statement covers benefits identified in the implementation of the current regulations and the projected economic, social and environmental impacts at new regulations.

3. BACKGROUND

The Energy and Petroleum Regulatory Authority (the Authority) has been implementing the Energy (Solar Photovoltaic Systems) Regulations, 2012. The regulations provide for;

- Licensing of all persons involved in the manufacture, importation, distribution, promotion, sale, design or installation of any Solar Photovoltaic (PV) systems;
- Collection of data on Solar PV systems installed in the country;
- Ensuring the manufacture, design, installation, repair and maintenance of Solar PV systems is done as per the relevant Kenyan Standards;
- Fair business practices in the Solar PV industry.

In March 2019, the Authority commissioned a Solar PV Regulatory Impact Assessment (RIA) Study to identify the impacts of the Energy (Solar Photovoltaic Systems) Regulations, 2012 on the Kenya Solar PV industry. This was part of the process of reviewing the regulations.

The exercise involved engaging stakeholders in the solar PV industry including solar PV licensees, relevant government agencies, development partners and non-governmental organizations. The stakeholder engagement included administration of questionnaires, one on one interviews and a validation workshop.

The salient findings of the RIA Study include:

- i. The Kenyan solar photovoltaic industry consists of small pico photovoltaic systems to complex grid tie and hybrid solar PV systems. The installed capacity has grown over the years to more than 150 MW with more systems expected in the coming years. Figure 1 and Figure 2 illustrates the growth in annual PV capacity from 2012 to 2025 and growth in plug and play devices over the years respectively.

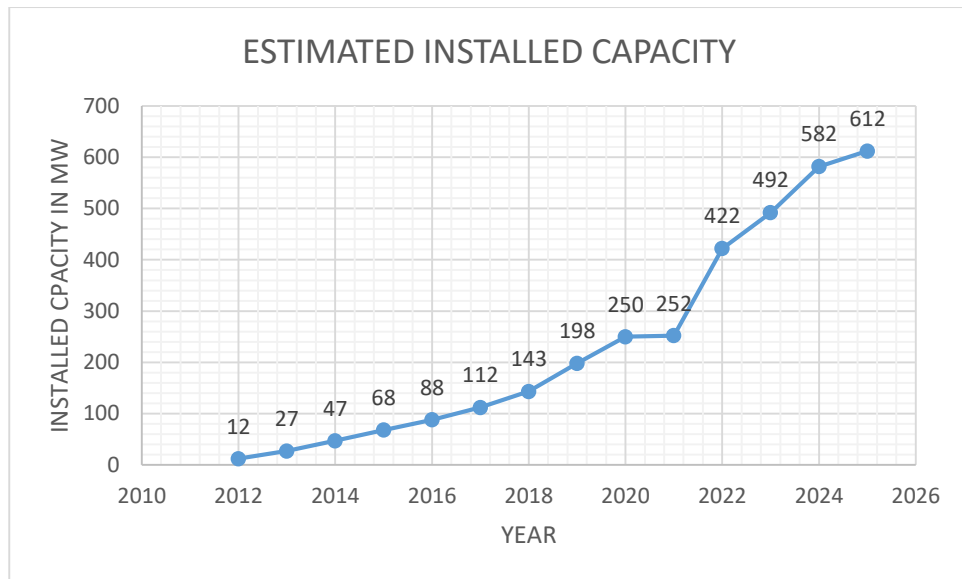


Figure 1: Growth in Annual PV Demand Capacity

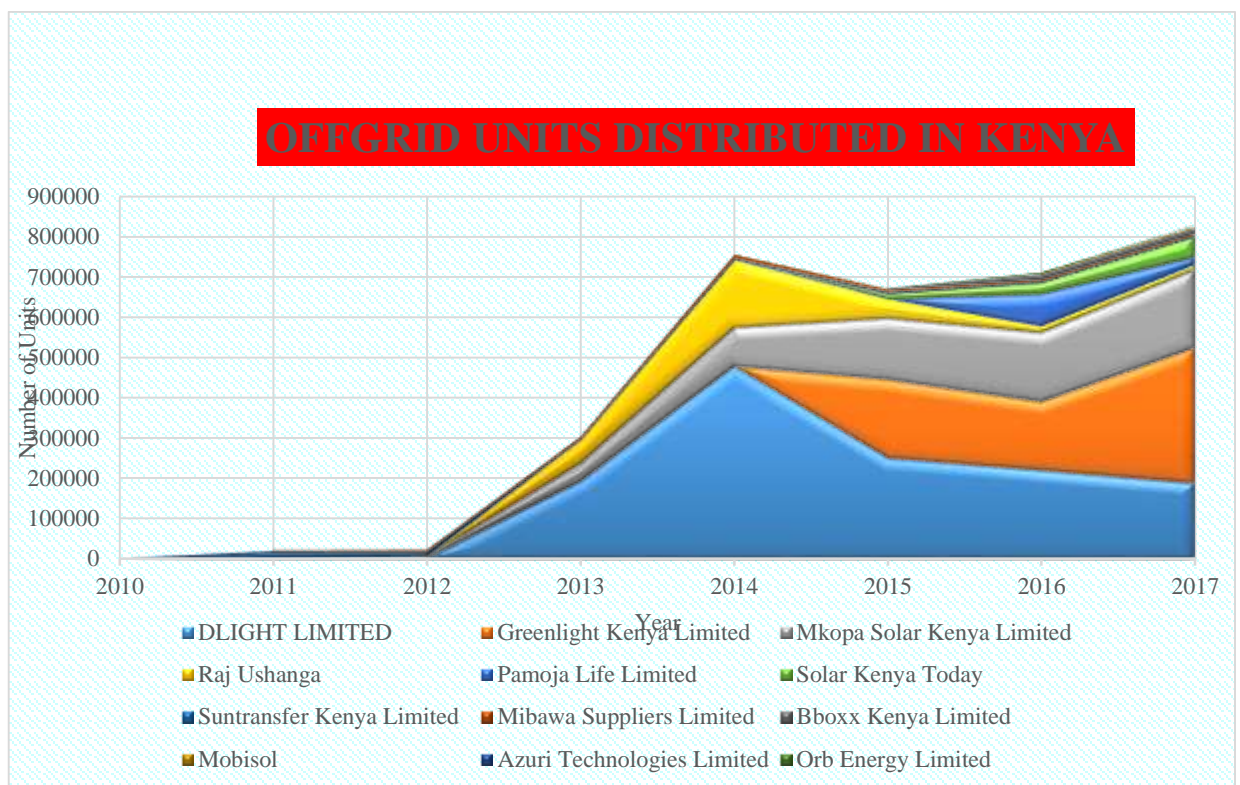


Figure 2: Number of Off-grid Units Distributed by various companies in Kenya between 2012 to 2017

Both Figure 1 and Figure 2 show significant growth in the solar PV market in Kenya since 2012 with the annual installed capacity increasing to more than 150 MW from 12

MW in 2012. The growth is associated with growing confidence in the performance of solar PV systems as a result of a streamlined sector.

- ii. The Energy (Solar Photovoltaic Systems) Regulations, 2012 have played a key role in streamlining the solar photovoltaic industry in Kenya by creating a pool of more than seven hundred (700) licensed solar technicians and five hundred (500) registered solar companies. Figure 3 shows the trend in the numbers of licences from 2012 when the regulations were first gazetted to date.

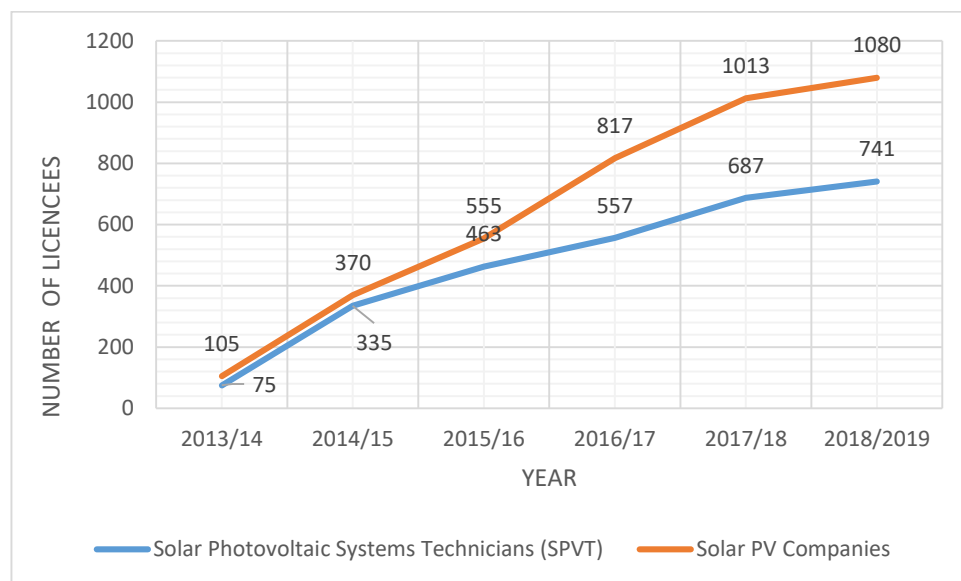


Figure 3: Growth in Solar PV Licences from 2012 to date

This is in addition to resulting in setting up of solar training centers that use a curriculum approved by National Industrial Training Center (NITA) to build capacity in the solar PV industry;

Similarly, the regulations have created job opportunities for the various practitioners in the solar photovoltaic industry value chain.

- iii. The scope of solar PV technician licences Class T1 and Class T2 are limiting and thus need to be reviewed in line with the current market requirements. This is in addition to expanding the scope of the company licences to cover more aspects of the solar PV value chain;

- iv. Whereas the regulations refer to the Kenyan Standards, they have not been able to address issues to do with substandard solar photovoltaic components in the Kenyan market. This is the regulations did not identify the specific standards to be adhered to by the licencees;
- v. Benchmarking from different jurisdictions revealed that countries such as Australia and USA have accreditation processes similar to Kenya for solar photovoltaic installers. Australia achieves this through the Clean Energy Council (CEC) while USA uses the National American Board of Certified Energy Practitioners (NABCEP). Both programmes require that the applicants have the relevant academic background and requisite experience in solar installation;
- vi. The licensing interviews administered by the Authority are fair, transparent and offered conveniently with some of the respondents advocating for decentralization of interview centers. The respondents agreed that the interview fees are fair and affordable with emphasis on the need of online process to be enhanced further;
- vii. The stakeholders provided a number of recommendations to be incorporated in the revised solar photovoltaic regulations.

The Authority consequently developed the Energy (Solar Photovoltaic Systems) Regulations, 2019 to address the gaps identified by stakeholders in the RIA study.

4. OBJECTIVES OF THE REGULATIONS

The overall objective of the draft regulations is to position the solar PV technology to contribute towards universal access to sustainable energy. Once enacted, the Energy (Solar Photovoltaic Systems) Regulations, 2019 shall provide a framework for enforcing standards in the importation, design and installation of solar PV systems; regulation of solar plug and play devices; and collection of energy data as provided for in Section 10 of the Energy Act, 2019. This is in line with the Energy Act 2019. The specific objectives of the Regulations are: :

- i. To protect end-users of solar PV products/systems from sub-standard products/systems by enforcing adherence to the relevant Kenyan Standards during manufacture, design, installation, repair and maintenance of Solar PV systems;
- ii. To enhance the quality of solar PV installations by licensing all persons involved in the manufacture, importation, distribution, promotion, sale, design or installation of any Solar Photovoltaic (PV) systems;
- iii. To facilitate collection of energy data as provided for in Section 10 of the Energy Act, 2019;
- iv. To promote fair business practices in the Solar PV industry.

5. REGULATORY ALTERNATIVES

Self-Regulation

The alternative to the regulation is self-regulation. In this alternative, major stakeholders, that is the users, installers, manufacturers and importers of solar PV systems would come up to set common principles that offer mutual benefits to all. Self-regulation has to come within the purview of specific interests of the consumers and the dealers of the solar PV components and systems. However, self-regulatory systems should, above all interests, focus on the interest of the consumers. In such a system, it is envisaged that consumers should have easy access to complaint launching processes. The working of such a system should also be transparent and accessible to the consumers. The system should also have credible and adequate sanctions to support the agreed decisions. As well, there should be adequate power to enforce the decisions.

Self-regulation can therefore be realized if all the players can agree to some code of practice which will ensure that only quality solar PV components and systems are imported, retailed and installed. It includes having a mechanism of registering qualified installers that are easily accessible to end-users. This calls for efforts of umbrella bodies in the country to come together and formulate frameworks for self-regulation. In addition, the government enters into a negotiated agreement with the players to come up with self-regulatory mechanisms.

In jurisdictions where self-regulation works, there is evidence of existence of well-established associations. Examples of such is Clean Energy Council (CEC) in Australia that represents and works with business operating in or supporting the development of renewable energy. CEC offers accreditation for the various works and responsibility that can be encountered in the solar PV industry and helps build capacity of the players. Similarly, South African Photovoltaic Industry Association (SAPVIA) formed by the South Africa solar PV industry players, offers members with programmes that focus on education, skills development, and training in the development of the industry. Both associations have mechanisms for censoring players who do not meet the requirements.

In Kenya, the self-regulation mechanism is not viable considering that the existing umbrella organizations do not represent all the players. In addition, the players' organizations do not have capacity to provide education, training and skills development to all players which is a requirement for self-regulation. Similarly, there no mechanisms of censoring non-compliant members. The Energy Act, 2019 and thus the resultant regulations provide a unified mechanism of having all the players comply with the developed solar PV standards and promote development of platforms for capacity development across the sector. This is in addition to creating a pool of licensed players easily accessible to the members of the public who intend to install solar PV systems. Fines and Penalties have been also provided for non-compliant practitioners.

6. COSTS AND BENEFITS OF THE REGULATIONS

6.1 Economic Impacts

The Sustainable Development Goal 7 that provides for access to affordable, reliable, sustainable and modern energy for all is in line with Kenya's target of realizing Universal Access to electricity by 2022. With the plummeting global solar PV prices, solar PV technology is poised to play a key role in meeting Kenya's current and future electricity requirements. This is evidenced by the current growth in annual PV demand presented in Figure 1 and Figure 2 where there is growth in both utility scale solar PV projects and off-grid solar systems. The current installed capacity is estimated at more than 150 MW based on the annual

demand provided in **Figure 1**. There are approved utility scale projects which will increase this figure to more than 500 MW by 2025. Similarly, the growth of the off-grid sector has seen more than 500,000 units distributed and installed in Kenya annually. Further to this, the government through the Kenya Offgrid Solar Access Projects (KOSAP) intends to electrify fourteen (14) underserved counties using solar home systems, solar mini grids and solar water pumping systems. The combined installed capacity through the project is estimated at 25 MW. The benefits of this developments are enhanced through ensuring that quality solar PV products are distributed and installed, with the local players fully participating in the manufacture, importation, design, installation and maintenance of the solar PV systems. The Energy (Solar Photovoltaic Systems) Regulations, 2019 will ultimately lead to a better regulated and more competent and accountable solar PV Industry as a result of the following:

- a) Direct employment opportunities for practitioners to be licensed for manufacture, import, design, installation and maintenance of the solar PV systems and indirect opportunities for the other players supporting the sector through training, advocacy, testing, financing among others. This is in addition to the more than seven hundred (700) solar PV technicians, five hundred (500) companies registered, five (5) solar training institutions, and testing laboratory established as a result of the current licensing regime.
- b) Accountability of the solar PV players through licensing and enforcement of standards thus installed solar PV products and systems meeting their intended lifetime. This would enhance electrification in the country and stimulate other economic activities. In addition, quality solar PV components/systems have longer product lifetime thus reducing costs associated with electronic waste disposal.
- c) Reducing the costs of energy data collection required for national energy planning by collecting real time data of solar PV systems installed in the country.

6.2 Social Impacts

The social benefits from the implementation of the regulations include:

- a) Promotion of fair business practice in the solar PV industry. Prescription of a framework for handling complaints between the solar PV practitioners and end-users by the Energy and Petroleum Regulatory Authority will ensure harmony in the market
- b) Promotion of access to electricity through use of quality solar PV systems as an alternative to national grid extension and thus contribute towards socioeconomic transformation.

6.3 Environmental Impacts

The regulations will lead to a better regulated and more competent and accountable solar PV Industry thus promote the use of solar photovoltaic systems in meeting Kenya's electricity needs. This is as opposed to use of fossil fuels which are associated with negative environmental impacts. With a projected additional PV installed capacity of 500 MW between now and 2025, Carbon Dioxide Emission Factor (CEF) of 0.33kg per kWh and a plant capacity factor of 20% properly installed systems would lead to a carbon dioxide abatement of 289,000 tons annually. The proposed continuous development for solar installers will equip them with skills and competencies for better management of electronic waste generated by solar PV systems. Similarly, use of solar PV systems for lighting does reduce indoor air pollution which results from the use of kerosene lamps.

6.4 Costs of Implementation of the Regulations

The regulations propose a minimal fee to meet administrative costs associated with the administration of the licensing interviews for individual applicants and licensing inspections for companies. The funds will facilitate closer scrutiny of the applicants to ensure that only qualified persons are registered.

Extra costs shall be borne through funds available to the Authority from other sources provided for in Section 20 of the Energy Act, 2019. The enactment of these regulations will NOT result in any additional resource allocation from the government with proposed fees designed not to limit any practitioner from accessing the services. Information Technology

Systems shall be deployed to ensure efficiency in the licensing process, monitoring of installed solar PV systems and reporting as required in the regulations.

7. CONCLUSION AND RECOMMENDATIONS

This regulatory impact statement has analysed two available options of self-regulation and explicit regulation through the Energy (Solar Photovoltaic Systems) Regulations, 2019. The Energy and Petroleum Regulatory Authority recommends adoption of the recommended regulations as opposed to self-regulation. Self-regulation as it is will not allow for achievement of the set objectives to streamline the solar PV industry in Kenya.

Once adopted, the regulations will allow the Authority to streamline the Solar PV industry through enforcement of solar PV standards, development of a pool of qualified solar PV installers and collection of energy data necessary for energy planning. This is to build on the foundation already set by the Energy (Solar Photovoltaic Systems) Regulations, 2012. The current regulatory instrument was developed through a participatory process with solar PV industry players. This includes solar PV licensees, relevant government agencies, development partners and non-governmental organizations. The recommendations provided were incorporated in the regulations.

In addition, the regulations provide a framework for promotion of solar PV technology as a form of renewable energy technology.

8. IMPLEMENTATION AND REVIEW

The Energy and Petroleum Regulatory Authority will implement the Energy (Solar Photovoltaic Systems), 2019 through gazette in the Kenya gazette. Review shall be done as per the provisions of the **Statutory Instruments Act No. 23 of 2013** and in consultation with all stakeholders.